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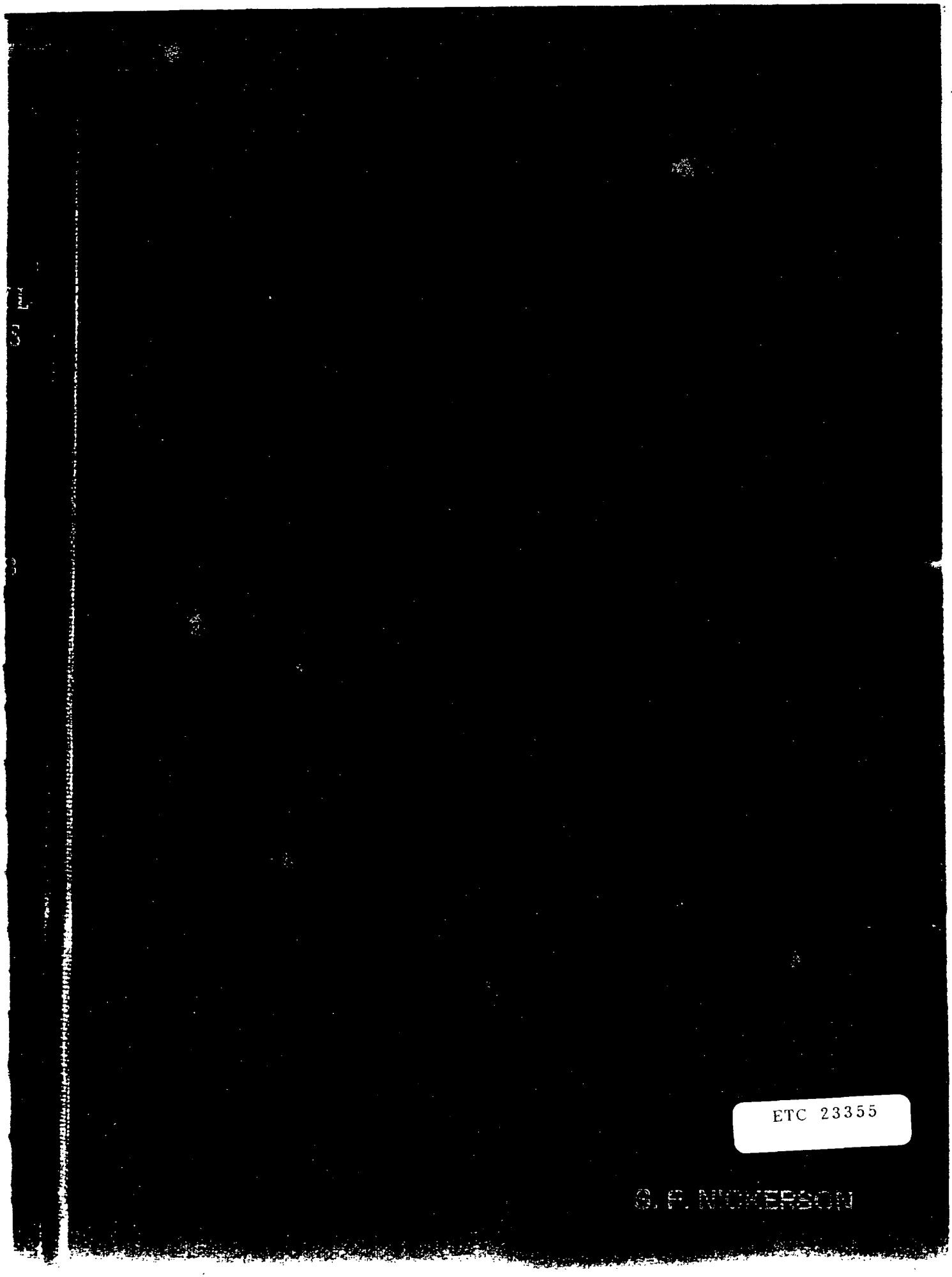
ETHYL NEWS

1948

ETC 23354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S. P. NICKERSON

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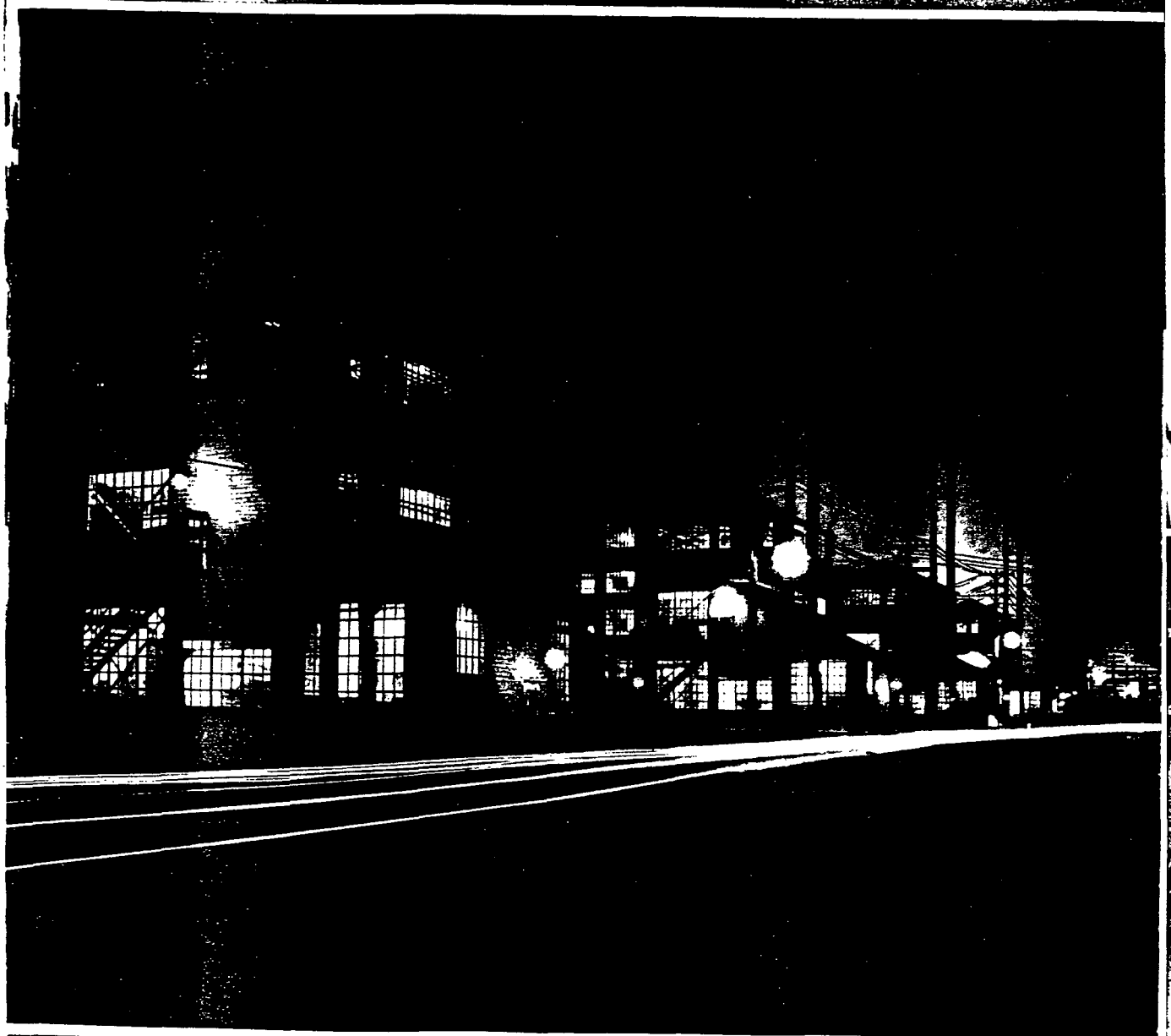

JANUARY ★ 1948

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Major General Stephen G. Henry, after a distinguished career in the U. S. Army, has joined the staff of the Ethyl manufacturing plant at Baton Rouge. He will serve as manager of the Plant and Employe Services Section.

A native of Louisiana, and a graduate of Louisiana State University, General Henry was previously associated with Ethyl Corporation for a brief period in 1930. This occurred while he was on leave of absence from the army to study automotive engineering in connection with the army's program for the development of motor transport and tank operations.

General Henry served his country in three wars. He was a second lieutenant in the Mexican Border crisis in 1916, an officer in charge of machine gun battalions in France in the first World War, and a key figure in the evolution of tank and motor transport operations in World War II. Starting as a captain of Infantry in the Regular Army after World War I had ended, he rose to the rank of major general in March, 1943 when he was serving as Commanding General of the 20th Armored Division, Camp Campbell, Ky. For his contribution to the development of the Armored Forces, he was awarded the Distinguished Service Medal.

IN THE

ETHYL NEWS

JANUARY 1948

BATON ROUGE IS TALKING IN BILLIONS NOW 3

The first billion pounds of ethyl chloride . . . the first billion pounds of tetraethyl lead — these are two production milestones which Ethyl's manufacturing plant has passed or is approaching, as it plans for still greater output.

WITH ROD, GUN AND CHECKBOOK 7

Once upon a time, hunting and fishing meant mostly fun instead of money — but now they've become a big item of expense for many of the nation's 14 million sportsmen.

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Unusual road signs throughout the world are often as fascinating as the interesting and odd places they identify.

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The strange business of housewrecking is taking on new importance today, as the postwar construction boom gets underway.

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A 93-year-old Titusville, Pa. woman vividly remembers the early days in the history of the oil industry — because she grew up during those stirring times.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Julian C. Gonzalez, secretary

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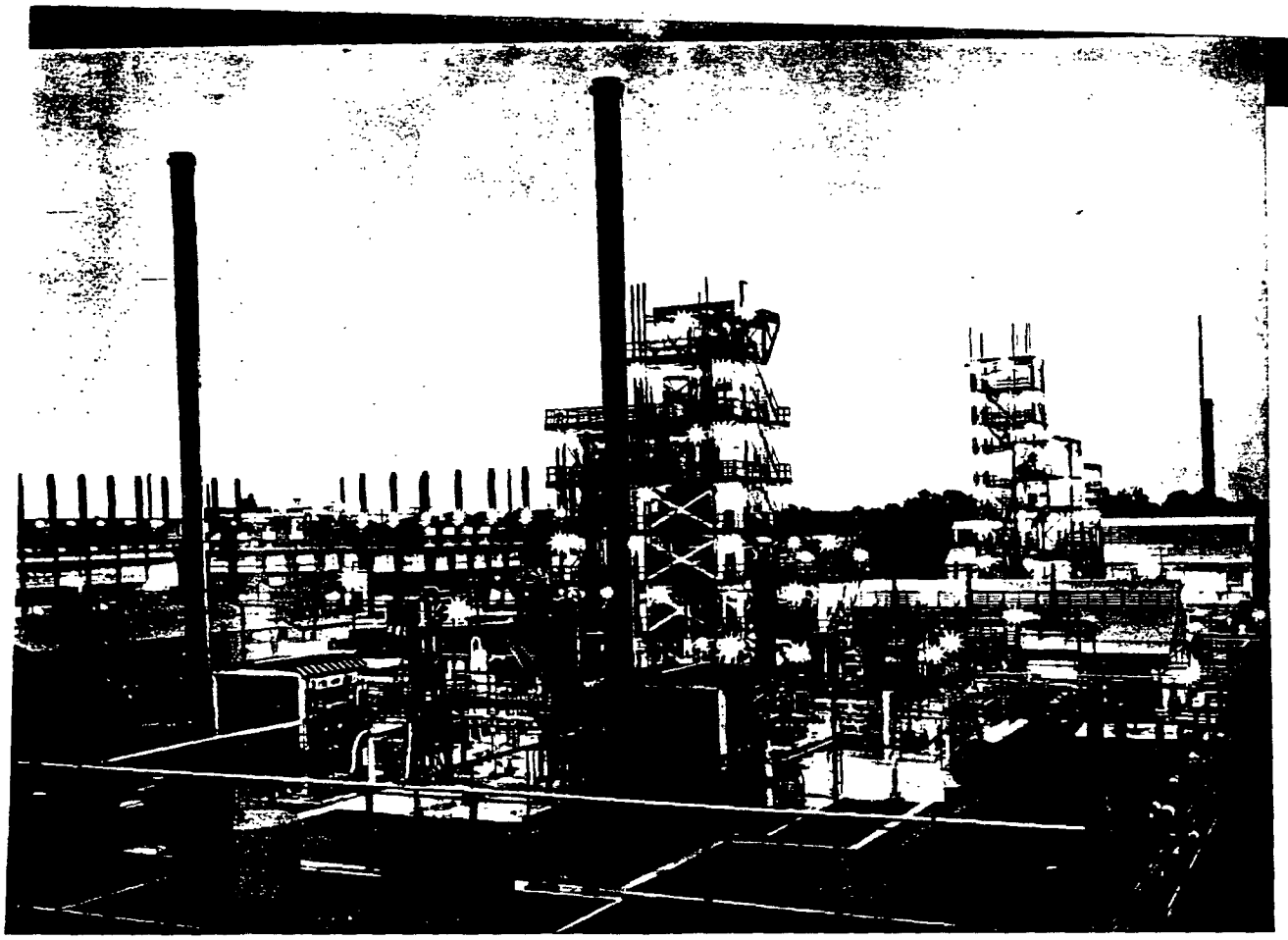

The ethyl chloride area, photographed at dusk, is one of the most spectacular parts of the Ethyl plant. Three methods are used to manufacture this important chemical

BATON ROUGE IS TALKING IN BILLIONS NOW

Largest producer of ethyl chloride in the world, Ethyl Corporation turns out its billionth pound of a basic ingredient for "Ethyl" antiknock fluid

A FEW DAYS before Christmas, the Ethyl plant at Baton Rouge quietly passed an important production milestone. It turned out its billionth pound of ethyl chloride, one of the key chemicals needed to manufacture "Ethyl" antiknock compound.

To the casual observer, the event might have seemed of little consequence. The plant continued operations with no special recognition of the achievement. Its assignment was to supply the petroleum industry with as much antiknock compound as possible, and the vast installations hummed and throbbed as they manufactured the completed product at a rate of more than 15,000,000 pounds a month.

But without ethyl chloride in sufficient quantities, there could not be uninterrupted production of finished "Ethyl" compound. A clear, colorless liquid, ethyl chloride is used in reaction with a lead-sodium alloy to form tetraethyl lead, the active antiknock agent in "Ethyl" antiknock fluid. By the end of December, pending an exact tally of year-end production figures, close to 1,008,000,000 pounds of ethyl chloride had been made at Baton Rouge since the plant went "on stream" more than a decade ago.

Sometime in April the plant will reach another billionth pound mark – this time in the manufacture of

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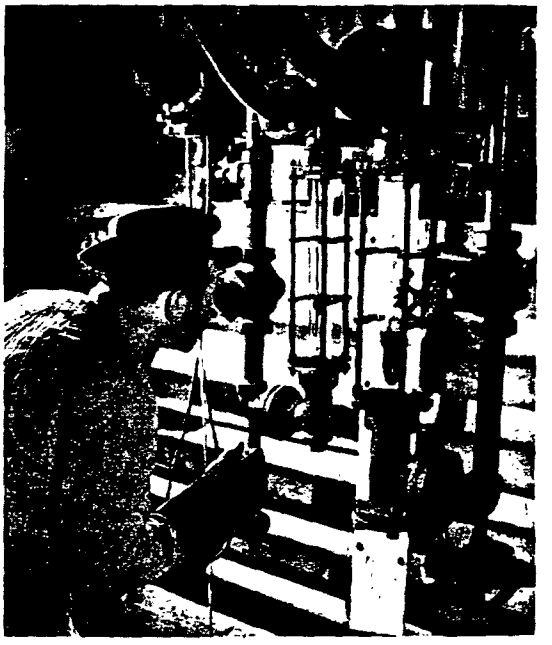
tetraethyl lead, which accounts for nearly two-thirds of the weight of "Ethyl" antiknock fluid. Sodium, a much lighter substance used in making lead-sodium alloy, will take longer to pass the same production point, although the output at Baton Rouge had passed 300,000,000 pounds by the end of the year.

First Billion Mark

The plant has already turned out enough of these and other agents in "Ethyl" fluid to have topped the billion pound production total for the compound itself. This was during the height of the war. Perhaps this pound of "Ethyl" helped power some squadron of bombers over Germany, some tank division in Italy, or a fleet of P-T boats in the Pacific. By the end of 1947, total production of "Ethyl" fluid at Baton Rouge had reached more than a billion five hundred million pounds.



Adjusting the flow of gases needed to yield hydrochloric acid, which is used in making ethyl chloride

Large as the manufacturing facilities of the Corporation may be to have produced these huge amounts, Ethyl is spending more than $20,000,000 for new construction now under way, which will greatly increase the plant's productive capacity. Additions will be made to all manufacturing areas, and will include new buildings, installations, and auxiliary services. Various units

Heavy compressors control temperatures and pressures in ethyl chloride manufacture

will begin operations as soon as they are finished, with the expansion program as a whole scheduled for completion in 1949.

A $6,000,000 supplementary building program is also progressing. This month a new drumming plant began operations as a part of a program for providing more flexible shipping services to customer refineries. Three field terminals strategically located on the east and west coasts, and in the mid-continent area, are to be completed as a secondary source of supply for "Ethyl" compound. Work is well along on a new medical and personnel building.

To Meet Indicated Demands

The new manufacturing and distribution facilities are being built in order to meet anticipated demands for "Ethyl" antiknock compound. With the nation's growing dependence upon gasoline-powered transportation of all kinds, the company is enlarging its operations in order to serve the petroleum industry better. Ethyl sales have already reached an unprecedented peace-time level.

While construction is under way, the plant will be able to accommodate increasing requirements in much the same manner that it met unusual demands for antiknock compound during the war, assuming that supplies of pig lead continue to improve as they have. New methods of efficient operation, techniques for speeding up production, and improvements developed through continuous and extensive research play an invaluable part in the company's entire manufacturing set-up.

Expansion is no new experience for the Baton Rouge plant. New construction has been almost continuous during the past 10 years in order to keep step with new developments, and to meet an ever increasing need to supply refineries with "Ethyl" compound. The latest installations, added during the war, include major improvements in the tetraethyl lead area, the ethyl chloride area, and the sodium buildings. Production soared to 145,000,000 pounds of compound during 1944, which was 43% above the plant's pre-war output.

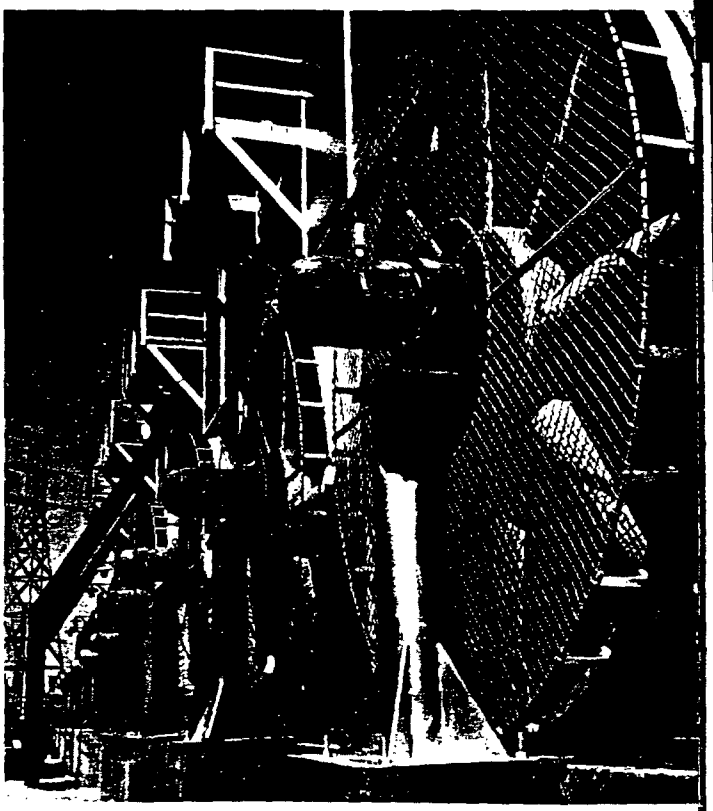
The ethyl chloride area is one of the most interesting parts of the Ethyl plant, from a spectator's standpoint as well as from the point of view of the industrial chemist. The maze of stacks, towers and machinery are dramatic symbols of science at work. Technically, the area has attracted widespread attention among industrial chemists for the nature of its achievement and the success of its operations. More than half of the nation's supply of ethyl chloride is made here.

Ethyl uses three processes to make the chemical. In the first process, refinery gases containing ethane and propane are cracked and treated further to give up their quota of ethylene. The ethylene is then reacted with hydrochloric acid and a catalyst, which produces ethyl chloride.

Utilizes Waste Products

The second method yields ethyl chloride by the reaction of chlorine with waste products from the ethylene process, and is used in a smaller plant first put into operation in 1945 on an experimental basis. Both methods of ethyl chloride production are supplemented by an older process once used entirely – the reaction of hydrochloric acid and ethyl alcohol.

Extensive equipment needed for the manufacture and control of various reactions while ethyl chloride is being made is responsible for



Cooling towers are required in ethyl chloride area operations, and are part of the water system for all plant use

much of the "spectator appeal" of the area. Production centers around batteries of furnaces, complex stacks and towers laced together by steel framework, fractionating columns, flash drums, and rows of massive pumps and compressors. Operations continue 24 hours a day.

Ethyl chloride plays its part in the manufacture of "Ethyl" antiknock fluid after it reaches the tetraethyl lead buildings. Here measured amounts of the chemical are reacted with lead-sodium alloy under controlled temperatures and pressures. Recent improvements in this process have cut the reaction time and increased the yield of tetraethyl lead.

Another Plus Factor

Much of Ethyl's success in making so much of its antiknock fluid and the various ingredients stems from the long experience of employes in all phases of the manufacturing operations. This experience includes not only service with Ethyl Corporation, but also with refineries, other chemical companies, industrial development organizations, and companies with processes and methods comparable to those at Baton Rouge.

Employe Experience

Of the 2,500 employes of all kinds at the Baton Rouge plant, 35 percent, or nearly 900 men, have had direct manufacturing experience of at least five to nine years. Another 10 percent have had from 10 to 14 years' experience. Ethyl expects its "longevity" statistics to show a continued increase, since the rate of employe turnover is less than one percent a month.

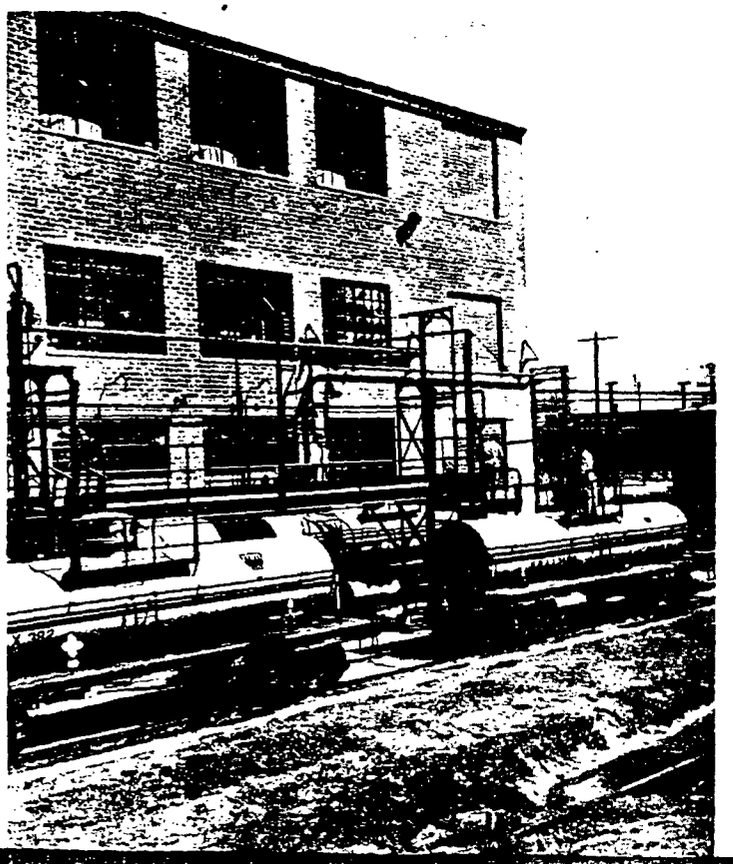
The average credited experience of all employes on the supervisory level at Baton Rouge is 11 years, one month and 10 days. Twenty-six employes, most of them in responsible positions, have had credited experience dating back 15 to 25 years.

Collectively, the experience of all personnel at Baton Rouge amounts to an astronomical total. In considering only their length of service with Ethyl at the plant, the working days they have spent add up to more than 3,000 years. Putting it in an imaginative way, if a single worker could have begun to make the antiknock compound when Moses led his followers out of Egypt around 1440 B. C., he would now be just about equalling the combined length of plant service of all Ethyl employes. He would have to work another 1,000 years to match their previous experience as employes of other companies.

Plant in Key Location

Customer refineries and the gasoline-consuming public are the ones who benefit not only from Ethyl's manufacturing know-how, but from the location of the plant itself. Practically all raw materials needed to make "Ethyl" compound are obtained locally except lead, ordinarily available from central Mississippi Valley mines and smelters. Ready access to raw materials simplifies supply problems, contributes towards manufacturing economies, and helps insure uninterrupted production.

With the development of still better fuels and engines, the company expects to continue its role as a working partner in helping to assure this country the best and cheapest automotive transportation in the world.



These tank cars are part of the fleet used to transport "Ethyl" antiknock compound. Besides tank car shipments, deliveries from Baton Rouge are also made in drum quantities. A new drumming plant for these shipments began operations this month

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With Rod, Gun and Checkbook

Hunting and fishing add up to a lot of fun and healthful recreation—but they also add up to a lot of expense

By Harry Botsford

THE LADY OF THE HOUSE smiled provocatively and pointed an accusing pencil at her alleged lord and master.

"As nearly as I can figure it," she chuckled, "the trout you have caught, cost at least $10 a pound. Grouse and pheasant seem to average about $20 a brace. Heaven only knows what that wild turkey cost!"

I mumbled some entirely incoherent and slightly confused defense. The statement had caught me off-guard. The Lady left the study with a slight smile of malice on her nice face.

I locked the door, grabbed pencil and paper, dug into old records, took a complete inventory of my gun cabinet, and examined my assorted fishing gear. I started to put down some figures and found that the task was easier than filling out an income tax return, because there were no deductions.

When my compilations were completed, it seemed advisable to destroy the evidence. The Lady was right. Indeed, she was more than right. Game and game fish, it was evident, were the most expensive foods that came into our kitchen. Defensively, I can say that they are also the finest food that comes to the table.

I suspect that very few sportsmen have ever made a cold-blooded, accurate analysis of the actual cost of hunting and fishing. It is a practice I do not encourage.

In my case, I had an ulterior motive. I wanted to confirm a private suspicion that has just become very obvious.

I am only one of the 14 million Americans who buy and use hunting

Even in ordinary times, the author points out, hunting and fishing entailed a substantial investment for the average sportsman. Higher prices all around have turned these sports into expensive hobbies

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licenses every year. If only a small percentage of my fellow sportsmen have an investment comparable to mine – and mine is modest in many respects – then hunting and fishing have graduated into the realm of Big Business.

Most of us accumulate our hunting and fishing gear over a considerable period of years. As a result, we seldom tabulate the costs. If you're on good trout waters and you ruin your waders, you go out and buy a new pair with the speed of light. If the guide has some special hand-made flies, you'll buy 'em.

When I started to hunt and fish, I was a youngster and I was able to get along with some pretty primitive equipment. Fish and game were plentiful. And not very smart! But, time and circumstance have changed the picture and have set up new buying habits that reach deeply into our economy.

A cane pole, a few feet of stout string, and a baited hook guaranteed a string of "eatin' fish." You just walked to the nearest stream, lake or pond and went to work. I owned a .22 rifle that cost $4, and a single-barrel shotgun that cost $5. They caused many casualties on squirrels, rabbits and grouse.

These were, as I recall it, very nice days. They are gone now, never to return. We fished and hunted for food and the heck with sport. We wanted fodder for the skillet and we were not too particular how we got it. A sportsman's ability was measured by the number of fish and the game he brought home, not by the fun he had securing them.

Today, our sports are expensive. Lots of money if one is to secure the utmost in enjoyment and sport. If you are a fly fisherman, you need a nicely balanced rod, about 4½ ounces in weight, about 7½ feet in length. You will pay about $50 for a good one. That's just the start; a good automatic reel will cost about $15. Add a double-tapered fly line at $6, plus several sets of long tapered leaders, and the costs start to jump.

Now you are down to terminal equipment: dry and wet flies. Most of us carry about 50, in assorted colors and patterns. From long experience, I've found that it's easy to have a $50-$100 investment in flies before you know it. Some of us tie our own flies; this means a further investment in feathers, furs, dyes, silk thread, wax and other items.

Clothing, waders, creels, fly boxes, fly oil, scales, landing nets and a host of gadgets can very quickly boost the total in this bracket up to $100.

The good trout streams are often hundreds of miles away. To reach them involves wear on a motor car, the consumption of gasoline and motor oils. We must eat, too, and we have voracious and expensive habits. If we belong to a hunting and fishing club, it's rather expensive living, especially if you count the inevitable bridge and poker losses. The services of a good guide will cost about $7 a day. If we hunt or fish outside of our native state, the out-of-state license fee will be in the two-figure bracket.

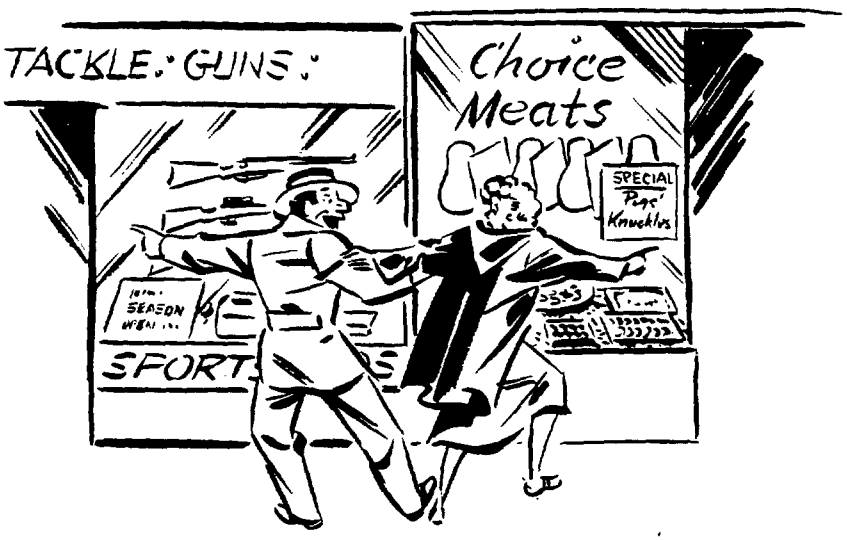
Trout fishing is expensive. But, if the angler goes in for bass or musky fishing, entirely different tackle will be needed. If he is a salmon addict, or if he engages in deep-sea fishing, the costs literally soar.

But, regardless of what it costs, the dividends in relaxation, in companionship, in good sport, far offset all of the expense items on which we can place a dollar value.

ETC 23365

More than that, whatever the sportsman buys, uses, breaks and loses and wears out, establish a cycle of dollar-distribution that is important. It involves such materials as steel, food, textiles, wood products, paints, varnishes, petroleum, rubber, aluminum. These are fabricated in hundreds of mills, plants and factories, large and small. The sports take recreation dollars from one area to another.

It's all on the plus side of our economy. Over 14 million Americans are engaged in this prodigal dollar-spreading.



Hunting is more expensive than fishing. Each type of game requires special guns, clothing and accessories. The shotgun used for quail and woodcock is seldom suitable for wild turkey or ducks. The rifle used for squirrel isn't suitable for deer, moose or bear. The light clothing worn in woodcock season will invite double pneumonia if worn while sitting immobile in deep snow on a deer crossing.

Today's prices for good guns make an old-timer shudder. Many hunters think they should have guns built for every type of game. A friend who does a lot of small and big game hunting has over $2,000 invested in the contents of his gun cabinet. I envy him his collection, as would almost any ardent hunter.

There must be thousands of fishing and game clubs in the United States. Membership is expensive — and worth it, too.

Distances from home to fishing and hunting areas steadily increase. Up in a Canadian hunting lodge I had as companions men from New York, Pennsylvania, Texas, Ohio, Kansas and Maryland. The next year, down at Corpus Christi, Texas, I found about the same variety. Some of the anglers drive their own cars, or cars and trailers, others fly their own planes; some arrived by train or airline. That's spreading the transportation dollars pretty widely.

Many anglers and hunters own cabins or hunting lodges in their favorite areas. These range from a single log cabin up to large, comfortable dwellings, with their own water and power systems. The boats range from a simple canoe to a cabin cruiser with a $75,000 price tag. Many states wisely expend their license money in restocking fish and game. This sets up a wave of buying and employment of a most substantial nature.

State Laws Help

Most states have enacted good game laws, aimed at the conservation of their game and fish stockpiles. They back up these laws with sound enforcement, with programs that keep streams and lakes filled with game fish and keep the woods and fields fairly rich in game of all sorts suitable to the climate and natural food.

All states recognize that money spent in the pursuit of sport is important, whether it's domestic or out-of-state money. In Elks County, Pennsylvania, a gasoline distributor tells me that his sales during hunting and fishing seasons are more than he sells during the balance of the year. Grocery stores and hardware stores all share in this prosperity. Even the telephone company has a peak with long distance calls.

The dollar-distribution generated by hunting and fishing is difficult to trace in detail. It's almost endless. Many sportsmen equip their homes with deep freeze units in which they can preserve their game and fish. Venison, they know, is excellent in April, trout taste grand in September, and quail are superb in December.

Many anglers and hunters go in for cameras of assorted types — and there go more dollars. Bird dogs may cost $200, plus upkeep — and they can be worth it, too.

It's all expensive, but the sportsmen largely think about the out-of-doors excitement, thrill and fun they enjoy, the healthful recreation that is the top dividend of the sportsman, from banker to baker, from prince to piker.

If we balance these health dividends against the basic expenditure for equipment, I suspect that the item of sheer cost will be completely obscured by the benefits enjoyed.

As a sportsman of long standing, that's my story and I'm going to stick by it.

ETC 23366

A sign in Holland

THE WAY TO GO

Montreal, Can.

The world not only has many interesting places for an automotive traveller, but unique road signs to show him the right way

Pass

DENPASAR

ETC 23367

Black Forest in Germany

Cairo, Egypt

As any American motorist will tell you, you've got to know where you're going in order to get there. And so, as he drives along, he faithfully consults the road signs along the way. But what he may not know is that the rest of the world follows the United States in showing the way to all points of the compass.

Modern road signs are to be found in some of the most historic and remote corners of the world – like Cairo, Bali and the Khyber Pass – blending the old ways with the new. Many of these signs are printed in several languages, most often as a guide to English-speaking travellers. And with a touch of showmanship, numerous road-signs serve as free advertisements for local points of interest or the leading products of an area. On these pages are reproduced some representative road signs found in many countries.

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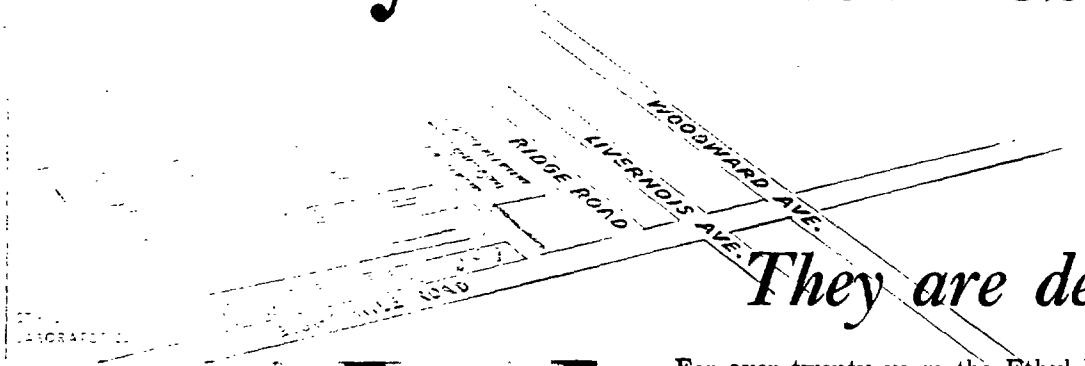
When in Detroit, visit the Ethyl Laboratories

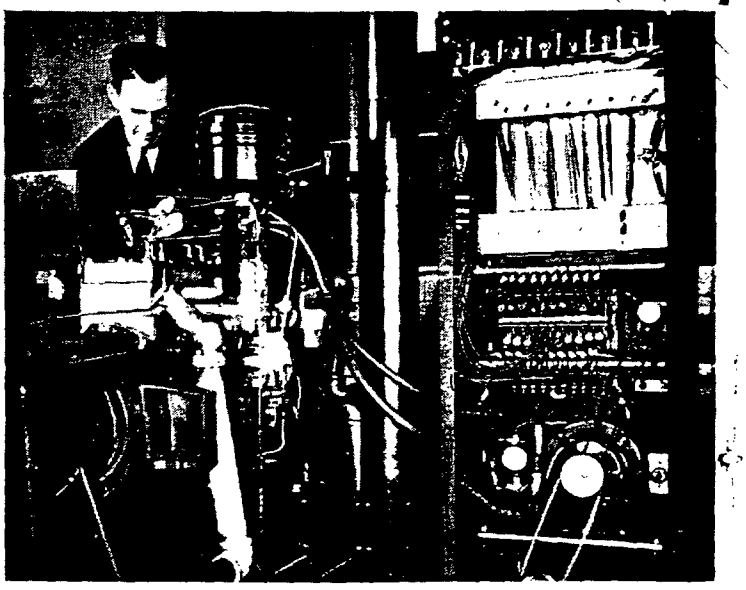


They are designed

For over twenty years the Ethyl Laboratories have performed an indispensable function in the organized research of the automotive and oil industries, which continuously brings better and more economical automotive transportation to the American people.

The present modern laboratories incorporate much

THREE EXAMPLES OF



THIS PLASTIC HIGHWAY enables Ethyl engineers to "bring the road into the laboratory." A combination engine and dynamometer control makes it possible to duplicate on the dynamometer stand the sequence of engine speed and loading recorded during any actual trip on the highway. The control equipment utilizes a plastic tape and operates on the principle of the familiar player piano.

A view of Detroit's fine shopping district—looking up Washington Boulevard.

ETC 23369

ETHYL CORPORATION

Ethyl Corporation's modern research laboratories on Eight Mile Road in uptown Detroit—twenty-five minutes from Washington Boulevard.

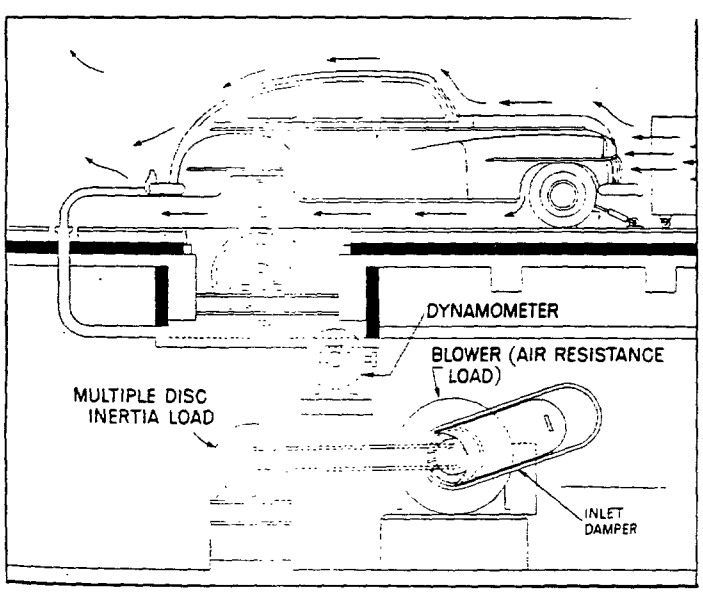
to serve the oil and automotive industries

special equipment with many unique features which are of interest to technical people in petroleum and automotive companies.

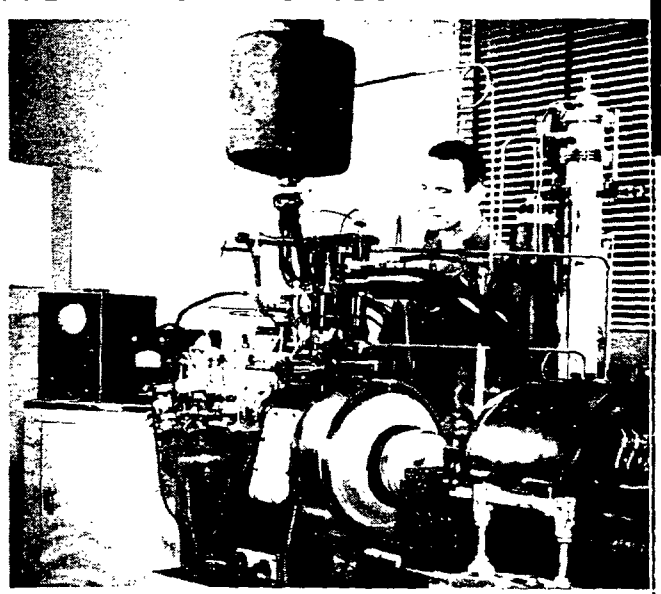
New tools and techniques are continuously being developed at Ethyl Laboratories for the express purpose of better solving the interrelated problems of engines, fuels and lubricants, in the never-ending search for better and more economical fuels.

Ethyl Corporation cordially invites technologists of oil, automotive and related companies to inspect the Ethyl Research Laboratories and to discuss problems of mutual interest.

SPECIAL EQUIPMENT IN THE ETHYL LABORATORIES



INDOOR "ROAD" KNOCK RATINGS may now be obtained on the rolls of this chassis dynamometer provided with special automatic control equipment developed by Ethyl Laboratories. Speed-time relationships for accelerations run on these rolls duplicate those obtained on the road. Knock ratings made on the rolls are essentially the same as those made on the road, and their reproducibility is better.



SPECIAL SINGLE-CYLINDER ENGINE studies indicate fuel antiknock performance under conditions including wide ranges of speed, manifold pressure and compression ratio. The extreme flexibility of this special engine makes it possible to rate experimental fuels under conditions which appear likely to exist within the cylinders of engines of the future.

RESEARCH LABORATORIES

1600 West Eight Mile Road, Detroit 20, Michigan
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ETC 23370

..and the walls came TUMBLING down

There's more than meets the eye to the business of wrecking a house. It calls for a rare combination of brain and brawn

EVERYBODY KNOWS that whatever goes up must come down. In the hurly-burly of the building game, though, it usually happens that something's got to come down before anything goes up. And that's where the house wrecker – the mortician of man-made structures – comes into his own.

Most people get as much kick out of seeing husky men smash a building to smithereens as they do watching a circus trapeze act. To the casual "sidewalk superintendent," wrecking a building appears to be mostly a matter of sheer bull strength, as simple as taking apart a kid's Erector set. And there doesn't seem to be much rhyme or reason to all the uproar.

But, like an iceberg, most of the wrecking drama is hidden from innocent eyes. It is an involved, dynamic business with its own peculiar rules - of - thumb, hair - raising hazards and scientific methods of destruction. The wrecking crews, two-fisted and proud, are a lusty rough-and-tumble fraternity with a language all their own. It is one industry where you can start at the top and work your way down.

Held in check during the war years, the country's wrecking teams are now going to work with a vengeance. Acres of drooping tenements are being razed to make way for urgently needed postwar housing projects. Army barracks are being ripped apart for the lumber they contain. Nostalgic mansions and plush hotels of the "good old days" are biting the dust in the cause of progress, as unsentimental males of the rack-and-ruin trade do their stuff with a heavy hand.

Although shortages of materials and high costs have held back many construction projects to date, the building wreckers know that a construction boom of unprecedented proportions lies ahead. It goes without saying that they will play a highly important part in that boom. And when they get through with things, they say, you'll never recognize the place.

By far the fastest way to reduce a building to rubble is to drop a bomb on it. But the wreckers say this method of destruction has its shortcomings. Debris litters a neighborhood, people can get hurt – and

This steel ball, a house-wrecking tool, represents 4,000 pounds of destruction

there is nothing much left to sell for salvage and profit.

That, incidentally, is one of the most important considerations in wrecking a building – to find what can be salvaged and sold again. At all times, things like steel girders, copper pipes, and other metal fixtures are worth real cash. Today, in view of the general shortages of raw materials, their prices are at peak levels.

Most peacetime house wreckers, today, use one of two systems. If speed is essential, the wrecking boys pitch in lightheartedly with their sledge hammers, and knock the walls down with little thought of saving material for re-use. At times, a two-ton iron ball, swinging like a pendulum on a cable attached to a crane boom, is hurtled at defenseless walls or chimneys, toppling them like Junior's pile of blocks. Because the ball sprays stuff all over the lot and cuts man-hours, it is not ordinarily employed. However, because of the need for speed, this system was used to bash down the thick walls of meat-packing plants on the site of the United Nations' headquarters in New York.

Such means of demolition usually leave the ground below piled with a mess of debris called "spaghetti" in the trade. But, with the present inflated materials' market, most buildings coming down now are made to yield all brick, lumber, glass, and fixtures that may be used again in new construction.

In this more popular method of demolition, laborers start at the rooftop and work their way downward, pecking at bricks and timber with an eye for salvage. Instead of letting the condemned structure fall in a heap, they put the bits and pieces in covered plank runways and the stuff "shoots the chutes" with a rumble to a truck below. This method is called a "broom-clean" job, and is nearly always used in crowded districts where pedestrians and traffic are potential targets for falling mortar. New York's Vanderbilt Mansion and the staid Murray Hill Hotel were given the broom-clean treatment.

First building of the United Nations Headquarters arises as the way is cleared for other UN structures to be built

As anyone who has watched the wrecking troupe put on a show knows, there is usually a skirt or fence of mesh and wood planking built around the lower floors of the building to prevent bashed craniums. Another precaution is the "bridge" erected over the sidewalk. Many wreckers wear plastic helmets for safety, and some carry rabbit feet for all-around good luck.

Like surgery, much of a wrecking operation is an inside job.

Before a wall is touched by sledge, the "innards" are first "trimmed." This chore often takes three times as many days as the actual wrecking. All plumbing fixtures, valuable molding or decoration, wiring, pipes, and sundry items are first stripped from the building's interior and carted off by dealers who buy them for their own businesses. Windows are taken out of their frames; carpets are ripped up; fireplaces, machinery, and room partitions are removed. Its trimming completed, the building is a shell of its former self, and not very long for this world.

During this interior razing, brawny wreckers often come across a batch of old love letters, long forgotten, which had been stuffed into a secret wall compartment. During Prohibition, some crews quit work for the day when they dug up a cache of imported champagne or liquor. Confederate money keeps turning up under ancient flooring, and assorted jewelry, deeds, and human skeletons have been uncovered. They have yet to strike oil.

But the best "finds" in house wrecking are the bathtubs, chandeliers, steel girders, wood and stone, whose sale often decides whether

the wrecking contractor comes out in the red or the black.

In the old days, wrecking men used to buy doomed buildings outright and sell the resulting debris for what they could get. Today, there is far more competition within the trade, most jobs are dealt out on a bid basis, and the laborers' wages are the highest in history.

Giving a doomed building the once-over, a contractor makes an estimate of its resale value. He figures how many truckloads of bricks he can sell to a construction jobber, how much of the woodwork is or is not junk, and how many days the razing will take. Time is money in this business, and things move fast.

If the contractor bids low enough to get the wrecking job, he immediately lines up other building trades people who would like to buy the salvageable stuff. The bid price often just pays the costs for equipment and labor; salvage brings the profit.

In the gloomy lobby of the 62-year-old Murray Hill, on Park Avenue in New York, recently stood 300 antiquated peg leg bathtubs. They were quickly sold by the Walsh Wrecking Corporation, which tore down the hotel, to a group of builders putting up inexpensive housing quarters. The same thing happened with dozens of doors and steam radiators. One glazier bought and removed the Murray Hill's picturesque stained glass. Another man purchased its electrical odds and ends.

Curious bystanders, aching with nostalgia, often plague wreckers for bits of buildings or mementos of celebrities. When Empire Wrecking Company men were mauling over the large Manhattan studios of Metro - Goldwyn - Mayer in 1946, several people begged for pieces of bric-a-brac which adorned movie star Marion Davies' apartment in the building.

That housewreckers start at the top, and work down, is evident in this photo. The chute drops debris to trucks below

Dismantling a church one time, a demolition man was approached by a young lady who asked whether she could take away a hunk of stone. The burly man said it would be okay with him but he wondered why she wanted it.

"My husband and I were married here three years ago," the woman said. "I know it sounds silly, but we thought it would be nice to have a souvenir of it."

Like Father, Like Son

Wrecking seems to be a family affair. Many of the house wreckers and ironworkers are doing work their fathers did before them. Some of them, in fact, picked up the hobby when little boys, and it has stayed with them ever since.

They are strong men with appetites like horses. Around larger cities, a large number of wrecking men are immigrants from Europe. Like the foreman on a New York job who is built like a Sherman tank, weighs 210, and is good football material at the age of 63.

Wielding an 11-pound crowbar or a backbreaking sledge hammer — the two most important wrecking tools — is a rugged day's work. It is not rare in the industry for a man to take a vacation that is in reality a rest cure. Collapsing walls, upended spikes, and accidental falls also account for the fact that premiums on workmen's compensation insurance are high. A contractor often pays as much as one-third of his costs for insurance alone.

But the life of a wrecker has its compensations. It's work for a real man — outdoors and physical. Wages today are best ever; a common laborer draws $1.80 per hour in the New York City Local of the Hodcarrier's Union; an iron "monkey" gets up to $2.50 per hour. Back in the early Twenties, a wrecker could expect about $1.25 a day.

ETC 23373

Days required to do a particular job vary widely. The Walsh firm aimed at levelling the Murray Hill in 90 days; a five-floor brownstone dwelling could be brought down inside of a week. The fabulous Vanderbilt Mansion on New York's Fifth Avenue, where socialites of a bygone day graced its portals, is no more after Wreckers and Excavators, Inc., worked on it for two months. This same company plans on having the proposed UN headquarters' area flat as a football field early this Spring. Ten months were required to clear a thousand decrepit tenement buildings off 2- blocks in lower Manhattan where spacious new medium-cost apartment houses now stand.

Not all house wrecking is wrecking houses or buildings. Versatile demolition men tackle anything from a one-room shack to a skyscraper, a factory, or a tank.

Not long ago, more than two dozen outmoded storage tanks owned by an oil company were dismantled by a wrecking firm. The steel sheets were "march-marked" for refitting and shipped off to Cuba, where they now hold chemicals for rayon manufacture.

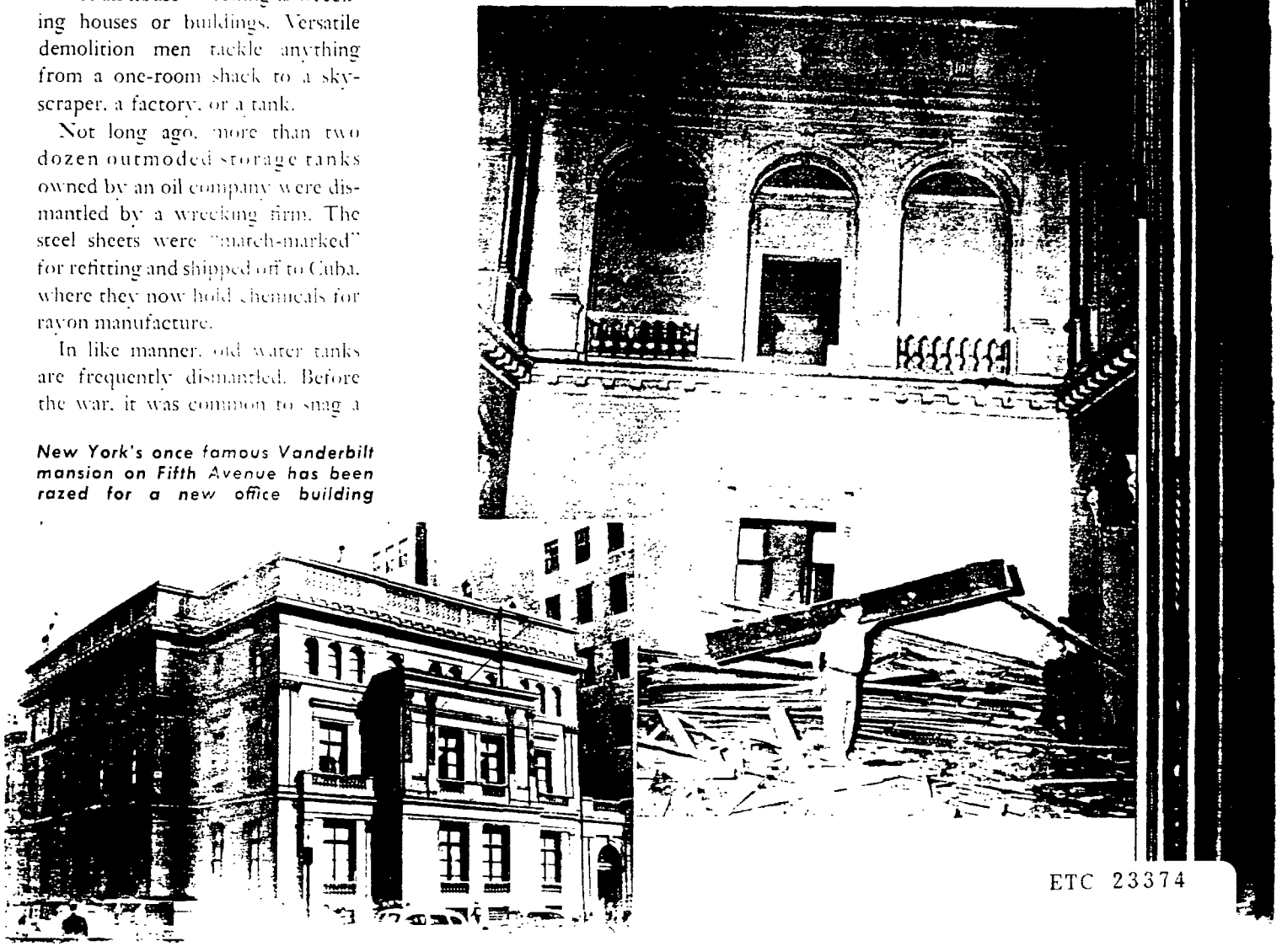
In like manner, old water tanks are frequently dismantled. Before the war, it was common to snag a cable over the tip of a tower and simply pull her over like a falling Sequoia with a bulldozer. During the war, many of these vital structures were carefully taken apart by wrecking crews to be rebuilt in other locations. One such tank was shipped out to a lonely Pacific atoll where it was used to give sweaty GI's their first real bath in two months.

Tied to New Construction

Most wrecking, though, is closely allied with the construction trade. The more building, the more wrecking; and the less time required for dismantling, the better for a contractor's purse. Even while a building is coming down, engineers are already taking earth-soundings to discover how deep they can drive foundation pilings for new construction.

Perhaps symbolic of a trend, the hotel known as "the old lady of Murray Hill," where the elder J. P. Morgan used to enjoy his brandy-dipped cigars and where President Cleveland once had a suite, is now bowing out in favor of a 30-story office building.

The Vanderbilt homestead will also be replaced by an office building. Along the river that separates Long Island from Manhattan, the meat-packing houses are vanishing under wreckers' hammers, and some of the UN buildings will take their place. Wreckers and Excavators,



New York's once famous Vanderbilt mansion on Fifth Avenue has been razed for a new office building

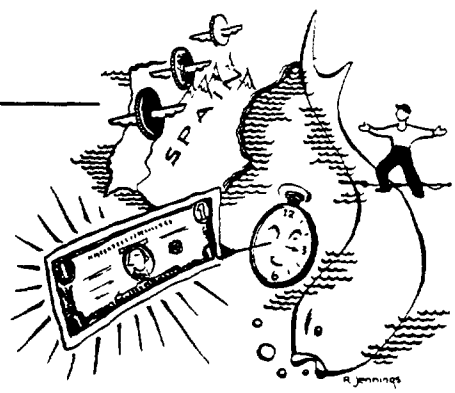
ETC 23374

Inc., which is clearing the UN area, bid $306,000 for the five-block job.

Located between fashionable Beekman Place and Tudor City — and overlooking the city jail out on Welfare Island in the river — the new UN buildings will cost the world around $65 million. The United States is expected to loan this amount to the UN on a 30-year repay plan.

In cities throughout America, big construction projects are being planned, the bigger the better for the wreckers who are called on to break the ground. But, although there is much activity in wrecking circles today, it still is not a boom. Main reason is the slow speed of new construction.

Boom or not, the rugged brothers of the demolition fraternity, plunging in with sledges, bars, and biceps, are lifting the face of American cities. In more ways than one, you might say, they are making room for improvement.



What's a Fungo?

By Ren Dicke

Count five points for each correct answer. If your score is at least 50, you know what's going on. If it is 75, or over, you're exceptionally well-informed. If you score 90 or over, show it to the boss — you're obviously underpaid.

1. These ill-assorted pairs have the same surname. Can you identify them: (a) F. Scott and Geraldine (b) Henry and Harry (c) Margaret and Daniel (d) Orville and Teresa (e) Joseph E. and Marion
2. In which state is the source of the Mississippi River: (a) Missouri (b) Wisconsin (c) Minnesota
3. Who introduced "the watch that made the dollar famous": (a) Waltham (b) Ingersoll (c) Elgin
4. Name the country to which the following monetary units belong: (a) escudo (b) leu (c) zloty (d) dinar (e) krone
5. When were big gloves first worn in a heavyweight championship fight: (a) 1860 (b) 1910 (c) 1892
6. Of what country is Tirana the capital: (a) Lithuania (b) Nigeria (c) Albania
7. What is an isobar: (a) an antisocial person (b) a counter where soft drinks are served (c) an imaginary line indicating barometric pressure
8. Who wrote "The Merry Wives of Windsor": (a) Dickens (b) Shakespeare (c) Sir Walter Scott
9. What place is sometimes called "The Roof of the World": (a) Tibet (b) Antarctica (c) the Andes
10. Where was "the shot that was heard 'round the world" fired: (a) Bikini (b) Bull Run (c) Concord
11. Identify the following abbreviations: (a) VA (b) FHA (c) NAM (d) SEC (e) REA
12. For what sports are these places famous: (a) Goshen, N.Y. (b) Wimbledon, England (c) Indianapolis, Ind. (d) Shrewsbury River, N.J. (e) Churchill Downs, Ky.
13. Name the chief U.S. delegate to the UN General Assembly
14. With what sports are the following terms associated: (a) telemark (b) spare (c) fungo (d) jibe (e) birdie
15. What is a mistral: (a) an illegal trial (b) a violent wind (c) a foggy day
16. What is the present name of what formerly were known as the Sandwich Islands: (a) Kuriles (b) Leeward (c) Hawaiian Islands
17. What is the largest fish ever caught by rod and reel: (a) tuna (b) mako shark (c) marlin
18. What actor and actress won the Academy Award for acting for 1945
19. Where is the deepest reported place in the ocean
20. What is the present salary for the office of: (a) the President of the United States (b) the Vice President (c) a Cabinet member

ANSWERS

1. (a) Fitzgerald (b) James (c) Webster (d) Wright (e) Davies
2. Minnesota
3. Ingersoll
4. (a) Portugal (b) Rumania (c) Poland (d) Yugoslavia (e) Denmark and Norway
5. 1892
6. Albania
7. An imaginary line indicating barometric pressure as used in weather forecasting
8. Shakespeare
9. Tibet: the Himalayan Plateau
10. Concord, Mass.
11. (a) Veterans Administration (b) Federal Housing Administration (c) National Association of Manufacturers (d) Securities and Exchange Commission (e) Rural Electrification Administration
12. (a) harness racing (b) tennis (c) automobile racing (d) iceboat racing (e) horse racing
13. Warren R. Austin
14. Skiing (b) bowling (c) baseball (d) sailing (e) golf
15. A violent wind
16. Hawaiian Islands
17. Mako shark
18. Ray Milland for "The Lost Weekend," and Joan Crawford for "Mildred Pierce"
19. In the Philippines Archipelago — the "Emden Depth" of 35,400 feet
20. (a) $75,000 (b) $15,000 (c) $15,000

ETC 23375

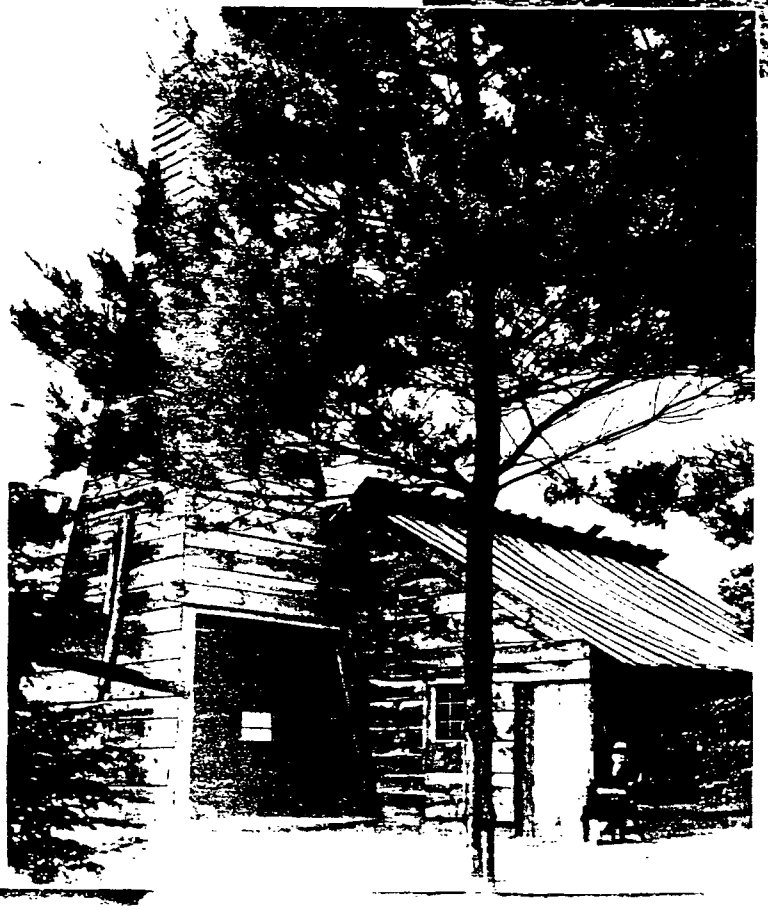
COLONEL DRAKE WAS HER NEIGHBOR

An excellent student, Annette graduated from the high school in 1872

By Paul H. Giddens*

Exciting days of oildom's birth are vivid memories for a Titusville resident who recalls the stirring era

One of the earliest Drake well pictures shows Mrs. Grumbine as the little girl seated on the left with a playmate in the background. She is shown at the well as she looks today in the photo below



IT IS MORE THAN 88 years since "Colonel" Edwin L. Drake brought in the first discovery well and started the oil industry rolling, and yet there is still at least one living link with those stirring days. That person is a woman nearly 93 years old – Mrs. Samuel Grumbine – who still resides in Titusville, Pa., within two miles of the site of Drake's famous oil well.

Mrs. Grumbine, a modest, cheerful woman whose looks and sprightly manner belie her years, is one of the few living persons with first-hand memories that go back to the early days of the oil industry. She has a rich heritage of personal reminiscences, and her memories are as full as they are varied. They include the

*Professor of History and Political Science, Allegheny College; Curator, Drake Well Memorial Park

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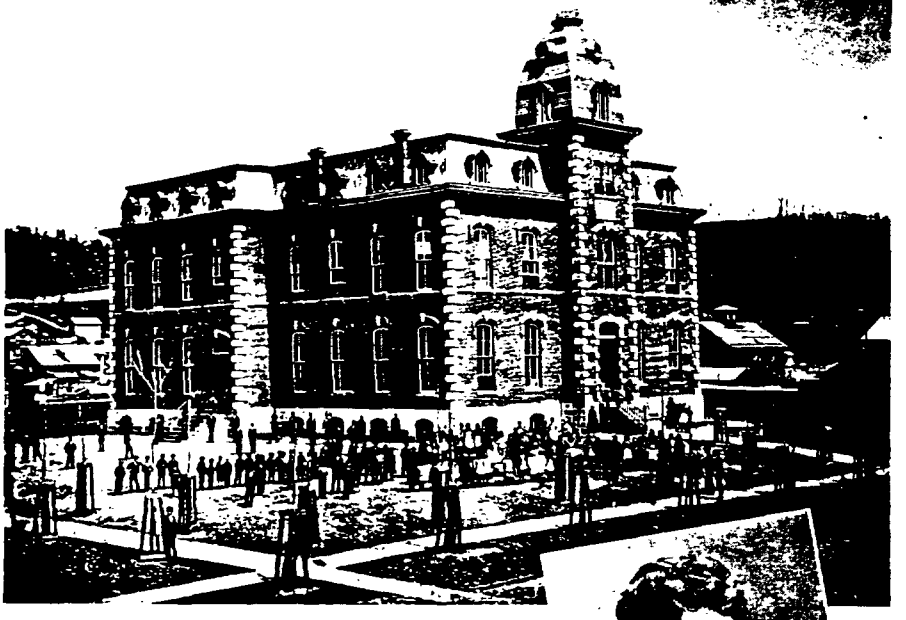


Many oil men who were pupils of Mrs. Grumbine remember her as their teacher at the Drake Street School in Titusville

growth of Titusville during its boom days, the character of those turbulent times, and the men who grew up there and developed the industry — many of whom she knew personally as pupils in her schoolroom classes. She recalls, too, many amusing incidents and times of tragedy, and much of the color and drama of oildom's birth.

It was in the Spring of 1861, a year and a half after the Drake well was drilled, that Mrs. Grumbine — then seven-year-old Annette M. Farwell — was brought to Titusville by her parents. They took a house a short distance south of the village near the Drake well. Hundreds of other newcomers were arriving too, lured there by the prospect of winning a fortune from oil.

The move must have been a courageous one for the Farwells. Annette had been born in sleepy little Ischua, N. Y., in 1855. During the winter of 1860-61 her family had lived with relatives near Union City, Pa. Titusville in the early sixties was a roaring boom town — lusty, crude and boisterous. Gamblers outnumbered church-goers, and there were more saloons than grocery stores. Life was anything but comfortable, pleasant and secure.

Annette's father became an oil driller and contractor. He worked along Oil Creek, and at fabulous Pithole, where the expanding and frantic search for more oil brought in some of the country's first big producing wells. For a while he operated a small refinery at Pioneer. In 1868, along with Abram James and Norman Potter, he organized the Harmonial Oil Company and drilled the famous Harmonial Well, which opened up the Pleasantville area. James picked the site for the well by the spiritualistic guidance of "Lalah," his imaginary "Indian maiden."

Drake was still in Titusville when Annette moved to the village. The ill fortune which dogged his footsteps after his initial triumph had already begun to make itself felt. In 1860 his sponsors, the Seneca Oil Company, had relieved him of his responsibilities. By 1861, when the Farwells arrived, Drake had managed to become a local justice of the peace, handling legal documents for oil leases.

He was a tall, bearded man, naturally well known to everybody in the community. Somewhat shy and retiring, and not in good health, he lived quietly in the village with his wife and child. He was often seen walking alone on the streets pensively smoking black Pittsburgh stogies.

The man had a legendary quality about him in the minds of the children of those times. From the talk of their elders, all Titusville boys and girls regarded him with a mixture of awe, reverence and fascination. They knew it was he who had made Titusville a center of interest for the entire country. They knew, of course, that it was this man who had drilled the first oil well, and who was responsible for many of the things their parents found both good and bad about the Titusville boom.

Drake left the village for the last time in 1866, when Annette was 11 years old. Discouraged, with little money, and with his health more wretched than ever, the former dry-goods clerk, hotel desk man, baggage agent and railroad conductor dropped into obscurity. He died in Bethlehem, Pa., on November 4, 1880.

As a child, Mrs. Grumbine spent many pleasant hours around the Drake well, although she will tell you, with a quick smile, that she did not understand the historic importance of the strange wooden derrick and its machinery. Even so, like children of any generation, it was fun

being where men were doing the curious grown-up things beyond the understanding of childhood.

One day in 1864, when Annette was playing around the Drake well with two neighboring children, Alice and Robert Locke, a photographer came along and wanted to take a picture of it. He asked all those around to pose for him. Alice Locke and Annette seated themselves to the right of the engine-house door. "Uncle Billy" Smith, the workman who drilled the well, sat on a wheelbarrow in the foreground, while four men, whose identities today are not known, stood in front of the engine-house. The photograph is one of the earliest ever taken of the well.

Elbridge Locke, the father of her two playmates, taught the first school Annette attended — a one-room building of frontier simplicity not far from the Drake well. Later, when the Farwell family moved into a more comfortable home in the village, she attended its high school, from which she was graduated in 1872.

There was plenty of fun for a young girl even in those days. Annette went to dancing classes, took singing and music lessons, and shared in the usual round of school-girl festivities. She developed a great fondness for reading, and remembers poring over accounts of the Civil War in *Harper's Weekly*. Mark Twain's *Innocents Abroad* was one of her favorite books.

The stirring times of her girlhood still stand out vividly in her mind today. The oil boom was everywhere. Titusville doubled and redoubled in population again and again. The furious building program, to keep pace with the flood of new arrivals, brought banks, stores, hotels, houses, new streets, and, of course, a forest of derricks. Along Oil Creek, Coopers making barrels for shipping oil worked 24 hours a day. There were always new stories of fortunes made and lost overnight.

The smelly oil lamps that burned the first crudely distilled petroleum lighted the Farwell home in Titusville. In fact the smell of oil in those days seemed to be every place. Men returned from the fields often dripping with the black stuff. Seepage made Oil Creek an open crucible of petroleum at times.

An Education First-Hand

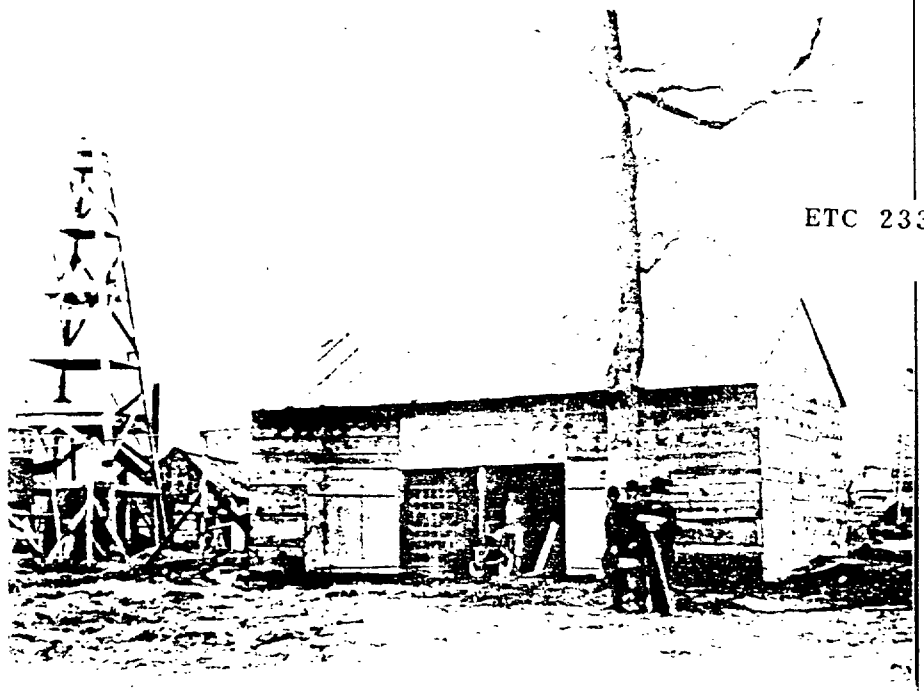
At home she heard her father talk about exciting happenings on the Titusville Oil Exchange as the price of oil went up or down. Mrs. Grumbine also remembers how, in her senior year at high school, the South Improvement Company created a furor by its attempts to monopolize the oil trade. She literally had an "education" in the infant oil business through her father and his oil activities.

Mrs. Grumbine's rather serious interests prompted her to become a teacher. For sixteen years she taught in the Titusville schools, first in the grades and then in the high school. For several years she was principal of the Main Street School. Here she developed interests, associations and friends that have endured throughout her busy lifetime. Her cultural activities were highlighted by a memorable performance of Sarah Bernhardt at the Parshall Opera House in Titusville during the Spring of 1881.

Many of her pupils later became active in the oil industry. Among the boys she taught were James H. Archbold of the Imperial Oil Company; Willis and John Fertig of the National Oil Company; R. D. Benson, president of the Tidewater Oil Company; W. S. Benson, vice-president of Tidewater; Tom McKinney, district superintendent of the South Penn Oil Company; Frank H. Payne, president of the Metric Metal Company of Erie; and Christy Payne, vice-president and treasurer of the Standard Oil Co. of New Jersey.

Some of Mrs. Grumbine's early

The famous Harmonial well, located by "spiritualism," was drilled by Mrs. Grumbine's father, a local oil contractor



ETC 23378

OUR COVER: This night scene of the tetraethyl lead area in Ethyl's manufacturing plant in Baton Rouge, La. was photographed in color by Scott d'Arazien. **OUR PICTURES:** Pages 7-11 (except Page 10, second from top), Philip Gendreau; Page 10, second from top, Press Association; Pages 7-9, illustrations by Rodlow Willard; Pages 10 and 11, illustrations by Harold Newman; Pages 14-15, official United Nations photos; Page 16, Wide World; Page 17 (left) Acme Newspictures, (right) International News Photos; Page 18, illustration by Ruth Jennings; Pages 19-21, photos courtesy Drake Well Memorial Park Museum.

friends later attained distinction. Robert D. Locke, whom she knew at the Drake well in her childhood, drilled with A. P. Karns the first oil well in China for the Chinese government in 1877. George White, an oil man with extensive interests, became governor of Ohio. Ida M. Tarbell, who later became a well known author, used to read Shakespeare and French with Mrs. Grumbine. The two of them were close friends for many years.

Because of her long life in Titusville since the beginnings of the oil industry, Mrs. Grumbine has known well many of the great figures in the early development of petroleum — Colonel J. J. Carter, E. O. Emerson, Henry Harley, W. H. Abbott, Joseph Seep, James H. Caldwell, J. C. and J. L. McKinney, A. B. Howland, Robert McKelvy and many others.

She also recalls Colonel E. A. L. Roberts, inventor of the Roberts torpedo used to revitalize dying wells. Mrs. Elizabeth Barnsley, Roberts' daughter, is still one of her visitors. In later years, Fred Howland, president of Kewanee Oil Company, and Axtell Byles, president of the American Petroleum Institute, became special friends.

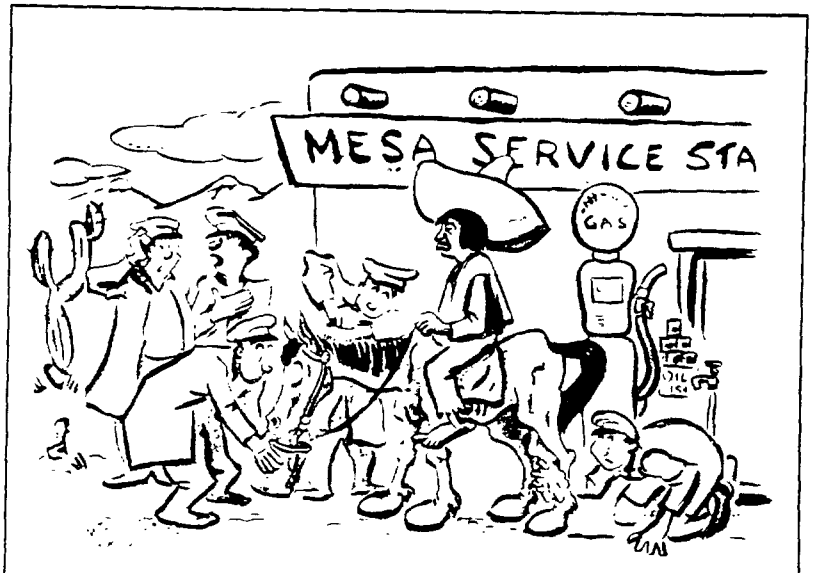
There are memories of disaster as well as memories of boom times in Mrs. Grumbine's store of knowledge. One morning she looked out of the window of her home about 7 o'clock and saw lightning strike one of the oil tanks on the hill south of Titusville, which started the great fire of 1880. School was dismissed at noon as the conflagration spread, threatening the very existence of the community. Late in the day she stood on the Franklin Street bridge and watched flaming oil run down the hill into Oil Creek.

Four years after her marriage to Samuel Grumbine, prominent local attorney who had taken an active part in molding the form of early oil leases, Mrs. Grumbine and her husband were trapped by the fire and flood of 1892. With several hundred others from Titusville, they were enjoying an outing at Canadohta Lake when the fire and flood broke out on a Saturday night. The disaster kept all those at the outing from returning to Titusville until Monday.

Today, Mrs. Grumbine lives quietly in the same house she has occupied for 59 of the 86 years she has spent in Titusville. The years have been kind to her, and she enjoys good health. Although her eyesight is failing somewhat, her stepdaughter and friends read aloud to her from a variety of magazines and books. She is still much interested in what goes on in the world. The radio brings good music, and she enjoys automobile rides on pleasant days.

Many friends of yesteryear call frequently, and find Mrs. Grumbine a gracious and modest hostess. Among her souvenirs are a paper-cutter and paper-weight made from the timbers of the Drake well. She is justly proud of the role she played as a member of the Canadohta Chapter, Daughters of the American Revolution, which finaly succeeded in having an appropriate marker erected at the site of the well in 1914.

To Mrs. Grumbine, the Titusville boom is not recorded history. It is what really happened — to her.



"If he had a cigarette lighter, maybe we could sell him some fluid."

ETC 23379

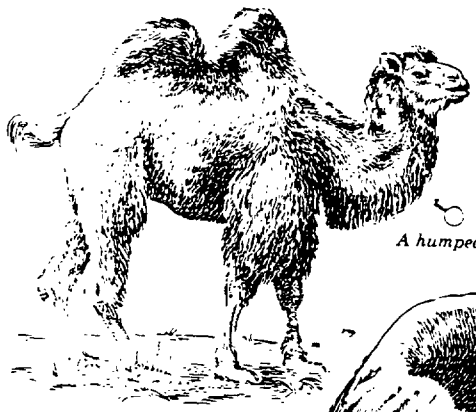
ROAD RESEARCH INDOORS

Most of the work of Ethyl's Research Laboratory in San Bernardino, California, consists of road research programs on fuels and engines. Centered in a great natural proving ground of mountain and desert, the San Bernardino Lab conducts programs under a wide variety of highway, altitude, climatic, and other driving conditions.

But in support of its road research work, the San Bernardino Laboratory also uses important indoor research facilities, one example of which is illustrated above.

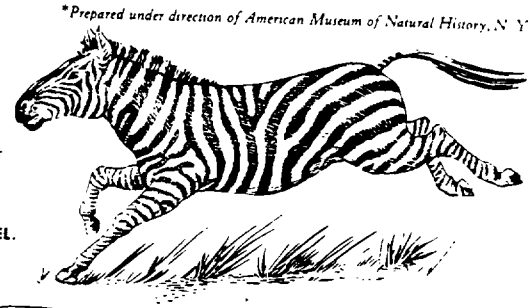
The passenger car shown is being operated on a chassis dynamometer in the San Bernardino Laboratory. With this equipment, a vehicle can be operated in gear under controlled conditions closely approximating actual road operation. In front of the car can be seen a duct which directs cooling air against the radiator at velocities up to 85 mph. As the car is driven at various speeds on the chassis dynamometer, data on the vehicle's fuel consumption, power output, and other performance characteristics are obtained. Such information is accumulated to indicate the condition of the engines of vehicles before, during, and upon completion of road research programs.

The research activities at San Bernardino are conducted in cooperation with Ethyl's larger research laboratories in Detroit. The joint, comprehensive programs of these research plants, now as always, are designed to provide ever better and more economical automotive transportation.



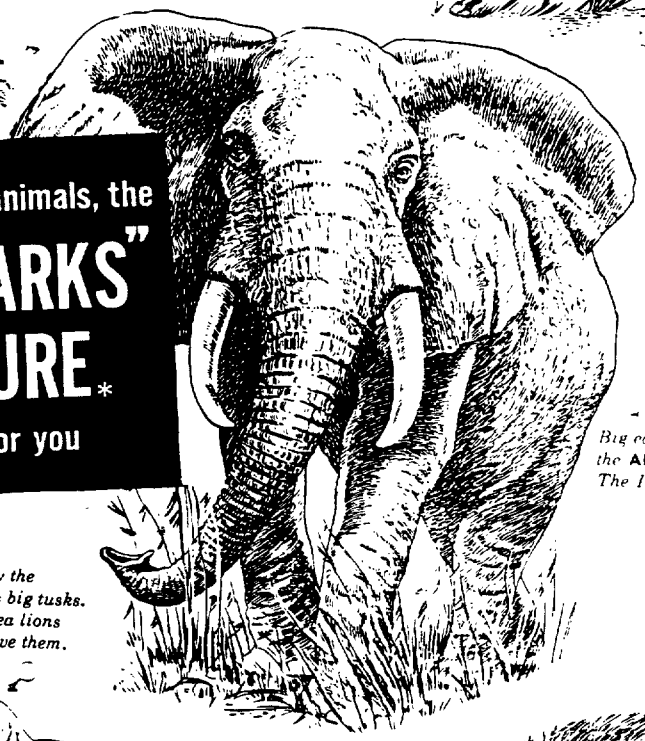
A humped back distinguishes a **CAMEL.**

*Prepared under direction of American Museum of Natural History, N. Y.

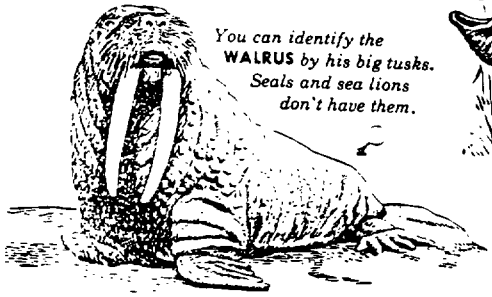


You can't miss the identifying feature of a **ZEBRA** *... his striped coat.*

When you see these animals, the "TRADE-MARKS" OF NATURE.* identify them for you



Big ears are the mark of the **AFRICAN ELEPHANT.** *The Indian elephant has small ears.*



You can identify the **WALRUS** *by his big tusks. Seals and sea lions don't have them.*

A tubular snout equipped with a 12-inch tongue makes the **GIANT ANTEATER** *easy to recognize.*

When you buy gasoline, the TRADE-MARK "ETHYL" identifies gasoline stepped up with "Ethyl" antiknock fluid

To get the most mileage from your car — use high quality gasoline improved with "Ethyl" antiknock fluid and have your motor service man tune up your engine to take full advantage of its higher quality. In these days when the oil industry is working night and day to keep up with the demand for gasoline, you can help conserve gasoline by driving at moderate speeds, avoiding "jack rabbit" starts and keeping tires properly inflated. *Ethyl Corporation, N. Y. — makers of "Ethyl" antiknock compound.*

ETC 23381

ETHYL NEWS

FEBRUARY 2, 1923 25 FEBRUARY [illegible], 1948

ETC 23382

On the occasion of the 25th anniversary of the first sale of "Ethyl" gasoline, we have selected for this month's cover an illustration which in a way symbolizes the memorable event.

The Refiners Oil Co. service station in Dayton, Ohio, where "Ethyl" gasoline first went on sale back in February, 1923, is reflected against a drop of "Ethyl" antiknock compound.

Framing the drop of "Ethyl" fluid are graphic representations of its three major ingredients — a molecule of tetraethyl lead, on the left, and molecules of ethylene dichloride and ethylene dibromide, respectively, on the right. The atoms in each molecule are represented by various colors — black, for carbon; yellow, for hydrogen; gray, for lead; green, for chlorine, and red, for bromine. Thus, the tetraethyl lead molecule is seen to consist of one atom of lead surrounded by four groups of carbon and hydrogen atoms, while the ethylene dichloride molecule consists of four atoms of hydrogen, and two each of chlorine and carbon, and the ethylene dibromide molecule is made up of four atoms of hydrogen and two each of carbon and bromine.

The illustration was prepared by Walter Hortens, who was graduated from the fine arts course at Pratt Institute, Brooklyn, N.Y., in 1936. This month, Mr. Hortens is leaving for Paris, where he will study painting for a year at the Ecole Nationale des Beaux Arts.

ANNIVERSARY ISSUE

25 YEARS OF

ETHYL NEWS

FEBRUARY 1948

FIRST SALE OF "ETHYL" GAS 3

The time was February 2, 1923; the place a service station in Dayton, Ohio. A motorist drove into the station, had his tank filled — and a new era in automotive transportation began.

TAKE ETHYL FOR EXAMPLE 7

By Charles F. Kettering

"Boss Ket" has a deep understanding of the human problems of business as well as the economic factors. Using Ethyl as a case history, he explains his philosophy of building an American business from an idea — as only someone with his long and rich experience could write the story.

EARLY RECOLLECTIONS OF TOM AND ETHYL 11

By Dr. Robert E. Wilson

Bob Wilson followed the work of his friend Tom Midgley, step by step during the long search for an antiknock compound. Here he relates some anecdotes of that experience which have never before been told.

SALESMEN CAN SELL PRODUCTS — BUT IT TAKES A MISSIONARY TO SELL AN IDEA 15

. . . and it was no easy task for Ethyl's representatives to educate the public to the concept of improved motor fuel.

THROUGH THE LOOKING GLASS 20

Tumultuous events and humdrum experiences of the past quarter-century formed the environment in which "Ethyl" gasoline was born and raised.

THIS BUSINESS OF SERVICE 27

"Customer Services," as they have come to be known, started before the first gallon of "Ethyl" gasoline was sold 25 years ago and their development has matched the growth of volume through the years.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Julian C. Gonzalez, secretary

ETC 23383

Twenty-five Years Ago...

FIRST SALE OF "ETHYL" GAS

It was an important day in the history of automotive progress when a motorist drove up to a Dayton station to buy the first gallon

MIKE REDELLE GAVE his overcoat collar a shove and buried his chin a little deeper in its warmth. As his Buick touring car swung into Main Street in Dayton, Ohio, he pulled out his watch – yes, he had plenty of time to make the lab – the General Motors Research Corporation Laboratory at Moraine City. As manager of the local GM recreation center, he had some details to straighten out before next week's events.

Traffic wasn't especially heavy as Mike approached the railroad crossing at Sixth Street. A trolley car rattled past him, and a few pedestrians went about their business. If it hadn't been for the warning indicator on his gasoline gauge, and a red and white sign beside the road, that particular morning would have been like many another in Mike's active life.

The gasoline gauge told Mike his tank was nearly empty. The red and white sign told him something else. It was the first of thousands of signs which would soon bring welcome news to America's motorists.

In big capital letters, it read: "ETHYL GAS–ANTI-KNOCK GASOLINE."

Mike bumped across the railroad tracks and swung into The Refiners Oil Company filling station where the sign, scarcely dry, had been hung only a short time before. Almost at once he spotted "Shorty" Wells, a General Motors Research Laboratory worker, and others he recognized.

As Mike pulled up to a gasoline pump under the new sign, "Shorty" grinned at him and walked over to

"Ethyl" gasoline was originally sold at this service station at Sixth and Main Streets in downtown Dayton

The late Thomas Midgley, Jr. who created "Ethyl" gasoline

the car. Mike knew this must be the day his friends at the laboratory had been talking about for a long time.

"Well," said Mike. "It looks like you've gone and done it. How are things going?"

"Ask me tomorrow," Shorty replied. "We've just got everything set. In fact you're the first customer."

That's how F. M. Redelle, long a prominent figure in the sports and recreational life of Dayton, became the first man in the country to buy "Ethyl" gasoline on the morning it went on public sale for the first time. The date was February 2, 1923 — just twenty-five years ago this month.

Mike still lives in Dayton, and clearly recalls what happened on that significant date. Like other motorists, however, who literally waited in line later in the day to try out the new product, he did not realize he was taking part in what was actually the beginning of a new era in automotive transportation. He had almost forgotten his place in the scene at the service station until inquiries about the first customer were made a few years ago.

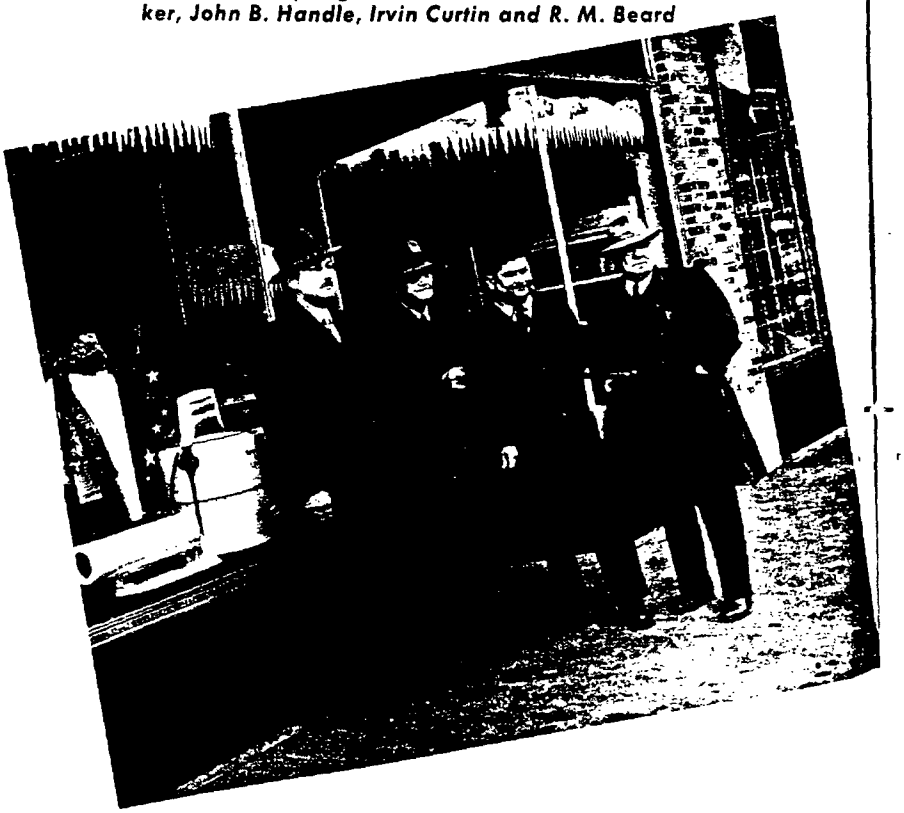
Neither could Mike have known that the gasoline sluicing down the hose into his tank would be the first of countless billions of gallons of "Ethyl" gasoline sold since that morning. There was no way for him to foresee the important role "Ethyl" antiknock compound was to play in the development of better engines, better fuels, and the most efficient and economical transportation any nation has ever had.

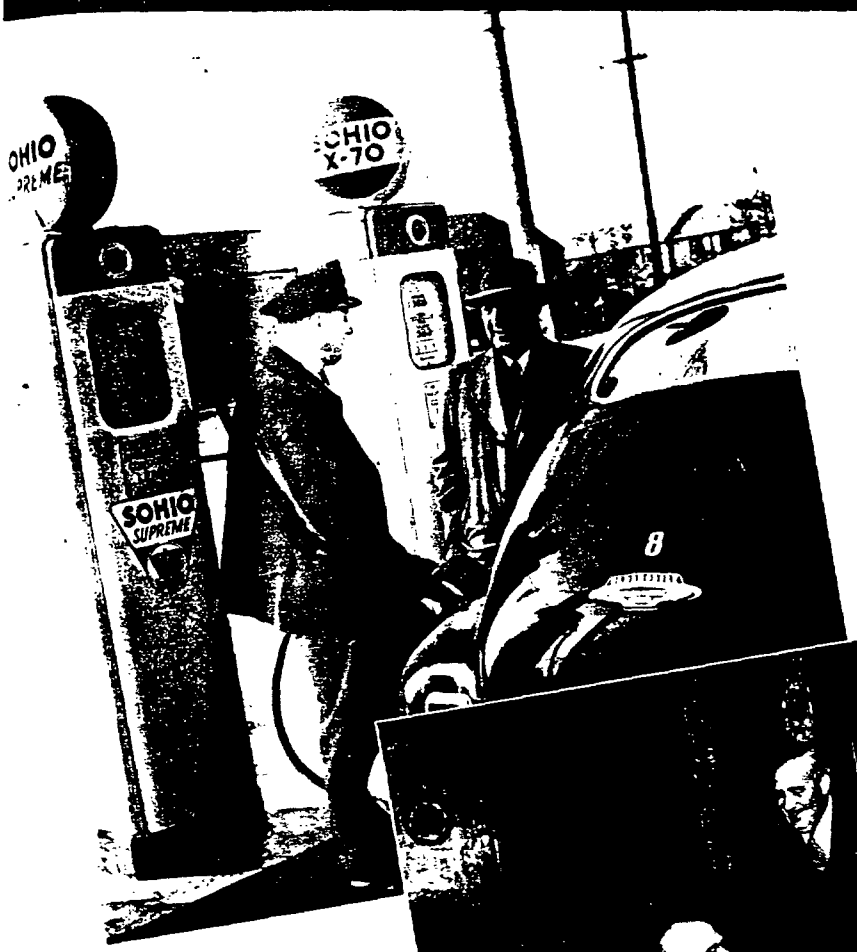
What Mike did know already was that the mysterious compound worked. Along with others associated with the laboratory, where the antiknock fluid had been discovered, Mike had been one of a number of General Motors employes and others who had often used their own cars as mechanical guinea pigs to try out the antiknock fluid as well as its experimental predecessors.

On the morning Mike Redelle made his purchase of "Ethyl" gas, two groups of men were equally concerned with the way the new venture would turn out. To the laboratory staff, headed by Charles F. Kettering, the public sale of gasoline containing "Ethyl" antiknock compound represented the culmination of years of faithful effort. To officials of The Refiners Oil Company, it was a daring business venture yet to prove its soundness.

They spent weeks making careful and detailed arrangements for "The Day." Harry A. Mack, the laboratory's purchasing agent and assistant business manager, took charge of arrangements with Refiners, and saw to it that enough fluid was ready to mix with 900 gallons of gasoline earmarked for

Revisiting the site of the old station where they first sold "Ethyl" gasoline are Arthur R. Brubaker, John B. Handle, Irvin Curtin and R. M. Beard





Mike Redelle, above, first to buy "Ethyl" gasoline, still uses it. Here he is buying a tankful from Harry Reehl, who also figured in the first sale back in 1923

Recalling old times at lunch are these former officials of Refiners Oil Company, the first to sell "Ethyl" gasoline. From left to right they are Willard E. Talbot, R. M. Beard, Karl S. Meuche, and Fowler S. Parrott. Harry Mack of Ethyl, standing, helped with arrangements for the first day's sale

delivery on the day of the first sale.

The oil company, through Mack, ordered a special globe for the pump from which "Ethyl" gasoline would be sold, and had the advertising sign painted to attract customers. Refiners had chosen the station at Sixth and Main not only because it was conveniently located for downtown motorists, but because the company's offices were in a building immediately adjoining. Executives associated with Refiners wanted to keep a close check on the way the venture would turn out.

If Harry Reehl, Refiners Oil Company driver-salesman, had been on time, the first sale of "Ethyl" gasoline would have taken place the day before Mike Redelle became the first customer. Harry was delayed in delivering his load of gasoline to the station – in fact the delay nearly cost him his job.

It took about an hour for Arthur R. Brubaker, General Motors chemist, and Charles P. Harding, a laboratory worker, to pour the "Ethyl" compound into the storage tank as each 100 gallons of gasoline was unloaded from the tank truck. Harry Mack was there too, supervising the operations. Arthur Kelsey, station manager, then ran a few "tests," filling the glass bowl of the pump with blended gasoline.

The next day, blinking with sleep, Brubaker, Harding and "Shorty" Wells were on hand at 6 A.M., taking care of last-minute details. Mack arrived shortly afterwards and was joined later by Refiners Oil Company executives.

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They included Robert S. King, president; Willard E. Talbot, vice-president and general manager; Clyde Morner, assistant general manager; Fowler S. Parrott, secretary and treasurer; R. M. Beard, supervisor of stations, and Arza E. Millard, in charge of wholesale distribution.

Station Manager Kelsey, Assistant Manager John B. Handle, and two part-time high school student aides, Ralph L. Davis and Irvin Curtin, were assigned to take care of the first day's sales. The driveway and the station itself had been scrubbed and swept immaculately. Tension mounted when the first Dayton motorists began to appear on the streets as stores and offices got ready to open for the day's business.

Not long after Mike Redelle had made his initial purchase early that morning, motorists began to respond in increasing numbers to the news that a new kind of gasoline was being sold for the first time. Before the day was over, cars were lined up along the curb, waiting their turn at the "Ethyl" gasoline pump. The Refiners Oil men began to breathe more easily. At least the experiment was off to a good start.

If the first day's results cheered Refiners, they must have brought a tingling exhilaration to one man in particular. He was Thomas Midgley, Jr., who had headed up the research at General Motors which finally brought about the discovery of the antiknock properties of tetraethyl lead, principal ingredient of "Ethyl" antiknock compound.

Midgley dashed back and forth from the laboratory to the service station half a dozen times during the first day's sales, asking questions, talking with customers, and joking with the Refiners officials. Sharing his exuberance were T. A. Boyd, Carroll A. Hochwalt, James P. Andrew, and others who had worked closely with him on the discovery.

The story of how the almost miraculous antiknock properties of tetraethyl lead were discovered has become a fascinating chapter in the history of automotive transportation. It is a story typical of the way other great discoveries have been made – through the sweat, the persistence and the faith of men who believed they could accomplish what they had set out to do.

Since 1916, when Midgley first went to work for Kettering, the two men and their associates had been looking for an answer to what seemed an insoluble problem – how to prevent engines from knocking.

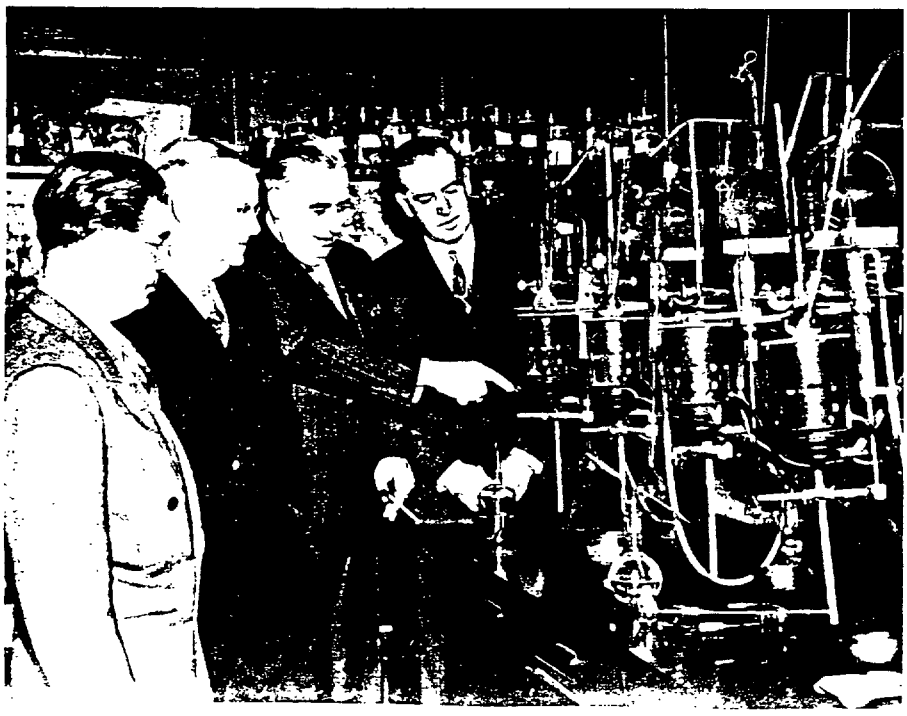
By the Spring of 1921, Midgley and the others were depressed and discouraged. They had tried just about all known chemicals mixed with test fuels, and had almost exhausted their ingenuity. Midgley finally decided to make a different kind of survey of possible new chemical compounds, trying an approach stemming from the ideas of Dr. Robert E. Wilson.

About this time Midgley hit upon the idea of building a "scale model" of the periodic table, using pegs to indicate the results of experiments already made, and the probable tendency of other compounds as antiknock agents. Short pegs were "duds," and the longer pegs were actually or theoretically the more successful compounds. He found evidence that derivatives of certain familiar metals held the most promise.

The old fervor had been rekindled. Midgley and his co-workers, with more confidence than they had enjoyed for a long time, investigated the antiknock properties of tin tetrachloride. Then they tried its ethyl derivative. Tetraethyl tin proved a much more potent antiknock agent than the researchers had expected. But, Midgley pondered, if tetraethyl tin was good, wouldn't tetraethyl lead be even better?

In December, 1921, Boyd and Hochwalt tried tetraethyl lead experimentally in the single cylinder Delco engine which had been used so many times before for tests with

(Continued on Page 33)



Among those associated with the early days of "Ethyl" antiknock fluid are Dr. Robert A. Kehoe, James P. Andrew, Harry A. Mack, and Robert S. King

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TAKE ETHYL FOR EXAMPLE

BY CHARLES F. KETTERING

America needs more understanding of how a business gets going

THE HISTORY of "Ethyl" gasoline for the first twenty-five years of its life is not so very different from that of any other new thing. Ideas grow very much like plants; you have to sow the seed, and when the shoots first come through the ground, they are quite tender and vulnerable. Proper cultivation and care of the plant in this state is very important if it is to live and grow. But this simple natural process is not well understood by most people when dealing with new ideas. The recent negative attitude of the government toward industry has been largely brought about because most people in government do not understand the process by which ideas grow.

We have seen this manifest in recent patent decisions in which the "flash of genius" principle was made the basis of invention. If we were to go back over the years of our tedious research, it would be very difficult to find at what point the flash of genius came, in the development of "Ethyl" gasoline, because our early work was mostly a succession of failures, with just enough successes to keep us going.

I should like to emphasize here that in doing a new thing which has no precedent whatever, only occasionally does anything go right; and at least ninety percent of the time it goes wrong. New and unexpected difficulties have to be overcome, and

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even after long searches yield a new discovery, nobody knows how to produce the product, or anything about its use, or what further developments are needed. Growth naturally introduces another set of problems; the difficulty of expanding when you take on new people; and the public naturally misuses any new product.

It has been my good fortune to go through at least a dozen of these new developments; two or three of them were chemical, others were electrical, and still others mechanical. The life history of all these is very much the same. There is a period, however, in all such developments which I call the "shirt losing zone." That is the time after the product is put on the market – the public has started to buy it, but through competition or misuse, it gets a very serious set-back. I am sure we all remember this period in Ethyl. This is the most dangerous period in the development of an idea into a business, and having had a large number of experiences, I am sure that a number of very good ideas must have been abandoned at this point.

Twenty-five years ago, when we sold the first tank of "Ethyl" gasoline, nobody could have predicted what would happen (either good or bad) to this very new, and at that time, questionable product.

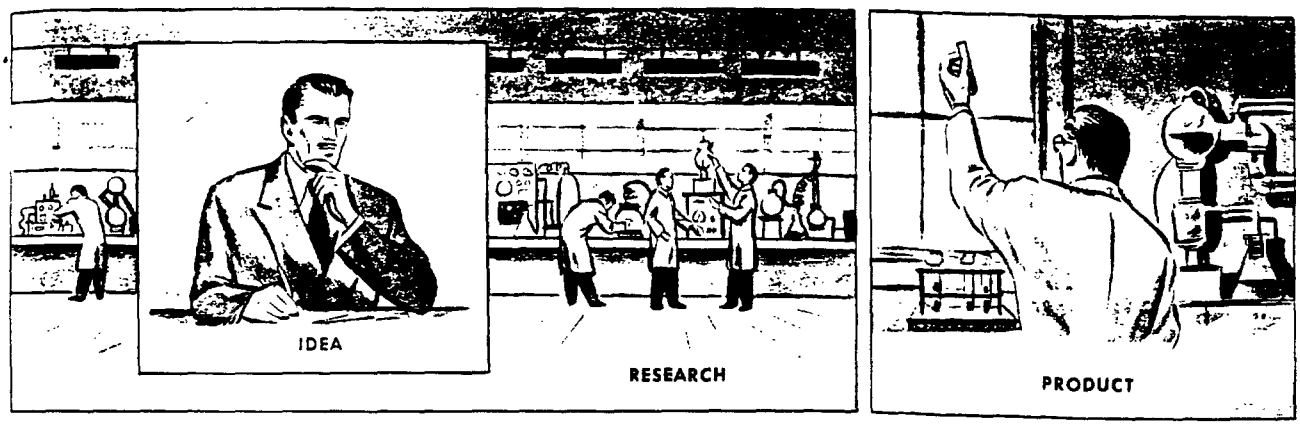
No product can be independent of the people who developed it. The story of these early developments is so well known to most of our readers, that I will not take time to mention many of the incidents here. We all know the great part which Thomas Midgley and his associates played in the development of the primary product, tetraethyl lead. There is one very interesting lesson that came out of this particular development, which seems to have been completely lost during the extravaganza of the war; and that is, that we developed "Ethyl" gasoline with the people who happened to be on the spot at the time the idea was started. This was not started as a great research in which a personnel department was asked to hunt for a special type of scientist. Tom Midgley started as a Mechanical Engineer, and died as President of the American Chemical Society. He became a chemist because of the problems and his ability to learn *en route*. He received practically all of the medals that can be given for original work in chemistry. Many of his associates, like himself, in this work were men who happened to be on location, so to speak, at the time when new problems and new experiments were devised.

With this and other histories in mind, I am still perfectly willing to undertake almost any new project with the people who happen to be at hand when the work is started, provided these people do not have *pre-conceived* ideas as to whether the experiment is a good or bad one; or, if it is good, just how it must come out. The desire to do is infinitely more important than knowing how.

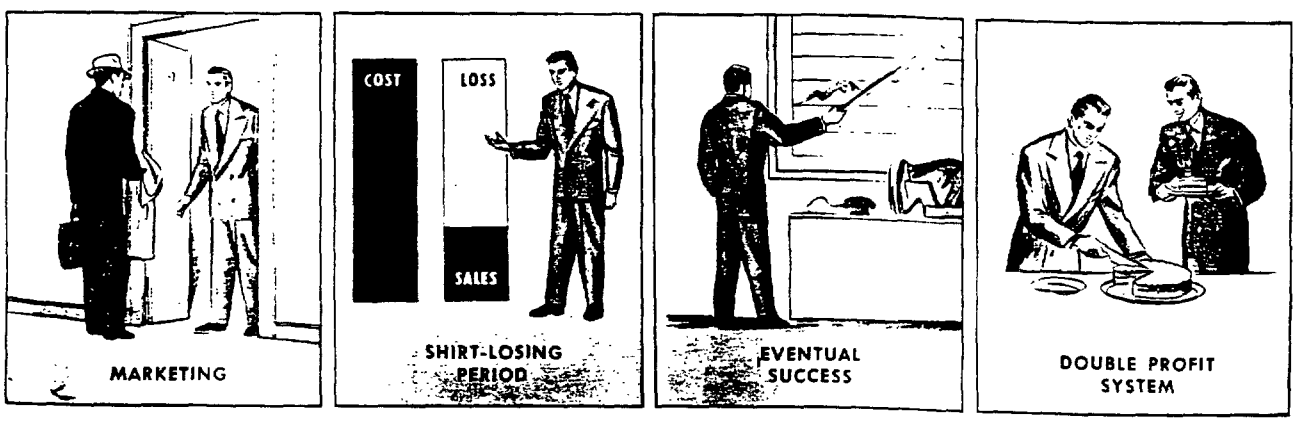
In reviewing the history of Ethyl Corporation and its spectacular growth and public acceptance, it may look fantastic to people who do not understand what the underlying economics of the product really are. The introduction of "Ethyl" antiknock compound into our automobile fuels stimulated an era of automotive and fuel progress which has resulted in a saving of about one-third of the total gasoline bill to the

In 1943, a twentieth anniversary celebration honoring the first sale of "Ethyl" gasoline brought together this group, all of whom contributed to the success of "Ethyl" antiknock compound. Seated are Thomas Midgley, Charles F. Kettering, and T. A. Boyd. Standing are Carroll A. Hochwalt and Charles A. Thomas

CO[illegible]ING AN IDEA INTO A BUSINESS



The life history of many new developments, "Boss Ket" points out, is much the same. After a new idea or approach to a problem is suggested, a long and usually costly period of research work follows — a period filled with countless difficulties, disappointments and failures. Finally, after great faith and persistence, a new product is developed



It is this period—after the new product is first marketed—that is the most dangerous in the development of an idea into a business. This is what "Boss Ket" calls the "shirt-losing" period of an invention, and a time when a lot of good ideas are abandoned. But if that product survives, and the company makes good, all share in the rewards

American public; that is, the net gains to the public in improved efficiency in their automobiles were equal to all they would have gotten from old-fashioned engines using one-third more gasoline, and were many times greater than the *total volume* of business done by the Ethyl Corporation, to say nothing of the small percent of this that was net profit.

"Ethyl" gasoline is a very good example of what I have often discussed as the "double-profit system" in business. That is, a company which makes and sells a product, if it hopes to stay in business, must sell the product for more than it costs. By this same thinking, the product must be worth more to the customer than what he paid for it, or the product cannot be a commercial success. In discussing this with a friend of mine, who is in the machinery business, he said that for their particular line (which is centrifugal separators), the customer, as a rule, made twenty-five times as much profit by the use of the machine as the manufacturer did for designing, building and selling it.

"Ethyl" antiknock compound stands in even better ratio to its customers — the oil companies — and to its ultimate consumers — the public — in its economic rewards over profits to the corporation than the rather unusual example I mentioned. It might be cited as an example of the "triple-profit system" in business.

One of the main reasons why we kept men working on the problem of knock in spite of a lot of discouraging experiments was that

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then, as now, people said that America was running short of oil. There was a big reward to the public as well as to the oil and automobile businesses if we could find a way to make automobiles run more miles on a gallon of gasoline. Since "Ethyl" antiknock compound has been on the market its use in gasoline has conserved over a billion barrels of crude oil. And with today's increasing demands for still more gasoline, the promise of saving additional billions in the future is evidence of the soundness of the original research goals, even though no one could then have hoped that the results of that research would offer a promise of such great value to the oil industry twenty-five years later.

It is very difficult for many of us who are in such close association to realize the great importance of automobile transportation. Therefore, anything that facilitates it, such as a more efficient fuel, has a much deeper economic significance than simply the making and selling of a specific product. When we sold the first few gallons of "Ethyl" gasoline on Main Street in Dayton, Ohio, we could not realize the troubles which lay ahead any more than we could visualize the tremendous factor which this would be in our everyday transportation. We could have made no prediction then that it would play such a dramatic part in the national defense such as was shown in World War II. The British say that if it had not been for tetraethyl lead they would have lost the Battle of Britain. Similar expressions of its value can be had from many important people in many important positions.

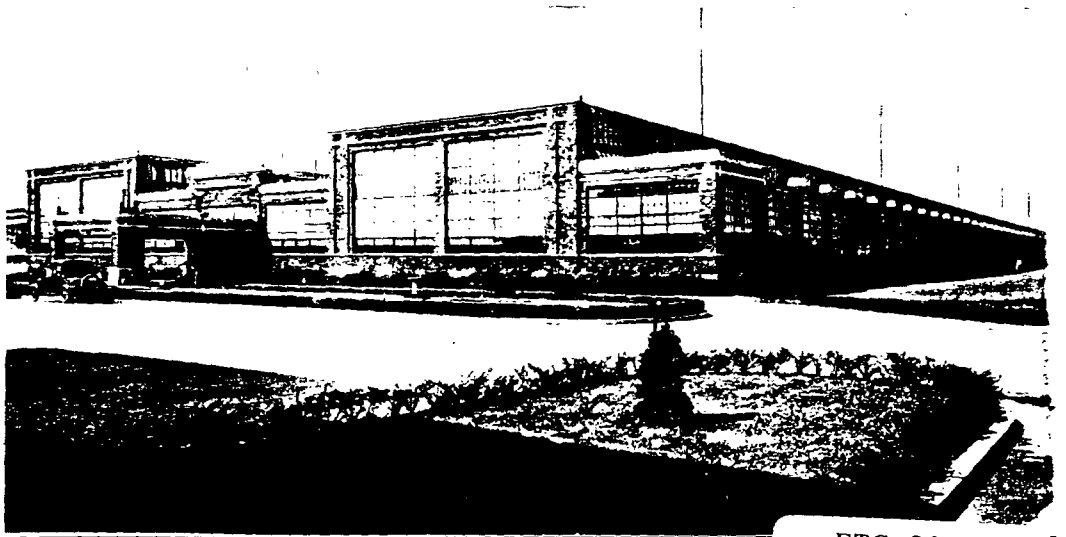
This peacetime development of a new type of fuel, like so many other industrial products, became one of the determining factors in the winning of the war.

I have assembled a series of notes which I hope some day to have written in the form of an early history of Ethyl, not so much from the standpoint of a chronology, but as a typical example of how American industry is developed and serves the world in so many unexpected ways. As we complete this twenty-five years of our history, we look forward with an entirely different perspective than the one we had when we started. We are a great commercial organization now which is in a competitive field. The significance of our product is even greater today than it has been at any time in the past. The development of the internal combustion engine, and its many applications, is still far from finished and will depend on "Ethyl" fluid more in the future than it ever did in the past.

We start the second twenty-five years with a rich background of experience and understanding that is just as important, to my way of thinking, as having a good product. Our public good will, which Earle Webb has developed along with our customers and sales relationship, merits our attention and respect. We have a good sales organization which is distributed all over the country. We have a fine manufacturing plant with well-trained personnel who are endowed not only with ability but also enthusiasm and foresight. Our product is now proved and accepted. Our research and development groups are as fine as can be procured both from the standpoint of personnel and facilities. These research people have imagination, and initiative of Ethyl quality.

It seems to me that our main problem in launching the second twenty-five years, is to raise our sights high enough to properly estimate our opportunities; because, just as "Ethyl" gasoline created economic situations beyond anything that its originators could have forecast, so will an organization with vitality and enthusiasm always outdo any conservative forecast it might make.

It is a profound satisfaction to me to have seen one of our unconventional ideas make such tremendous progress in twenty-five years, and also to envisage what perfectly marvelous opportunities still lie ahead.



The General Motors Research Corp. laboratory in Moraine City, Ohio, where Thomas Midgley and his associates carried on the long and costly research work that eventually resulted in tetraethyl lead. The lab is now a part of the Frigidaire Division of General Motors

ETC 23391

Early Recollections of Tom and Ethyl

BY ROBERT E. WILSON

Chairman of the Board, Standard Oil Company (Indiana)

An old friend and associate of Thomas Midgley tells, in warm and human terms, what it took to find tetraethyl lead

MY EARLY CONTACTS with Tom Midgley and Ethyl were closely tied with meetings of various scientific and technical societies. We were both ardent convention hounds, partly because of the scientific stimuli they afforded, but even more because both of us have always had our closest friends among the scientific and engineering fraternity. Seeing him thus at intervals of several months, the progress he and his associates were making in trying to understand the mechanism of knocking, and learning how to prevent it, made the work appear even more dramatic than it probably did to those closely associated with the daily grind of experiments, many of which were doubtless disappointing.

The first time I met Tom, in the fall of 1918, he told me the dramatic story of the Midgley indicator and showed examples of how different fuels "write their own calling cards" on his indicator diagrams. He had definitely proven that, contrary to general belief, knocking and preignition were different things, and that knocking was a chemical characteristic of the fuel. He pointed out that benzol and cyclohexane, which latter he had succeeded in making in his Dayton laboratory, knocked much less than gasoline, and gasoline much less than kerosene.

Almost every time I saw Tom he had some new theory regarding the mechanism of detonation or of antiknock action, on which I was the professional skeptic. While successive theories were usually discredited by further experimental work, they were always stimulating and frequently led to discoveries of importance. The most striking example of this was in his early work when he was trying to theorize as to why kerosene knocked worse than gasoline. He seized upon the obvious difference in volatility, and postulated that possibly most of the kerosene remained in droplets until after combustion started and then vaporized very suddenly with a resultant too-rapid explosion. If this explanation were correct, he reasoned that by dyeing the kerosene it might be possible to make the droplets absorb radiant heat from the combustion chamber and hence vaporize sooner.

Had Tom been a good physicist he could have doubtless found by calculation that this theory was untenable, but being a mechanical engineer he fortunately decided that it was much easier to try it out than to do the calculations. He accordingly went to the stockroom in search of some oil-soluble dye, and as usual the stockroom was just out of the desired product. However, Fred Chase suggested that iodine was oil-soluble and would color the kerosene, so Tom promptly dissolved a substantial quantity of iodine in the kerosene, tested it in a moderately high-compression engine, and found to his delight that the knocking was eliminated.

Tom immediately sent out to scour Dayton for all available samples of oil-soluble dyes and that afternoon tested out several different ones in rapid succession without getting the slightest result from any of them. To clinch the matter, he added a colorless iodine compound to the gasoline and found that this stopped the knock. Thus, the first theory of detonation went to start the graveyard, which is now fairly well filled, but along with its demise came the real birth of Tom as a chemist, and for the next few years he was an insatiable student of every branch of chemistry to aid him in endeavoring to explain his observations and to make new compounds for trial as antiknock agents.

Three or four meetings prior to and after the birth of "Ethyl" gasoline stand out in my recollection. By this time I had returned from the Chemical Warfare Service to become Director of the Research Laboratory of Applied Chemistry at the Massachusetts Institute of Technology. In the fall of 1920 I was asked

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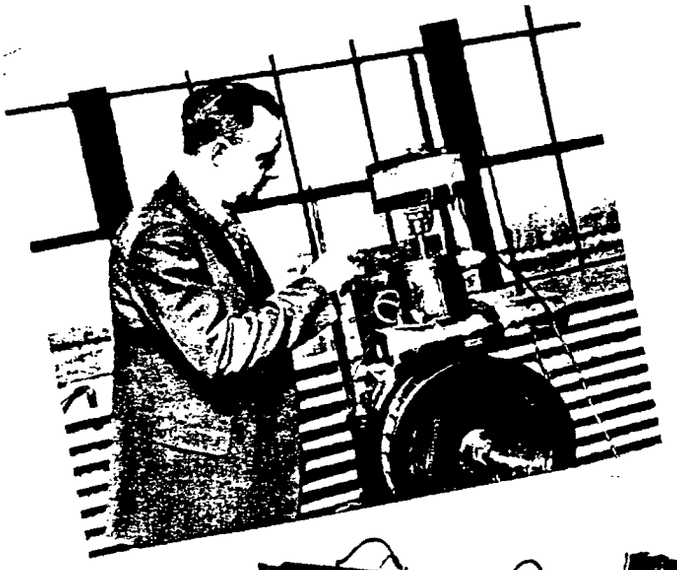
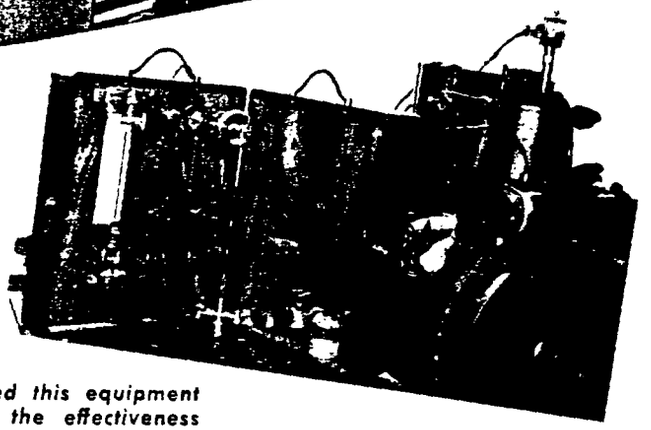
by Van Manning, newly appointed Director of Research of the American Petroleum Institute, to serve on an advisory committee to recommend research problems which the Institute might well finance. When I attended the meeting I was disappointed to find that two men I had particularly looked forward to seeing, C. F. Kettering of General Motors and Dr. W. M. Burton, President of Standard of Indiana, were not present. However, this was compensated by the fact that I happened to be seated next to Tom, who was representing Ket, and we spent most of our time discussing ideas and information we had on fuels and lubricants.

Tom was then particularly enthusiastic about the possibilities of aniline, though, as always seemed to be the case when he discovered a new antiknock agent, he had to go to work to improve the methods of manufacture and lower the cost before the agent would be economically feasible. He also had some hopes then for his first ethyl compound, ethyl iodide, if he could just locate a plentiful source of iodine.



The late Dr. Midgley, at the age of 35, with the first engine he used to test his discovery. The Midgley Optical Indicator is on top of the engine



Dr. Midgley used this equipment to demonstrate the effectiveness of antiknock agents before the American Chemical Society in 1922

My next significant meeting with Tom was at the Rochester meeting of the American Chemical Society, in April 1921, where we both became charter members of the Petroleum Division. Tom was very much interested in a paper which I presented on measuring the effective volatility of different fuels, and urged me to go to West Baden in June of that year to present this information before the Spring meeting of the Society of Automotive Engineers, stopping off at Dayton to visit his laboratory. I was, of course, very happy to do this, and had the good fortune to room with Tom throughout this meeting, at which we really became very well acquainted. By chance on the last day we discovered that we had both been born in a suburb of Beaver Falls, Pa., and that the same doctor had presided over our respective arrivals in the early nineties; and we later discovered that when the Midgley family moved away when Thomas was four, they sold his folding bed to my parents, and I and my brother and sisters successively used it in subsequent years. This naturally led to a very close friendship which lasted throughout our lives.

At the West Baden meeting Tom's current enthusiasm was diethyl telluride, which was better than any previous antiknock agent. His friends were treated to several rides in high-compression cars over the hills around French Lick Springs. While it was much more efficient per pound or per dollar than aniline, it had the serious drawback that when minute quantities were inhaled or absorbed through the skin it resulted in tellurium "poisoning," the outstanding symptom of which was a strong, garlic-like odor apparently given off from every pore of the body and affecting everything and everyone with whom the victim came in close contact. His friends, after even short contact with Tom, who had a bad case, were convinced that this disadvantage would make the commercialization of diethyl telluride impossible, but Tom pointed

out that as soon as the entire population got infected the problem would disappear, as the victims would soon become unable to detect the odor! This country has many reasons to be grateful for the discovery of tetraethyl lead, and in my opinion not the least of these is the fact that, had it not been discovered, I feel sure that Tom would have worked out some way to put diethyl telluride across! Its widespread use in the United States might have solved our immigration problem and garlic-eaters would have felt quite at home.

At this meeting I showed Tom a new chart of the periodic system I had drawn up, arranging the elements according to both their electropositive and electronegative properties in accordance with Langmuir's new octet theory, and bringing out certain relationships which had not generally been appreciated. Tom was greatly interested in this, especially since he had found that the antiknock properties of various agents were primarily properties of the elements, and had some indications that the antiknock effect of an element varied predictably with its location in the periodic system. He later indicated that the effort to put this relationship on a more quantitative basis for an article, and the use of my chart of the elements, was largely responsible for trying tetraethyl lead after great difficulty in getting a suitable volatile lead compound.

It was at the annual meeting of the Society of Automotive Engineers in New York in January 1922 that Tom, with an air of great excitement and secrecy, showed me a little tetraethyl lead in a test tube and told me that that was really the answer to the whole problem. Its efficiency, he said, was very much higher than that of any previously discovered compound, and it appeared to be free from every one of the difficulties which had plagued earlier attempts to solve the problem. Of course, he did not yet appreciate either the toxicity or the deposit problems. Shortly thereafter General Motors financed an investigation at my M. I. T. laboratory of the feasibility of making tetraisopropyl lead by an electrolytic action between lead electrodes in a solution containing acetone. However, this did not prove competitive with improved methods which were later worked out for the manufacture of tetraethyl lead.

Shortly after this, in October 1922, I came to the Standard of Indiana as Assistant Director of Research, carrying with me my great interest in tetraethyl lead. I took steps immediately to set up an engine laboratory, and brought my former associate from M. I. T., Dan Barnard, to design and direct it, particularly with a view to studying antiknock problems. I asked Tom to be sure to let me know as soon as he felt that tetraethyl lead was ready for commercial use, as I wanted to interest our company in it.

While automotive engineers at that time realized that by the use of antiknock fuel one could design higher compression engines and obtain substantial economies as the result, there appeared to be almost insuperable problems in getting it on a commercial basis. One could not sell high-compression engines unless the fuel was generally available, and one could not expect high antiknock fuel to be widely distributed unless and until there was a real demand and need for it. Many people in the oil industry felt that this problem was almost insoluble, but Tom's conviction as to the importance of the economy kept him working away and led to the development of the first step in answering this problem, namely, the use of a small metal container which permitted the direct addition of small quantities of "Ethyl" fluid to the gasoline at the pump. This method obviously had many disadvantages and serious health hazards which were not at first appreciated, but it did make it possible to get started without having to overcome the obstacle of making the oil industry install duplicate sets of tanks and pumps to handle premium gasoline.

Professor M. T. Bogert presenting Dr. Midgley with the Perkin medal in 1937. Dr. Wilson, on this occasion, delivered the address honoring the medalist

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Early trials at Dayton by a local jobbing company brought out the fact that a surprisingly large number of people were willing to pay several cents a gallon premium for a product which they believed to have merit, even though all it did was to wipe out a small amount of knock in engines which were rather badly carboned up. The psychological demand for something new and more expensive was a great help in getting "Ethyl" gasoline on the market, and in establishing the premium grade system which has done so much for automotive progress.

Even with this demonstration, however, Tom was unsuccessful in interesting any of the larger oil companies in the East and decided that the only way to get started was to work with jobbers who would be willing to go to a good deal of trouble in order to have a distinctive product. I persuaded him, however, to come out and talk with our people, and when he told Dr. Burton that he could hardly expect a large company to go to the large expense and risk the loss of prestige which might result from failure, Dr. Burton interrupted to say that the Standard of Indiana was not afraid to pioneer anything if they felt that the venture was technically sound. I was assigned the problem of determining its soundness, and spent several weeks looking into all aspects, making road tests, etc.

In the course of this investigation, with testing methods still rather crude, we found to our mutual surprise that our cracked gasoline had definitely better antiknock properties than straight-run gasoline, and hence needed somewhat less lead than the usual gasolines of that day.

The details of the very first contract with a major company were worked out on a train to Atlantic City, where Tom and I were going to attend a meeting of the American Society for Testing Materials in June 1923. The principal point of argument before we finally reached agreement was as to the length of the exclusive period to which we thought we were entitled if we pioneered the venture in the Middle West. Agreement was finally reached in September 1923.

While there were times in the early years, with the toxicity scare and deposit troubles, that we were both seriously worried, the contract worked out to the mutual advantage of both companies, and to Tom and me personally in bringing us to the attention of the higher-ups in our respective companies.

The history of Ethyl from these early days is well documented, but there is one more incident which should be mentioned. When negotiating the contract I had urged on Tom that General Motors consider taking us in as a partner because I was sure we could help in solving the marketing and other problems. Tom said General Motors was not interested, but that if they later became interested, he would let me know. Several months later he said that they might be interested in a partnership arrangement and asked me to sound out our people. I talked with Dr. Burton, who said that the Indiana Company would definitely not be interested in a sideline of this kind, and I so advised Tom.

About two months later Col. R. W. Stewart, Chairman of our Board, telephoned me at Whiting to ask if I knew anything about a proposed partnership between the Standard of New Jersey and General Motors to handle "Ethyl" antiknock fluid. I told him of my conversation with Dr. Burton, about which he apparently did not know. He got busy on the telephone with Mr. Sloan and promptly went to New York. Anyone who thinks there is not competition between the Standard Oil companies should have sat in on that meeting! The Colonel was told, however, that the deal had already been agreed upon and that they were not willing to reopen it. Had it not been for this I would probably have sat with Tom on the Ethyl Board, as I did for many years on the Board of the American Chemical Society. Be that as it may, I shall never forget, nor cease to be thankful for, my many associations with Tom and Ethyl.

America's first antiknock factory. This crude apparatus made tetraethyl lead in one-gallon batches at the General Motors Research Corp. laboratories in Moraine City, Ohio

SALESMEN CAN SELL PRODUCTS, BUT

It Takes a Missionary to Sell an Idea

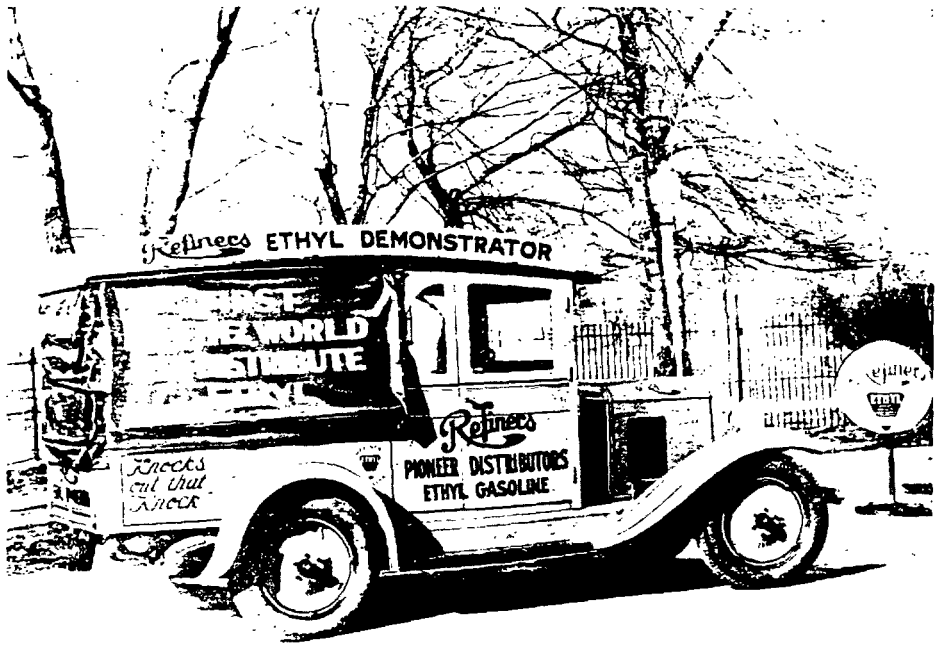
By W. J. Heggen

Life was anything but dull for the Ethyl representatives who first carried the gospel of good gasoline to the public

No crowd was too big or too little for an Ethyl man, demonstrating the merits of "Ethyl" gasoline

THE HOUSE LIGHTS DIM. Footlights go on. A hush falls over the audience. The curtain goes up. An opening night on Broadway? No. Not an evening gown is in sight. Coveralls are the fashion here. This is no Theater Guild production. It's the Progressive Oil Company Show for an exclusive audience: their dealers.

The script is held together by a slender thread of story and its moral is plain – how to sell more tires, batteries and accessories. The Progres-



Refiners Oil Co., as the side curtain on this demonstration truck proudly proclaims, was the first to market "Ethyl" gasoline. It was also the first of many oil companies which, in cooperation with Ethyl Corp., gave demonstrations at service stations showing the meaning of better fuels

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sive Oil Company is just using the glamour and trappings of the stage to get more power from sales promotion and merchandising tools. Teaching by precept, showmanship in business – call it what you will.

Now look at the cast. That tall man playing the part of the customer is John Jones, Ethyl representative. And what, you ask, is an Ethyl representative doing at a Progressive TBA meeting? Just helping out. In this case he's taking the place of a man who became ill at the last moment. But it's an old custom with Ethyl men. A good part of their time is spent helping out customer companies, and the stage is no stranger to them.

Ethyl men in the early days had to be not only showmen but missionaries. Their text book was a knocking engine and their pulpit was any handy street corner.

When an Ethyl man left home in those fabulous early days, he kissed his wife and children goodby with added fervor, because he knew it might be weeks, perhaps months, before he saw them again. One representative, in fact, was away from home for 21 months, living out of a suitcase in a hotel room. Territories covering a dozen states were not uncommon for these field men. Fifteen meetings in twelve towns in six days was not an unusual week's work.

The Ethyl representatives, then as now, were all trained in engineering, and were well versed in the technical phases of their subject. But besides being technical men, they also had to be travelling showmen, moving from town to town, promoting their own show – and taking the bitter with the sweet. They lectured, they instructed, and what is more important, they sold the oil industry and the public on the merits of "Ethyl" gasoline. Theirs was a vital role in starting the Ethyl Corporation on the road to success.

In the beginning, their job was primarily to assist in the installation of "Ethyl" fluid mixing plants at refineries, to advise on the standard safety precautions, and to talk before groups of oil company employes and service station dealers. Later, almost always in cooperation with an oil company, they arranged to give demonstrations of "Ethyl" gasoline at a local service station, to which the public at large was cordially invited.

The original one-cylinder demonstration engine an Ethyl man transported, weighed nearly 600 pounds. It had to be uncrated before each demonstration and then crated up again. It had to be in A-1 condition at all times. Consequently, the Ethyl representative had to be, among other things, a good mechanic.

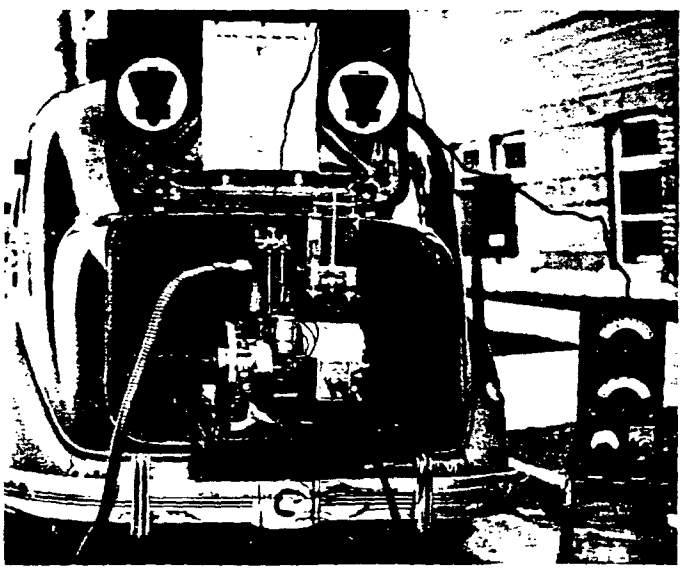
Resourcefulness was a prerequisite. These field men were supposed to be experts, and unless they answered the questions thrown at them quickly and conclusively, the demonstration lost its impact. One day, they might appear before a scientific or civic group. The next day, they might simply "talk" to a meeting of oil people or garage men. But in all cases, they had to have the answers.

Worked All Hours

Hours meant nothing. After an evening demonstration, and a great many of them were held at night, the representative might get involved in a discussion that would last into the small hours. When it was over, he would crate his engine, grab a few winks of sleep, and move on to the next assignment.

When assigned to work with Ethyl's customer companies, these men had definite programs laid out for them. Their main job was to hold educational meetings for oil company personnel and to give demonstrations at service stations.

But occasionally, as their work schedules permitted, the Ethyl men were given roving assignments. In these cases, their instructions from the home office were to "tell the



A child of the 600-lb. demonstration engine of Ethyl's early days is this later model which fits snugly into the trunk compartment of a car

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Shown on this page are some of the men who served as Ethyl's field representatives during the 1920's. Each of them has been associated with Ethyl since 1928 or earlier

JOSEPH A. COSTELLO
Assistant General Manager, Manufacturing

FRANK R. ELLIOTT
Fleet Engineer

JULIAN J. FREY
General Sales Manager

FRANKLIN FRICKER
Business Manager, Detroit Research Laboratories

CHARLES P. HARDING
Detroit Research Laboratories

ROBERT L. JORDAN
Sales Representative

HARRY W. KALEY
Vice President — Sales

OSCAR B. LEWIS
Assistant General Sales Manager

HARRY A. MACK
Sales Coordinator, Central Region

WILLIAM A. NEWMAN
Safety Engineer

THOMAS E. RONAN
Manager, Sales Administration

SANFORD M. WAGNER
Western Regional Manager

RUSSELL B. WESTON
Advertising Manager

public about the merits of 'Ethyl' gasoline." Beyond that, each man was on his own.

Street corner meetings were not uncommon. Pick a likely-looking spot . . . collect a crowd . . . go into action. If the crowd was slow in collecting, the Ethyl man frequently drew attention to his demonstration by starting up the engine and allowing it to knock.

It wasn't too difficult to draw a crowd because Americans always love a show . . . particularly a free one. And it was a good show! First of all, because it concerned the automobile which was a subject of rapidly growing interest in the mid 1920's. Also, because there were intriguing instruments to watch – the demonstrating engine, a Midgley bouncing pin connected with an electric bulb which showed by flashes the severity of the detonation, and a volt meter connected with the engine which gave an indication of power output. The demonstrating engine was high compression and would detonate on almost any commercial fuel then available except "Ethyl" gasoline.

The demonstration itself had overtones of magic. Using a commercial fuel, probably purchased that day at a local service station, the demonstrator would start the one-cylinder motor. As the engine warmed up, the knock became apparent. The audience could hear it; second, the electric bulb connected with the bouncing pin would start flashing like a Roman candle. The needle on

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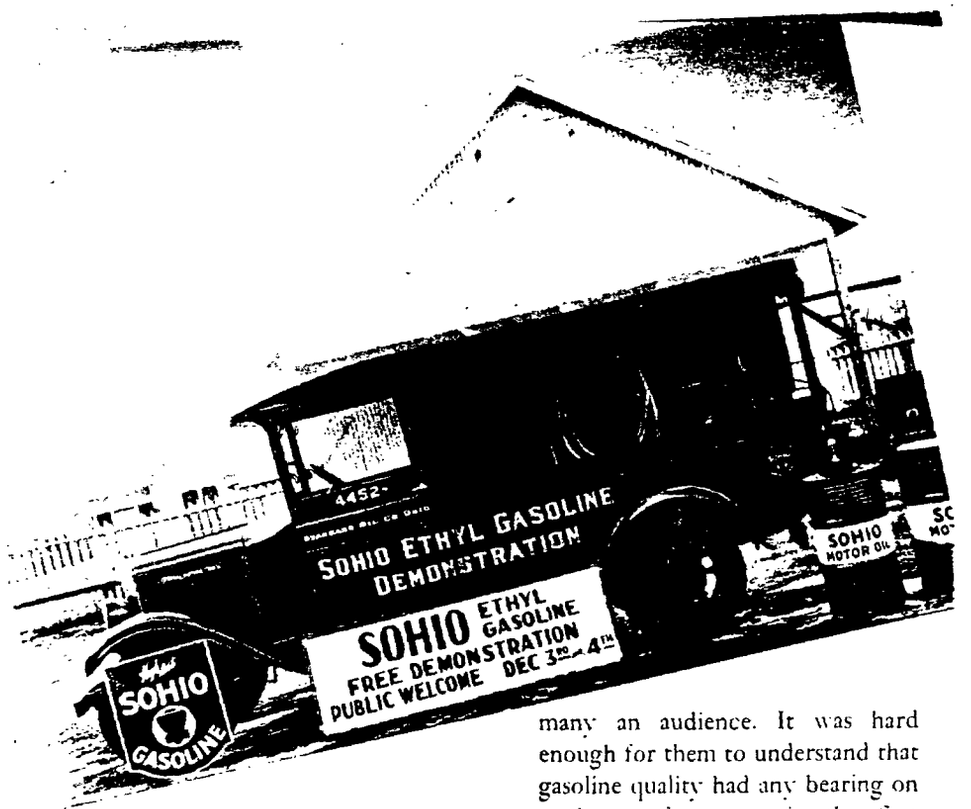

This Standard of Ohio demonstration truck, set up in front of a station in Findlay, Ohio, advertised a demonstration of "Ethyl" gasoline in 1928

the volt meter was low and sluggish, reflecting the fact that the engine's power output was low. The demonstrator called attention to all of this in a running commentary.

Then came the magic. Using a medicine dropper, he put two or three drops of "Ethyl" antiknock compound into the gasoline. The audible knock ceased almost immediately. The bulb stopped flashing. The needle on the volt meter came to life with a jerk, as the engine speeded up. Before it became stationary again, it indicated a substantial increase in power output.

There was no trick to it. It was a demonstration based on a sound scientific principle – the principle that better fuels make possible better engines, and that better engines give more power and better performance.

Naturally, there were skeptics in many an audience. It was hard enough for them to understand that gasoline quality had any bearing on engine performance, in the first place, much less to appreciate that something added to the gasoline would affect its quality.

Accordingly, for the benefit of these people, the Ethyl engineer would frequently carry his demonstration further and show them the difference between "Ethyl" fluid as a knock inhibitor, on the one hand, and of substances like amyl nitrate and isopropyl nitrate as knock inducers, on the other. By adding a

During the late 30's, an important Ethyl field activity was its "Tune-Up Clinics." At the left, and on the next page, are scenes of two of these clinics, which toured the country for two years

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few drops of amyl nitrate or isopropyl nitrate to the test fuel, the engine was made to knock. Then, by adding "Ethyl" fluid to the fuel, the knock of course disappeared. That usually was enough to convince the audience that the knocking tendencies of a fuel were closely related to its chemical composition.

For the most part, each audience watched the demonstration with interested and thoughtful eyes, crowding around the demonstration engine, intrigued by its special attachments, and asking innumerable questions of the Ethyl engineer. They remembered how the family car had knocked the day before going up Oak Street hill, and determined to try this new fuel next time they bought gasoline. Slowly but surely, public demand for "Ethyl" gasoline increased.

Meanwhile the demonstrations went on — at Rotary Club luncheons, in town halls, in engineering and chemical society meetings, and at schools and colleges. Automobile distributors and dealers arranged for demonstrations for their own personnel. Exhibits were set up at state and county fairs. One Ethyl representative once gave his talk from a church pulpit with minister, choir and parishioners in the pews.

About 1930, the missionary aspects of the Ethyl meetings began to give way to more formalized activities. Field men concentrated their efforts entirely with the sales forces of customer oil companies, and this work increased rapidly as more and more oil companies began selling "Ethyl" gasoline. Some marketers purchased demonstrating engines from Ethyl and began to train their own personnel on the merits of their own individual gasolines containing "Ethyl" antiknock compound.

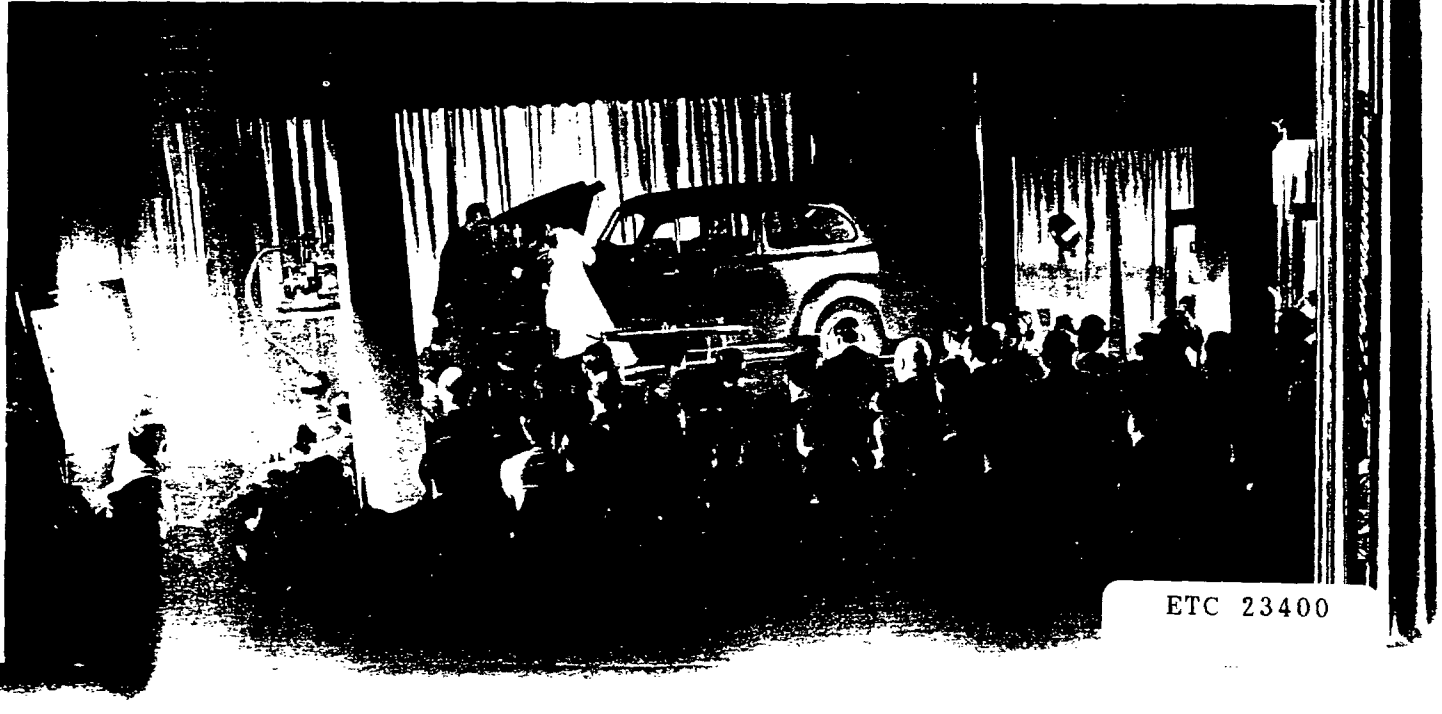
Ethyl's Tune-Up Clinics

However, Ethyl men continued to give demonstrations for customer companies and other interested groups for many years, and they never lost their talent for showmanship. In the late 1930's the Corporation established an elaborate tune-up clinic program. Nine separate portable clinics, complete with dynamometers, toured the United States for more than two years. These clinics, which appeared in every important city of 50,000 or more, helped make the nation "tune-up" conscious through promotion of a better understanding of fuels and motors.

Night after night the personnel who staffed the clinics put on demonstrations for service station men of one customer oil company after another. Sandwiched in between were demonstrations for automobile distributors and dealers and their personnel. Because the "show" was interesting and educational, many men came back a second and third time. When the territory was covered, the clinic men moved on to the next town.

Similar educational programs were carried on in the farm tractor field, with manufacturers of buses and trucks, and with fleet operators generally. A handful of Ethyl men started and carried on a movement which has practically revolutionized the farm tractor. By dint of persistence and hard work they eventually sold the high compression principle to all the farm tractor manufacturers.

In these days of gasoline shortages, there is less of this exploitation work to do, but the Ethyl representatives still work closely with customer companies. They are still good showmen, ready to make a speech, give a demonstration or otherwise be of assistance at any time and any place.



THROUGH THE LOOKING GLASS

In addition to being a contribution to automotive progress, "Ethyl" gasoline since its introduction, in 1923, has become a part of the American scene

AMERICA IN THE 1920's was something wonderful to behold.

Jazz captured the eager imagination of America's "flaming youth," and beat out the fast tempo of the times. . . . Men took to wearing wrist watches, and women began smoking cigarettes in public. . . . Gangsters were famous national figures, as bootleg liquor and the corner speakeasy made a mockery of Prohibition. . . . The flapper, described so accurately in John Held, Jr.'s sketches, strutted across the scene in her short skirt and bobbed hair. . . . College boys ran around in raccoon coats too big for them. . . . And a lot of people who should have known better tried to get rich quick in the stock market.

But underneath the veneer of easy times and plush living was something real and substantial about this era of "Coolidge prosperity."

The United States had emerged from World War I to find itself the greatest industrial nation on earth. The oil, automotive and radio industries, among others, came into their own as basic factors in the national economy. The automobile population reached the unheard-of total of 26½ million vehicles, with the industry in one year producing more than 4½ million passenger cars – a record, incidentally, that still stands.

It was in the midst of this kaleidoscope of events that "Ethyl" gasoline began its career.

The simple announcement that "Ethyl" gasoline was put on sale created less than a ripple in the public press. People wanted to know whether the groundhog had seen his shadow that February morning in 1923, rather than learning about that new "antiknock gasoline." Still, by the middle of 1923, "Ethyl" gasoline was on sale at many service stations in Ohio, and a few months later, Standard Oil Co. of Indiana started distributing "Ethyl" gasoline in a dozen other states.

By the time "Ethyl" gasoline was one year old, the United States was shifting into the high gear of prosperity. The postwar housing boom was in full swing. The automobile industry was producing over three million cars a year. And, as further signs of the times, the dapper Prince of Wales came to visit the United States while Germany sent the dirigible ZR-3 on a goodwill flight from Friedrichshafen.

The year 1924 was memorable, too, because it provided the first spectacular public demonstration of the value of "Ethyl" gasoline. The time was Memorial Day; the place, the famous Indianapolis Speedway.

Seeking to demonstrate publicly that "Ethyl" fluid increased the power of gasoline, Tom Midgley persuaded a number of the drivers

The three presidents, past and present, of Ethyl Corp. are shown together — Earle W. Webb, Charles F. Kettering, and Edward L. Shea. Mr. Shea assumed office in 1947

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in the race to use it in their fuel. At the end of that gruelling 500-mile grind, the first three cars to cross the finish line came in on gasoline *plus* "Ethyl" compound.

It was in 1924, also, that Ethyl (Gasoline) Corporation was born as the successor to the General Motors Research Corporation and the General Motors Chemical Co., both of which had marketed "Ethyl" antiknock compound previously. The corporate parents of the new company were General Motors and Standard Oil Co. (N. J.).

For the most part, the research that led to the discovery of tetraethyl lead as an antiknock agent had been conducted under General Motors auspices. Now, in 1924, consulting chemists of Standard Oil had evolved a cheaper and simpler method of manufacturing the compound. Realizing the potential importance of their respective discoveries to both oil and automotive progress, GM and Standard agreed upon the formation of a separate, jointly-owned company.

The presidency of the new Ethyl company was assumed by Charles F. Kettering, who had been the first man to probe the riddle of knock and who had directed Thomas Midgley, Jr. and his associates in the long and costly research that followed. "Boss Ket" resigned on April 21, 1925 – less than a year after the company was formed, and was succeeded in the presidency by Earle W. Webb, who held that position for 22 years. Last August, Edward L. Shea became the third president of Ethyl Corporation, succeeding Mr. Webb.

No Easy Road

With the economic value of its product demonstrated, and with a growing number of oil companies expressing interest, the infant Ethyl Corporation might be supposed to have an easy road to success. Nothing was further from the truth. Before Ethyl Corporation made the grade, it had to overcome two crucial hurdles. Before its product became a commercial success, its sponsors were more than three million dollars in the red. This is what "Boss Ket" refers to as the "shirt-losing period" of a new invention.

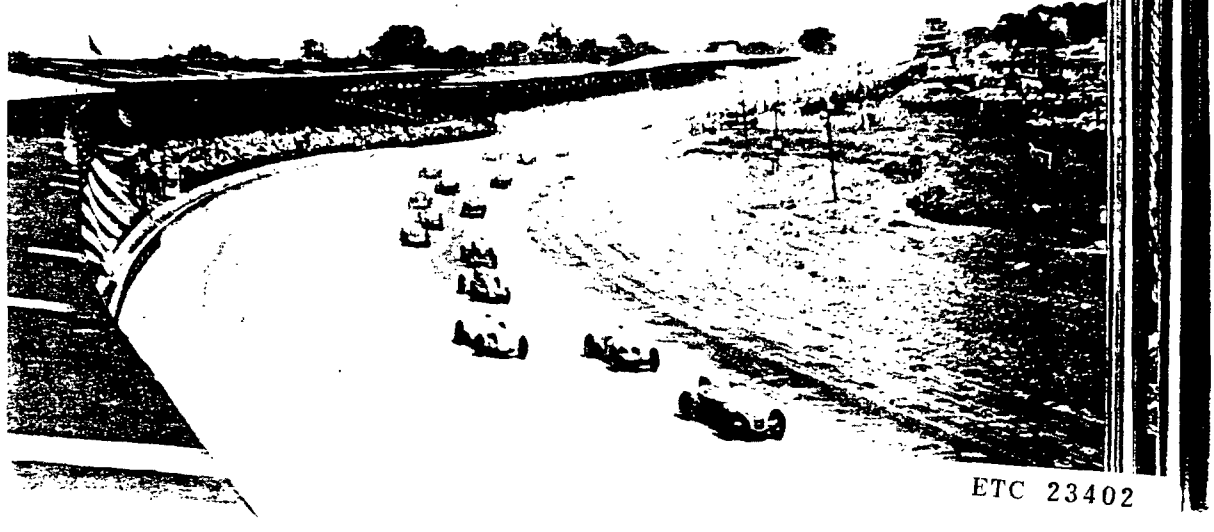
It was in 1925, the year that Clarence Darrow and William Jennings Bryan debated in the Scopes evolution or "monkey" trial, that Ethyl met and faced two of its most critical problems. The first of these was the lack of enough bromine to make large quantities of the product. The other was the "poison-scare" publicity which dubbed the new gasoline "loony gas" and said that its sale was a public hazard.

The scarcity of bromine was a simple bottleneck. The manufacture of sufficient "Ethyl" antiknock compound for one-fourth of the nation's gasoline would require more bromine than the nation's entire output.

Some of the men concerned with the problem suggested that the sea might be "mined" to provide the amount of bromine required. It was a daring thought, but bold thinking was required. A semi-experimental seaside pilot plant had been set up at Ocean City, Maryland, during the winter of 1924-25 to test the theory, and research there indicated that separating bromine from ocean water might not be impossible. Yet, it had never been done. Nor did many people think it worth trying, with only 67 parts of bromine to be found, on the average, in every million parts of sea water.

To expound the bromine extraction theory further, a former Great Lakes steamer was purchased by the Corporation, renamed the *S.S. Ethyl*, and sent to the Bethlehem shipyards at Wilmington, Del., for conversion into a floating chemical factory. After ten weeks of refitting, she put out to sea on April 27, 1925, and cruised the waters of the Gulf Stream for a week.

The bromine extraction equipment aboard the vessel was used for



The Indianapolis Speedway. The 500-mile race here in 1924 gave "Ethyl" fluid its first big public test — and victory

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only about six hours – at an indicated cost of $60,000 an hour – but that $360,000 experiment more than paid for itself. It proved conclusively that bromine in a usable form could be recovered from sea water on a commercial basis.

Today, there stand along America's coastlines two monuments to the theory proved by the good ship *Ethyl:* these are the Ethyl-Dow bromine extraction plants at Kure Beach, N. C., and Freeport, Texas. The Kure Beach installation has been on a standby status since war's end, but the newer plant at Freeport, which was built during the war, is in active operation and capable of producing 30 million pounds of ethylene dibromide yearly.

Coincidentally, on almost the very day that the *S.S. Ethyl* was returning to port from her historic journey, the Ethyl Corporation met the "poison-scare" publicity by what has been described as one of the boldest and most successful acts of public relations in American business annals. By unanimous vote of the board of directors on May 5, 1925, "Ethyl" antiknock fluid was withdrawn from the market pending the outcome of an investigation as to whether there was any hazard in the public sale and use of "Ethyl" gasoline. This investigation was conducted under the auspices of the Surgeon General of the United States Public Health Service.

The product was off the market for more than a year, during which time exhaustive studies were made into all phases of its distribution and use. The committee of experts reported in January, 1926 after many months' study that there were "no good grounds" for prohibiting the use of "Ethyl" antiknock compound in gasoline, provided that proper safety regulations were followed. Ethyl's officials kept the compound off the market until June of that year, when all the recommended safety measures were put into operation.

When "Ethyl" gasoline went back in service stations again, in the summer of 1926, its sales area consisted of 28 states. A year later, it could be purchased in every state in the Union. Meanwhile, the Corporation's research staff had been busily engaged on another problem: a yardstick for power.

Up until that time, there was no generally accepted means of measuring the antiknock value of gasoline. Refiners used methods such as "Benzol Equivalent," "Highest Useful Compression Ratio," and so on. There was a need for improvement and uniformity in the evaluation of antiknock performance.

The Octane Scale

Seeking to obtain a stable yardstick, Dr. Graham Edgar selected two pure chemicals, both hydrocarbons in the gasoline boiling range. One was iso-octane, synthesized then for the first time, to provide a hydrocarbon which would not knock in the highest compression engine in existence. The other was normal heptane, guaranteed to knock the daylights out of any motor going.

To these he assigned the arbitrary values of 100 and zero respectively. Thus, it came about that a mixture of 40% heptane and 60% octane was said to have an octane number of 60; a mixture of 30% heptane and 70% octane had an octane number of 70; and so on.

The octane scale which was generally adopted in 1930 represented a signal contribution. Not only did it permit the oil industry to discard its former cumbersome methods; it contributed to the uniformity

Dr. Graham Edgar, who invented the octane scale in 1926

of antiknock value of fuels; provided a basis for the gradual but sure improvement in antiknock value through the years; and it has been of great service to the automobile manufacturer by permitting him to design engines to take advantage of higher antiknock fuels, as they become available.

The first modern high compression engine came along around this time. This was Chrysler's famous "Red Head" engine, which demonstrated the additional power that automobile engines could develop when designed specifically for better fuels. In introducing the new engine, which was made available as an optional motor, Chrysler stamped the words "USE ETHYL GAS" on the cap of the gas tank of each car it powered.

Meanwhile, Ethyl's research and technical people had been continuing their exploratory studies – and seeking to spread more widely the significance of better engines operated on better fuels. True, they now had the new octane scale with which to rate the antiknock performance of gasolines. It was also possible to produce gasolines of higher octane value than currently in use. But they still had to convince people to what

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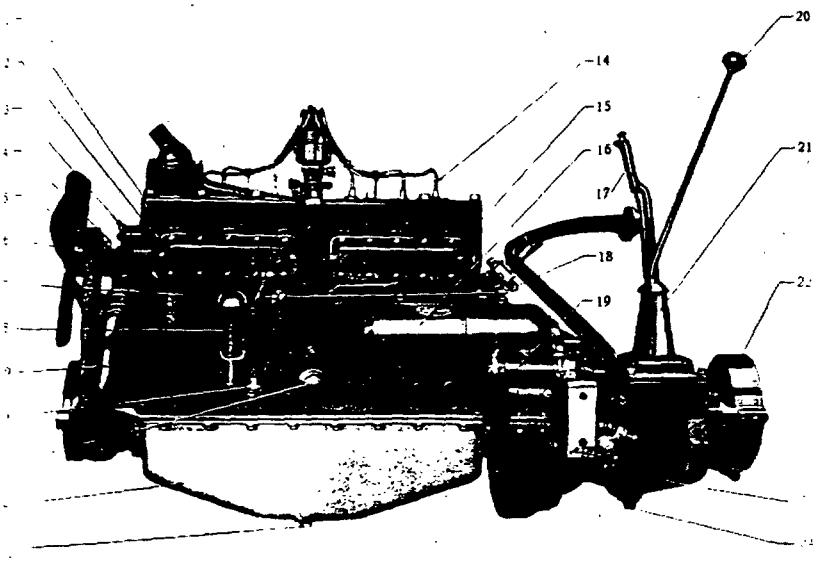
extent the further possibilities of the internal combustion engine could then be realized.

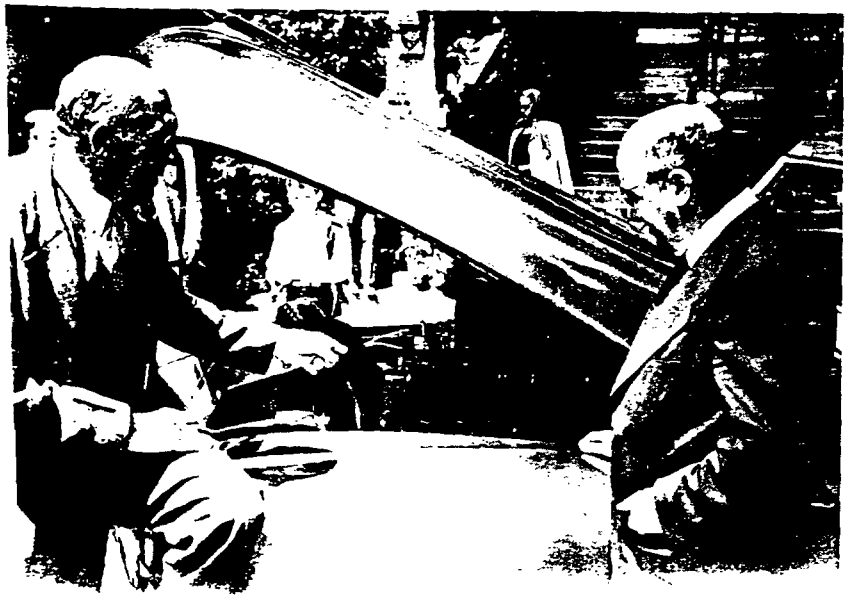
To do that, Ethyl's engineering research staff in 1929 purchased a new automobile of that year, stepped up its compression ratio, and proceeded to operate it on high octane gasoline. The engineers then arranged for a race to be held in Dayton against a standard make of the same year. In that race, a climb up a steep hill, they predicted that their entry would perform 20% better than the competing car.

To give the high compression automobile the 20% extra load, Earl Bartholomew, of Ethyl's Research Laboratories, piled four passengers into the car, and the race was on. With their throttles jammed to the floorboards, both vehicles raced up the hill. They reached the top of it at exactly the same moment, proving the 20% claim to the amazement of all.



Chrysler's famous "Red Head," shown here, was the first high compression engine designed for high antiknock fuels

"Boss Ket" points out to Dr. R. E. Wilson features of the latest high compression engine, his new experimental model



That Dayton race led Ethyl to purchase 150 of these experimental cars in order to demonstrate the improved performance of high compression engines run on high octane gasoline. They became known as "mystery cars" to the public – but what made them tick was no mystery to the automobile industry. Soon, numerous manufacturers began introducing high compression models, and the public responded enthusiastically.

In 192-, the year that Lindbergh flew from New York to Paris, "Ethyl" gasoline had become a national product, supported by national advertising. That same year, too, marked the transfer of Ethyl's research laboratories to Detroit, after two years of operation in a small garage in Yonkers, N. Y. By moving to Detroit, Ethyl's labs could be situated in the heart of the automotive industry and at a more central geographical location to the petroleum industry. Ever since then, Ethyl's Detroit Labs have worked closely with technical men in the oil and automotive industries on fuel-engine-lubrication problems and the technological improvements that have always been underway. It is interesting to note that the average car owner today uses a far better grade of fuel than Lindbergh had to fly the Atlantic.

In 1928, Ethyl's shirt-losing period was over. New facilities and services to the oil industry were added. The first of Ethyl's branch gasoline testing laboratories was built.

Meanwhile, the country at large was building itself up to the awful letdown that was to come in October, 1929, when the stock market crashed. Millions of investors lost their shirts. Millions of breadwinners were thrown out of work. Farmers suffered severely. Numerous banks

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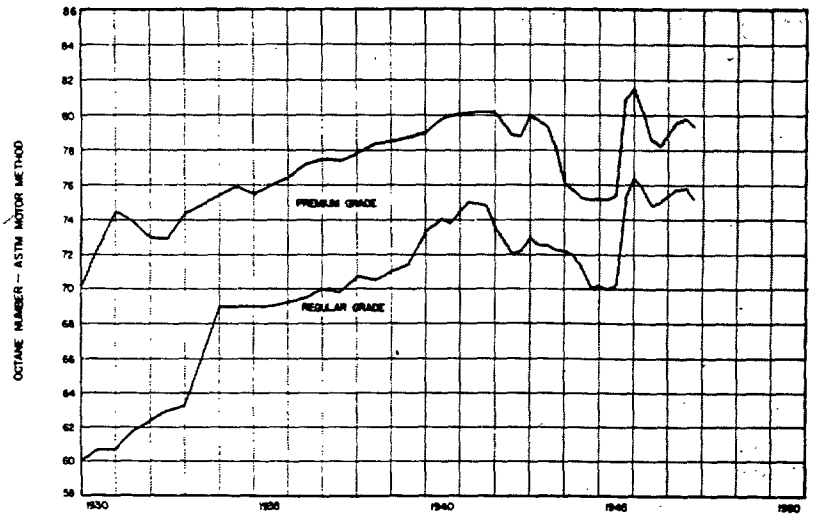

TREND IN ANTIKNOCK QUALITY OF GASOLINES SOLD IN THE UNITED STATES

Despite wars, temporary shortages, and other problems, gasoline quality has shown a broad increase since 1930

went to the wall. And all around, there was ample evidence of the misery of the times.

In common with American business at large, the oil and automotive industries had been hard hit by the depression. The oil industry saw demand fall off, saw gasoline prices drop, saw the percentage of "Ethyl" gasoline sales decline. The automobile industry saw its passenger car production fall away to one-fourth the peak volume of 1929. Meanwhile, more motorists began turning to third-grade motor fuel and tried to ignore the insistent knock in their cars as they pulled away from stop-lights or climbed a hill.

Introduced New Brand

It was at this time that Ethyl's management decided to offer to the petroleum industry a mixture of tetraethyl lead in an antiknock compound called "Q" brand. This introduced antiknock compound in regular grade gasoline for the first time in the United States, beginning in April, 1933. Significantly, within a year, the average octane number of "house-brand" gasolines increased from 63.5 ASTM to 69 ASTM.

The rise in the octane value of gasolines during the depression years had another far-reaching effect. It was matched by corresponding increases in compression ratios of succeeding new automobile models. Introducing them first as optional and then as standard equipment, more and more automobile manufacturers turned to high compression engines in the 1930's. The result was that the motoring public benefited from the added power, better performance and greater fuel economy made possible by better engines operating on better fuels.

The country was still deep in the depression when members of Ethyl's sales staff turned their attention to another field: agriculture. They saw an opportunity to apply the benefits of modern gasoline to the power machinery of farming, thereby helping farmers to produce more in less time with greater efficiency.

But farm income then was less than half what it is today. One out of every 12 farms was changing hands – half of the time through forced sales. Farmers had to be shown the dollars-and-cents value of gasoline in their tractors.

On July 31, 1934, Clarence Dauberman, a Kanesville, Ill., farmer, permitted George Krieger, of the Ethyl Corporation, to convert his 16-year-old tractor to high compression. This was done by replacing the pistons with high compression pistons, installing "cold" spark plugs, and installing a gasoline manifold and carburetor.

With his tractor using gasoline, Mr. Dauberman gained such renown that interested neighbors from miles around flocked to his farm to try it out.

The following year, the first high compression tractor was manufactured, designed to operate on 70-octane regular grade gasoline. And that was only the beginning. Today, three out of every five tractors in use are high compression models, with gasoline by far the preferred fuel. Every tractor manufacturer, moreover, now produces one or more gasoline burning models.

Aided Farm Production

High compression spurred the growth of farm mechanization. What this increased mechanization has meant is evident in recent farm production records. Since war's end, farmers have been producing about a third more than pre-war – and doing it with 10% fewer workers.

Meanwhile, in 1934, the first plant for extracting bromine from sea water was opened at Kure Beach, N. C., only a year after Ethyl and the Dow Chemical Co. had formed the jointly-owned Ethyl-Dow Chemical Co. to carry on this activity.

Another milestone came when members of Ethyl's Detroit research

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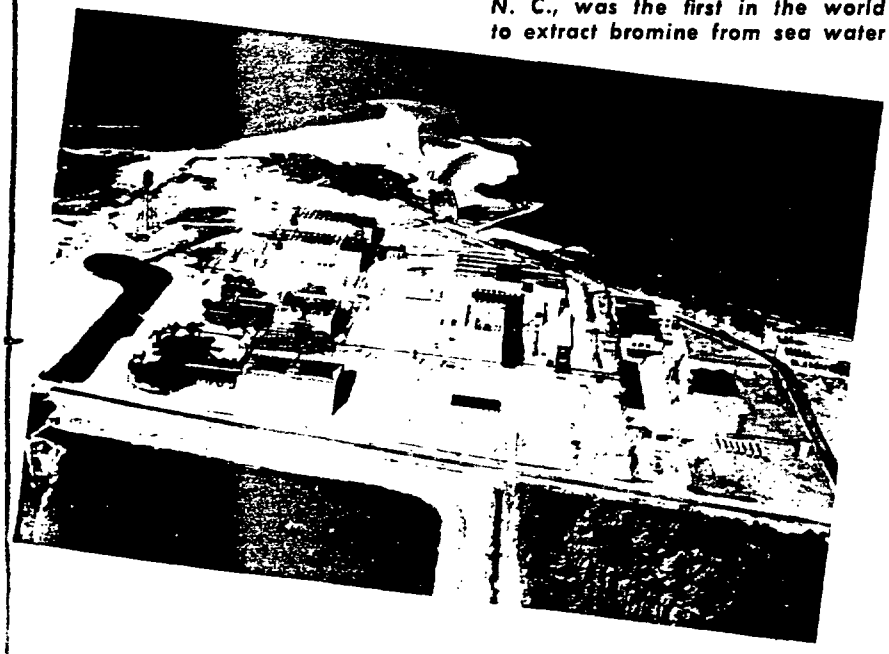
staff traveled to San Bernardino, Cal., to conduct a series of road tests in 1935. There, in a great natural proving ground of mountain and desert, fuels and engines were put through their paces. San Bernardino was found to be so satisfactory for road-test programs that three years later Ethyl established a permanent laboratory there primarily for this purpose.

A year later, when the first tetraethyl lead unit went into operation at Baton Rouge, there was little inkling that the plant would one day become the largest of its kind in the world. Yet, the subsequent years have been marked by continuous growth and expansion – that even today is not yet completed. Currently, a construction program of over $20 million is underway.

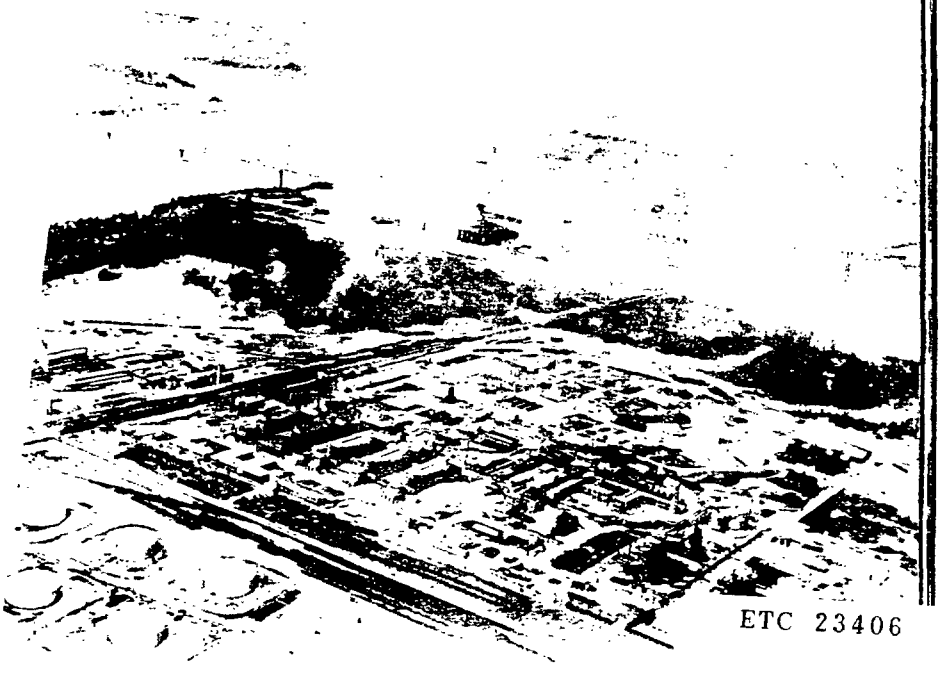
The Ethyl-Dow plant at Kure Beach, N. C., was the first in the world to extract bromine from sea water



As the demand for good gasoline recovered from its depression low – and began to show a steady increase – it became apparent that existing facilities for manufacturing antiknock compounds would prove inadequate for indicated future requirements. Accordingly, Ethyl Corporation decided to construct a new plant in Baton Rouge, La. This was in the Fall of 1936.

Some four years after its Baton Rouge plant went into operation, Ethyl could announce the opening of new research facilities in Detroit. Located on a 26-acre tract, the research laboratories boasted the most modern equipment for comprehensive research programs on fuels, lubricants and engines. Yet, the paint was hardly dry on the laboratory buildings when Ethyl's research facilities were enlisted in the war effort. During the war, Ethyl's labs were engaged almost exclusively in research projects on behalf of the armed forces, while various Ethyl technical personnel worked directly with the armed forces or the war agencies, lending their advice and assistance.

Motorists remember the war years, not only for gasoline rationing, but also for the sacrifice in gasoline quality they entailed. Many a car suffered from "wartime knock," labored up hills, and frequently had to be tuned down in order to get along on the inferior wartime fuels. But the "Ethyl" antiknock fluid that was missing from civilian gasolines was at the fighting fronts, where it was used in virtually every gallon



An airview of Ethyl Corp.'s manufacturing plant in Baton Rouge, where "Ethyl" antiknock compound is produced

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of military and aviation grades of gasoline. To powerful aviation superfuels, developed during the war, "Ethyl" fluid gave the final, decisive lift in octane rating, a lift that helped establish the aerial superiority of the Allies. For their part, Ethyl's manufacturing employes at Baton Rouge were awarded the Army-Navy "E" in reflection of their achievement in increasing production 43% above the pre-war level.

With the return of peace, "Ethyl" gasoline was again freely available to the motoring public. And so eagerly did car owners demand "Ethyl" gasoline, after the war-long drought, that "Ethyl" gasoline sales accounted for more than 45% of total gasoline sales.

Subsequently, however, in common with the oil industry at large, Ethyl Corporation ran into shortages on the basis of the public's unprecedented demand for petroleum products. In Ethyl's case, it was a reconversion shortage of metallic lead, which developed during 1946, and which resulted in temporary restrictions upon the manufacture and use of "Ethyl" antiknock compound during that year. At the same time, an octane ceiling was in effect on motor fuels during 1946.

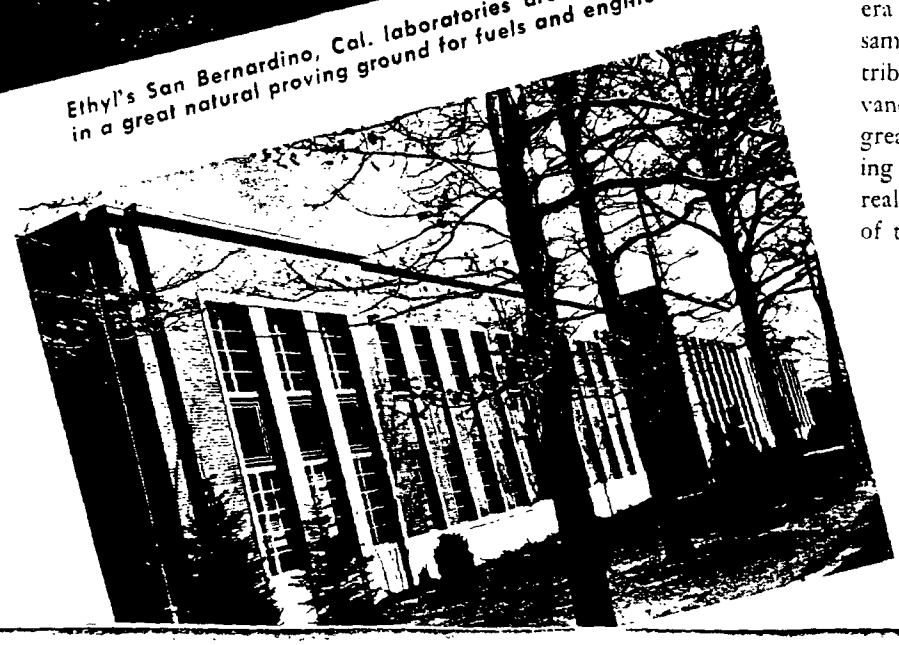
Since the lifting of these controls, Ethyl Corporation has had the objective of increasing its current production of "Ethyl" antiknock compound and of expanding its manufacturing capacity to anticipate future requirements. The expansion program now underway at Baton Rouge is in reflection of that aim.

Nineteen-Year Record

Looking back, many billions of gallons of "Ethyl" gasoline have been consumed by American motorists during the past 25 years. In fact, for the 19 years since records have been kept, more than 60 billion gallons of premium grade gasoline and more than 250 billion gallons of housebrand gasolines have been improved by the antiknock compounds supplied by Ethyl Corporation.

Observance of the silver anniversary of the time "Ethyl" antiknock compound was first marketed, comes with a sense of some satisfaction. Originally, by reducing the degree of fuel knock, it permitted the development of more powerful engines with higher compression ratios, thereby aiding in a great era of automotive progress. At the same time, it has enhanced the contribution of each subsequent advance in refining technology. And – great satisfaction comes from knowing that "Ethyl" gasoline, in a very real sense, has become a basic part of the American scene.

Ethyl's San Bernardino, Cal. laboratories are centered in a great natural proving ground for fuels and engines



Ethyl's principal research activities are conducted at its modern Detroit Research Laboratories, opened in 1942

ETC 23407

Ethyl's field representatives present educational programs before groups of service station personnel and automobile dealers, as one of the Corporation's many services

THIS BUSINESS OF SERVICE

Paralleling the growth of "Ethyl" gasoline these past 25 years has been the growth of many useful services

TO LOOK BACK a quarter of a century to its origin is a pleasant experience for any company. Ethyl is no exception. Recalling the discovery of a successful antiknock fluid, the first public sale of "Ethyl" gasoline, and the subsequent founding of the company give perspective and meaning to what Ethyl Corporation has been during the years.

The company has had its pioneers, its builders and its leaders. It has expanded from a small group of men, serving a limited market, to a national organization. It has invested millions of dollars for the manufacture and distribution of "Ethyl" antiknock compound, and employs nearly 4,000 men and women in its plant, offices and laboratories.

But a more sober reflection prompts the observation that many companies have had interesting beginnings, and have grown up in much the same manner during the time Ethyl was taking on a mature stature. Many have outstripped Ethyl in terms of plant investment, in number of employes, and in ways brought about by the particular character and requirements of their businesses.

More than considering physical growth as a hallmark of success, Ethyl looks with gratified realization to the nature and scope of the services it has offered to the oil and automotive industries since the days when the now familiar "Ethyl" trade-mark became a recognized emblem. In fact the company's services contribute to every field in which the energy of gasoline is utilized.

The growth of these services has paralleled the company's progress in supplying antiknock chemicals to help the oil industry give the nation the best gasolines in the world. The formula of its antiknock fluid has been improved and Ethyl's services have become more effective during the past 25 years. In a very real sense, the achievements of the past quarter century are achievements in service as well as in product.

To be sure, these services center initially around the best utilization of the antiknock quality of gasoline. During the time they have been expanded, diversified and strengthened through experience, Ethyl's cooperative enterprises have reached not only customer refineries and automotive industries, but the public as well. In more recent years the com-

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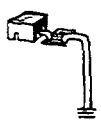
ETHYL'S MANUFACTURING PLANT

Largest of its kind in the world, the Ethyl plant at Baton Rouge, La., is completely "integrated," producing nearly all the intermediate chemicals needed in the manufacturing processes as well as the finished antiknock compound. The expansion program at Baton Rouge, now underway, will increase substantially the plant's capacity for making antiknock compounds.

RESEARCH LABORATORIES

Ethyl Corporation maintains groups of research laboratories in Detroit and San Bernardino, Cal. The Detroit laboratories, where the major part of Ethyl's research work is performed, carry on cooperative programs in studies of fuels, lubricants and engines. The smaller laboratories in San Bernardino are used primarily for the road testing of fuels and engines.



ETHYL-DOW BROMINE EXTRACTION PLANTS

Ethylene dibromide, one of the ingredients in finished "Ethyl" antiknock compound, is produced by the Ethyl-Dow Chemical Co., which is owned jointly by Ethyl Corporation and the Dow Chemical Co. The bromine so used to make ethylene dibromide is obtained by extracting it from sea water. The first bromine extraction plant, now in a standby condition, is located at Kure Beach, N. C. The second and newer plant, which supplies Ethyl's needs, is at Freeport, Texas.

GASOLINE TESTING LABORATORIES

Ethyl's five gasoline testing laboratories, located at key points throughout the country, annually test more than 25,000 gasoline samples as a service both to refiners and to the motoring public.

FIELD STORAGE TERMINALS

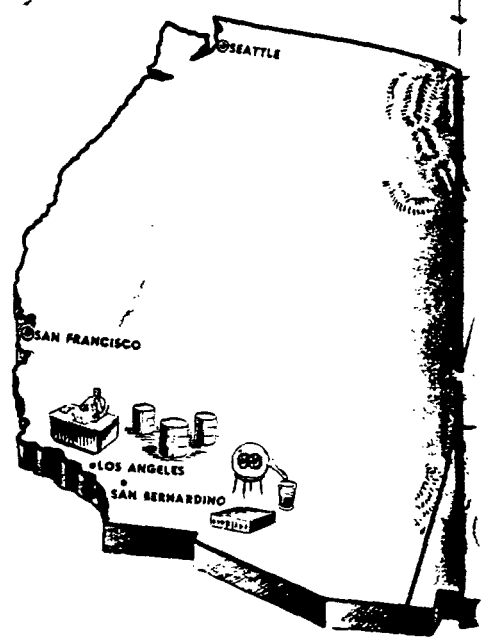
New field terminals for the storage and distribution of "Ethyl" antiknock compound will be strategically situated throughout the country.

ETHYL'S REGIONAL OFFICES

Four regional offices are maintained by Ethyl Corporation, as focal points for serving customer oil companies, in New York, Chicago, Tulsa and Los Angeles.

OTHER SALES OFFICES

Supplementing the work of Ethyl's regional offices are smaller sales offices in Philadelphia, Pittsburgh, Dayton, Kansas City, Mo., Atlanta, Dallas, Houston, San Francisco, and Seattle. In addition, members of Ethyl's field staff operate from scores of intermediate points.



PRINCIPAL PLANTS, L

pany has also worked closely with farm tractor manufacturers and dealers, and with the aviation industry.

The idea of service to all those concerned with gasoline-powered transportation stems from the days when the foundations of the Ethyl Corporation were being laid. The first of hundreds of close working relationships with customer organizations was set up 25 years ago with The Refiners Oil Company in Dayton, pioneer distributors of "Ethyl" gasoline.

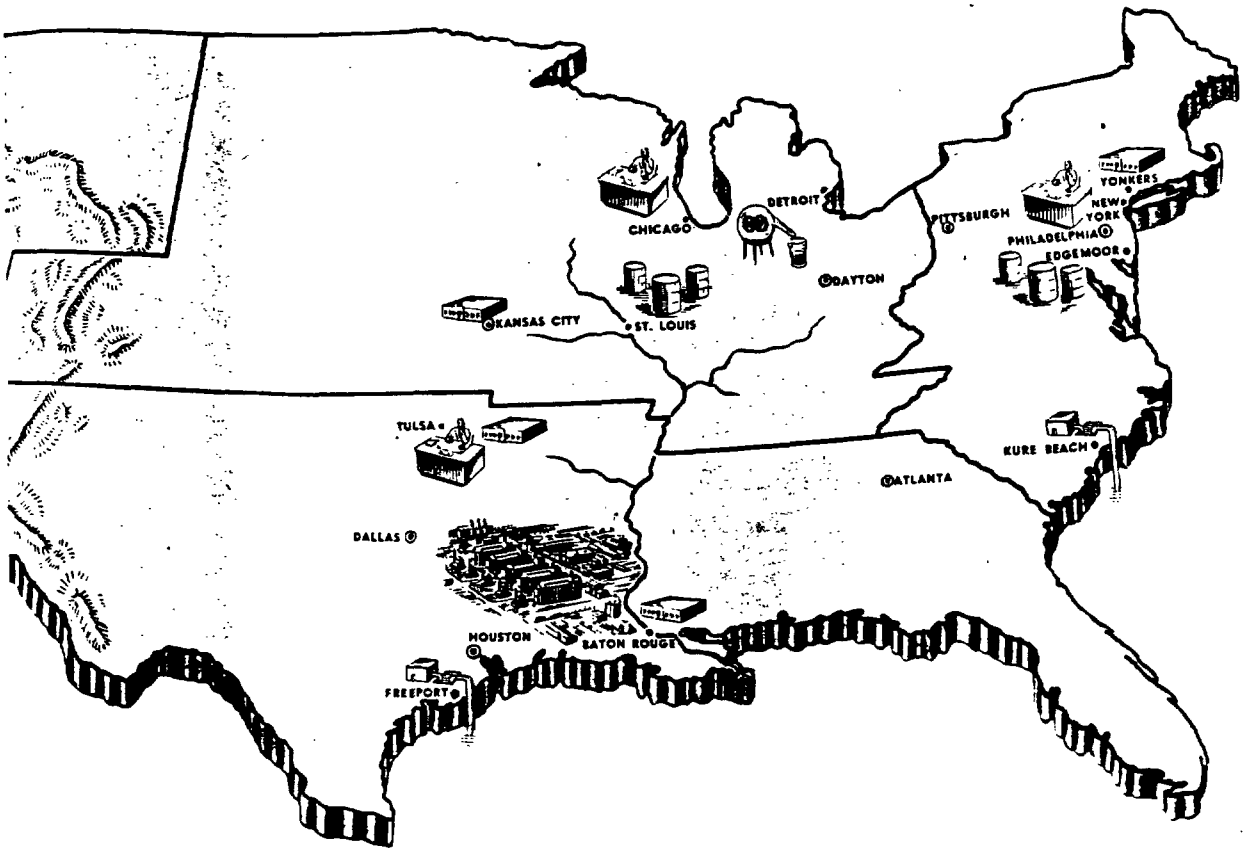
Ethyl sales, from the earliest years, owe much of their expansion to the fact that representatives of the Sales Department have been constantly aware of the importance of service to actual or potential customers. They have established a reputation for attention to a wide variety of problems in which their interests and broad experience qualify them.

A prime obligation of any company, of course, is to assure its customers a high quality product. As engine designs were improved and as more modern fuels were developed during the years, Ethyl introduced seven major changes in the formula for making "Ethyl" antiknock fluid, in keeping with changing requirements. Much of the work now under way on the improvement of engines and fuels is coordinated with Ethyl's own research.

Making a better product has the companion undertaking of improving manufacturing methods. The company's plant at Baton Rouge, largest of its kind in the world, is an outstanding example of how a number of integrated operations have been geared to keep pace with progress in research and in chemical engineering. Today the plant is producing "Ethyl" antiknock compound at the rate of more than 22,000,000 pounds a month.

New processes used to produce ethyl chloride, an important chemical needed in the manufacture of

ETC 23409



ABORATORIES AND OFFICES OF ETHYL CORPORATION

tetraethyl lead, are typical of how Ethyl has pioneered in its manufacturing techniques. The present quantity and quality of "Ethyl" compound production would be impossible without the use of these and other highly specialized operations at the Ethyl plant.

From the time "Ethyl" antiknock compound leaves the Baton Rouge plant until it reaches the consumer, Ethyl men work hand in hand with men in the petroleum industry. Ten thousand tank cars of the fluid are delivered during a year. Customers are also served by tank trucks and by drum shipments.

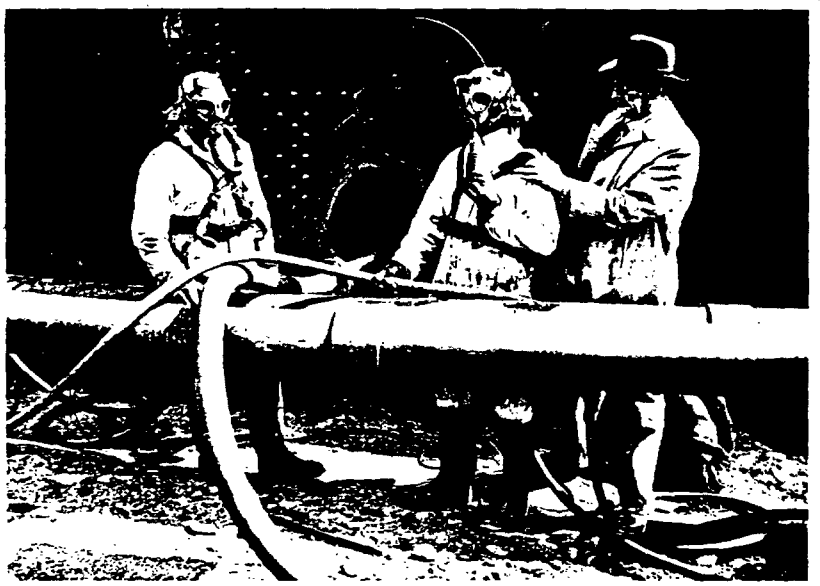
One of the earliest considerations of Ethyl's Sales Department was the safety of all those who handle "Ethyl" antiknock compound, including the personnel of customer refineries. As a result of constructive efforts it initiated through the years, the Safety Department has developed an unusually effective program and a noteworthy record of accomplishment.

Safety engineers have paid particular attention to recommended measures which should be followed at blending installations, and during the cleaning or repair of storage tanks which have contained leaded gasoline.

Although the blending of "Ethyl" antiknock fluid with gasoline takes place under sealed conditions, regular inspections of a blending plant by an Ethyl safety engineer provide a systematic check that it is operating satisfactorily. Moreover, the company's broad experience is shared freely with oil companies which are planning or building new blending plants. Ethyl engineers have also helped in the development of improved storage tank design, from a safety standpoint, by suggesting numerous improvements.

In the matter of storage tanks, the advisory services of Ethyl's safety engineers are available whenever a tank which has contained leaded

ETC 23410



Ethyl's safety engineers are always available to advise on cleaning gasoline storage tanks

gasoline has to be entered for cleaning or for repair work. Besides their specialized knowledge of "Ethyl" antiknock compound, these engineers are well versed in all the hazards of gasoline, and can point to an enviable safety record in the many thousands of tank cleanings they have attended. A recent useful contribution to safety equipment is Ethyl's newly developed lead-in-air analyzer, which can detect the presence of minute amounts of lead in the atmosphere long before this condition might become hazardous.

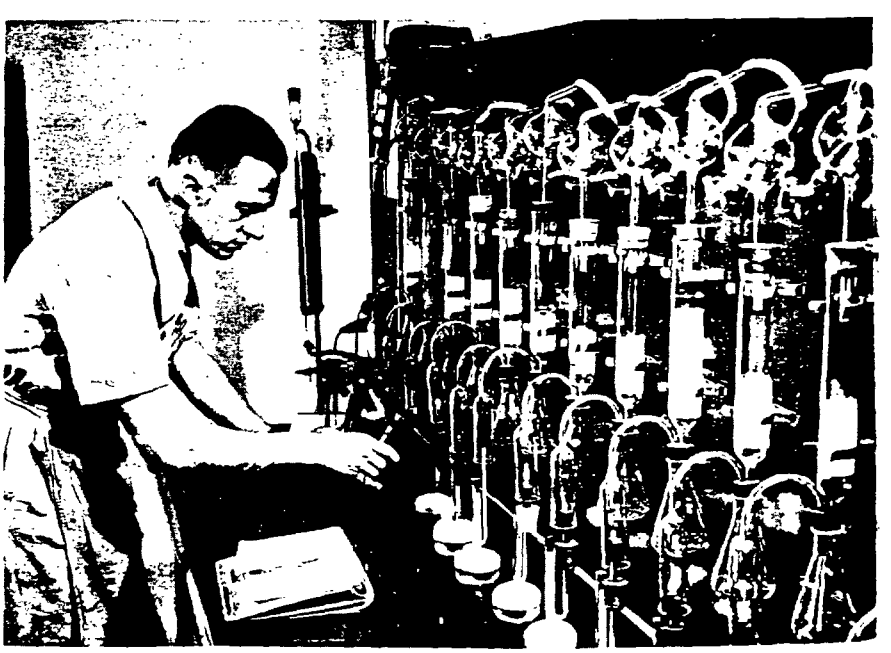
Unknown to many among the general public – but of great service to the oil industry and in turn to motorists – are Ethyl's five gasoline testing laboratories, strategically located throughout the country. The work of these laboratories is part of the services offered to customer refiners as mutually helpful marketing aids.

In a typical year, the laboratories will handle some 25,000 samples from oil refineries, from bulk plants, and from filling stations. Each sample undergoes anywhere from one to nine standard tests.

Refinery samples are tested to check the amount of antiknock compound needed to make gasoline conform to standards set for it. Field samples provide a spot check against possible deterioration or contamination of the fuel after it leaves the refinery. And as a result of its work, Ethyl is able to furnish the automotive and petroleum industries with useful quarterly surveys of gasoline quality, and of trends in quality.

Customer companies are informed of the results of individual analyses of samples as an aid to them in controlling the quality of their gasoline blends. In many cases, Ethyl's work provides data to supplement the findings of the oil companies' own laboratories. Ethyl's testing laboratories have frequently been called upon to test samples refined by new processes and equipment, while separate investigations of these fuels are made at the Ethyl Research Laboratories in Detroit.

To promote the proper use of petroleum products, Ethyl has produced, as part of a broad educational program, a series of films on such topics as engine maintenance, gasoline handling, tractor operation and related subjects. These films are designed to help those dealing with



Ethyl's five gasoline testing laboratories annually test over 25,000 samples on behalf of the oil industry

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petroleum products and services, and with automotive maintenance.

The company's Refinery Safety Show, which has been seen by thousands of oil industry personnel, is typical of another kind of educational service. Every year Ethyl representatives assist oil companies by participating in hundreds of meetings, discussions and demonstrations for such groups as automobile dealers, fleet operators, farmers and farm equipment groups, garage mechanics and service station operators. Thousands of copies of an educational booklet, "Professional Driving," are among the publications Ethyl has distributed widely.

In a company which was born of research, perhaps it is not surprising to find that Ethyl gives research an especially important place among its services. The Ethyl Research Laboratories in Detroit are a center for broad, fundamental and closely integrated investigations which had their beginnings when the first company laboratory was set up more than two decades ago.

Time was, in the early days of the automobile, when the problems of engines and fuels were considered more or less separately. Today, however, it is an accepted axiom that "the engine must fit the fuel and the fuel must fit the engine." Therefore, a recognition that engines, fuels and lubricants have close and interdependent relationships has been the underlying philosophy of all research activities.

Ethyl scientists work closely with petroleum technologists – cooperat-

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The two top pictures illustrate two of Ethyl's regular services — its work in the farm field and with operators of bus and truck fleets. The audience below is watching an Ethyl representative present a demonstration on the safe handling of gasoline

ing with them in studying and testing their products to meet the advancing requirements of engines. And, on the other side of the picture, Ethyl researchers cooperate in the same way with engine manufacturers, so that future engines may make the best use of available fuels and lubricants.

Joint efforts of this character have had important bearing on the solution of many engine-fuel-lubrication problems in automobiles, trucks, buses, planes and mechanized farm equipment. Ethyl's research program has brought about a better understanding of these problems, and Ethyl's technical services have spread this understanding to those who fuel, lubricate and maintain the nation's vehicles.

A fleet of cars and trucks is used for actual road tests to substantiate and supplement laboratory findings. Ethyl also maintains a laboratory and a large fleet of test vehicles at San Bernardino, California. The terrain here, with its mountains, valleys, deserts and nearby coastline, can duplicate almost all highway conditions found in various parts of the United States.

In the work of Ethyl's research and technical staff in the farm field, tests on fuels and engines are carried out on a comprehensive scale in cooperation with farm equipment manufacturers. This kind of research is increasingly significant in the light of the growing importance of gasoline-powered farm machinery. In a recent poll, eight out of ten farmers reported they prefer gasoline tractors.

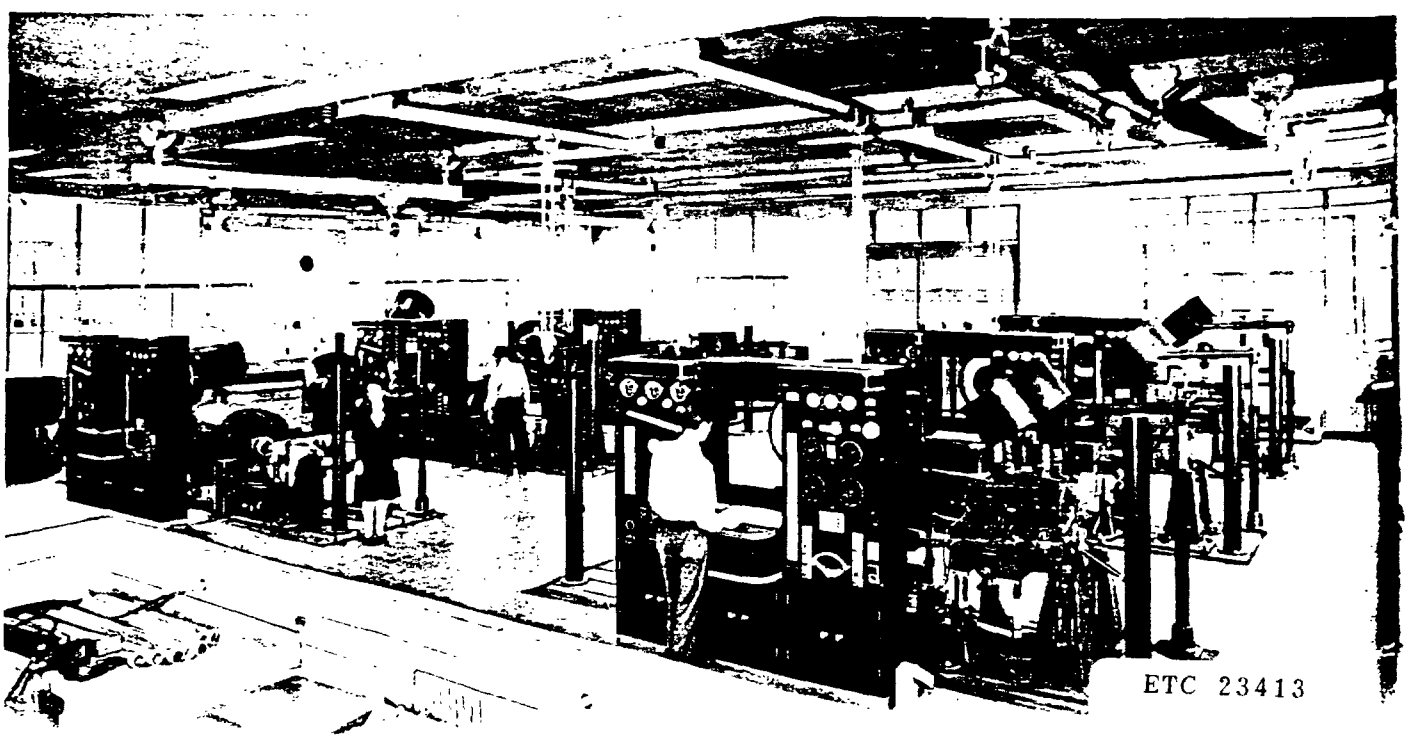
Operators of truck and bus fleets are of course large consumers of gasoline, and to them the quality of motor fuels is particularly important as it bears on operating performance and economy. In cooperation with customer oil companies, Ethyl fleet engineers work closely with truck and bus operators, lending their technical advice and assistance. One purpose of their work is to help promote the best utilization of fuels in commercial engines. They also assist fleet owners in the solution of maintenance problems.

Complementing these efforts is the work of the Technical Service Division of Ethyl's Detroit laboratories, which works with manufacturers of commercial vehicles on the best use of present and future fuels.

Through the activities of both its field and technical service groups, Ethyl acts as a liaison among fleet operators, gasoline refiners, and engine manufacturers—making known the fleet owners' desires and requirements, and reporting back to them significant trends and developments in fuels and motors.

These are some of the services which have been developed in the quarter of a century during which Ethyl has been a part of the oil business. Most of them have been designed to add a plus to the value of the product sold to customers, but all have been operated with the long run interests of both the oil and automotive industries in mind.

These engine dynamometers are part of the modern equipment in use at Ethyl's Detroit labs



FIRST SALE OF "ETHYL" GAS

(Continued from Page 6)

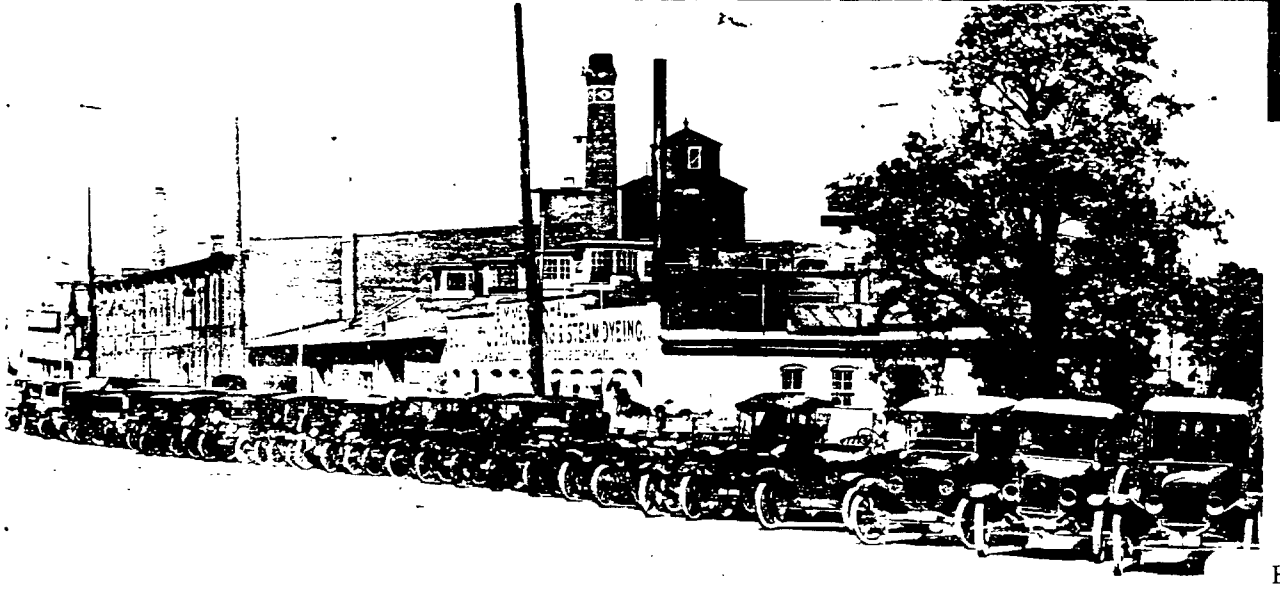
literally hundreds of different compounds. Results were instantaneous. Scarcely able to contain themselves, the group double-checked their trial run the next day.

Just about everybody working on the problem was on hand that morning when Midgley started up the engine. Again tetraethyl lead stopped the metallic jangle of the engine's ear-splitting knock at once. Midgley then tried tetraethyl lead in various concentrations and under as many conditions as his excitement gave him the patience to think of. The tests worked.

Midgley, Boyd, Hochwalt and the others danced a non-scientific jig around the laboratory. Certain at last that they had cornered their elusive quarry, Midgley reported the discovery to Kettering. For hours the two men talked, planned and dreamed. It was a day they would always remember – December 9, 1921.

The passing of time has long since established the fact that the discovery of what tetraethyl lead can do was like tapping an almost unlimited reservoir of new energy. The coordinated efforts of the automotive and petroleum industries, aided by "Ethyl" compound, have been able to nearly triple the power of gasoline engines, and to increase the mileage per gallon of gasoline by better than 25 percent.

Looking at it another way, the widespread use of "Ethyl" antiknock compound in by far most of the gasolines marketed today represents an annual saving to the public of at least one billion dollars. By promoting efficient use of gasoline, "Ethyl" antiknock is an important factor in fuel conservation. The compound adds to the nation's cars and trucks the equivalent horse-



The Dayton Power and Light Company was the first fleet user of "Ethyl" gasoline in 1923, when models like those below were on the road. The two Dayton Power men who first decided to try "Ethyl" gas are shown as they look today — Fred Lewis, left, and Oscar B. Reemelin, vice president

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OUR PICTURES . . . Pages 4 (lower right), 5, 6, and 33 (right), Commercial Photos, Inc., Dayton; Page 7, A. Devaney, Inc.; Page 9, illustration by Walter Hortens; Page 20, Camera Associates; Page 21, Press Association; Page 23 (bottom), courtesy General Motors Corp.; Pages 28-29, map by Harold Newman; Page 33 (left), courtesy Dayton Power & Light Co.

power of well over 50 Hoover Dams every year.

After the discovery, there were still a number of thorny problems to be solved before tetraethyl lead could be sold commercially on a practical basis, but to Midgley and his co-workers, by this time including Charles A. Thomas, the job seemed relatively simple. Satisfactory additives had to be found to control certain combustion reactions, for one thing, but the first sale that wintry day in 1923 saw the most important of their difficulties overcome.

At first Midgley was unable to arouse much interest in the compound, but eventually he found a customer practically in his front yard. A close friend happened to be Willard E. Talbot, vice-president and general manager of The Refiners Oil Company, the largest independent oil company in Ohio at that time.

One Saturday, Midgley telephoned Talbot and invited him to lunch at the Dayton Engineers Club. From 12:30 until 3:30, Talbot listened to the story of tetraethyl lead and its discovery.

Would Refiners Oil Company be the first to market a gasoline containing the new antiknock fluid?

Talbot discussed the proposal with Robert S. King, president of Refiners, and others in the company. At length they agreed, and reached a verbal understanding with General Motors that Refiners would market "Ethyl" gasoline in Ohio.

Sales at the station at Sixth and Main were so successful, after a few weeks, that Refiners also made it available at a second station at South Main and the Cincinnati Pike. On some days as much as 80 percent of all sales at the two stations was "Ethyl" gasoline.

Not long after Mike Redelle had made his first purchase, another Dayton motorist drove into the same service station and asked for a tankful of "Ethyl" gasoline. His Ford had knocked like the seven furies driving down Main Street, but as soon as he drove away with the new fuel, his car purred like a kitten.

Supervised a Fleet

The duly-impressed motorist was Fred Lewis, transportation superintendent of the Dayton Power and Light Company. As supervisor of a fleet of 65 cars and trucks, he was on the lookout for something which would not only stop knock, but reduce operating upkeep and maintenance costs. He lost no time in telling O. B. Reemelin, general superintendent of the utility, about his personal experience with "Ethyl" gasoline.

Reemelin, who knew Midgley well, decided to find out more about the new gasoline additive. Reemelin invited Midgley for lunch. This time Midgley listened to an explanation of the Dayton Power and Light Company's problems. They agreed to use the utility company's fleet in order to test experimental mixes of "Ethyl" fluid and gasoline.

The Dayton Power and Light Company, on June 1, 1923, accordingly became the first of thousands of operators of large fleets of motor vehicles which today use "Ethyl" gasoline. The Dayton company found that operating and maintenance costs dropped by two-thirds through the use of "Ethyl" gasoline. Since 1923, their fleet has been enlarged to 384 units. They still use "Ethyl" gasoline exclusively.

By midsummer that year, The Refiners Oil Company had expanded its distribution of the new gasoline to all 75 of the oil company's service stations. In certain non-competitive areas, Refiners also sold "Ethyl" gasoline to the Sinclair Refining Company. Before long, Refiners found itself the talk of the petroleum industry.

In West Virginia, the Spears and Riddle Company became distributors of the new compound. Larger oil companies then began to show an interest in the product. Standard Oil of Indiana offered "Ethyl" gasoline to motorists at a few stations in Muncie, Ind., during the summer, and the results were such that the Indiana Company entered into a contract with General Motors Chemical Company.

The first year of "Ethyl" gasoline sales, beginning with the small amounts sold to curious motorists on February 2, was only a small indication of what was to follow, promising as that first year might have been. A quarter century may not be a long period of time, but it has seen astonishing progress in putting the nation on wheels. The founding of the Ethyl Corporation is a part of that picture, occupying a significant place in the development of the modern automotive and oil industries. But these developments are part of another story.

In the Ethyl Research Laboratories in Detroit there is a memorial plaque, shown on the next page, in honor of the late Thomas Midgley, Jr.

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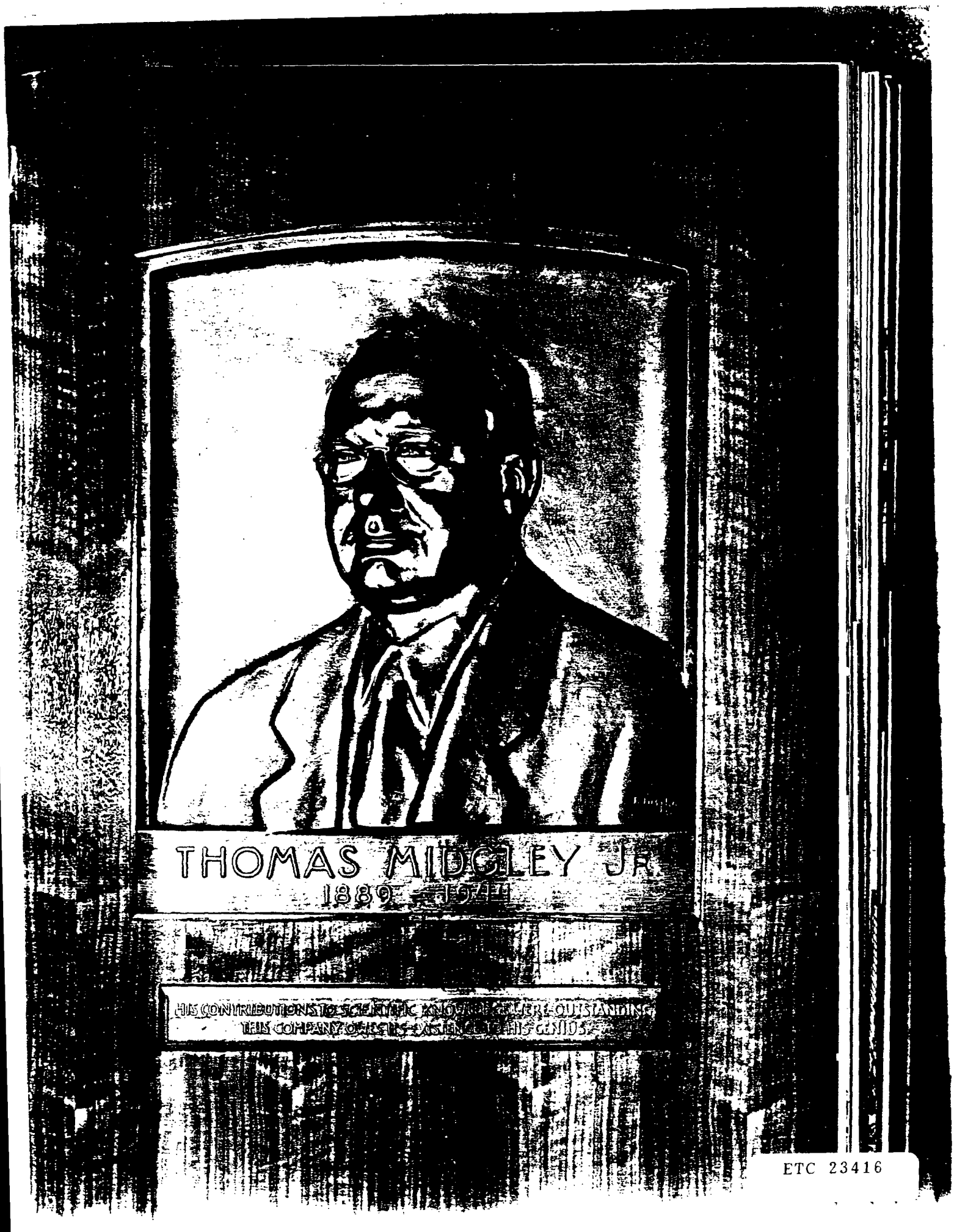

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EARLE WEBB RETIRES AS AN OFFICER OF ETHYL CORPORATION

He will continue, however, to serve as a Director and will be available for advice and counsel

HAVING REACHED retirement age on February 9th, last, Earle W. Webb has resigned as Chairman of the Board of Ethyl Corporation, after an association of nearly 23 years with the Company. While relinquishing all administrative duties, he will continue to serve as a Director and will maintain space in the New York offices where he will be available for advice and counsel.

Mr. Webb has been associated with Ethyl Corporation for all but eight months of its entire existence. Joining it as President in April, 1925, he served in that office until August, 1947 when Edward L. Shea was named to succeed him in the presidency and Mr. Webb was elected Chairman of the Board.

Earle Webb's interest and active assistance in Ethyl's business affairs even preceded its formal incorpora-

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tion. He joined the then infant company, moreover, in its darkest hours, and saw it through the critical years that followed. And his business philosophy was a major factor in the Corporation's eventual success. This is what Charles F. Kettering had in mind when he recently declared, "The public good will, which Earle Webb has developed through the years, merits our attention and respect."

Native of North Carolina

Mr. Webb, who was born in Morehead City, N. C., on February 9, 1883, attended Trinity College (now Duke University) for three years and took his senior year at the University of Michigan, where he was graduated. Later he attended the New York Law School, and was admitted to the New York bar in 1904.

After practicing law in New York for a period of 17 years, during which time he served as attorney for several large corporations, Mr. Webb in 1922 joined General Motors as general attorney, with headquarters in Detroit.

It was in this capacity that he first came into contact with the subject of antiknock compounds for gasoline.

At that time, Thomas Midgley, Jr. and his associates at the General Motors Research Laboratories had discovered tetraethyl lead, and arrangements had been made for manufacturing the finished "Ethyl" antiknock compound in commercial quantities. Now, General Motors was ready to place the compound on the market. Accordingly, Earle Webb, as attorney for General Motors, was asked to draw up the incorporation papers for the General Motors Chemical Co., which was to handle the marketing of "Ethyl" fluid. This he did, and GM Chemical began operations on March 7, 1923, a little more than a month after "Ethyl" gasoline first went on sale at a single service station in Dayton, O.

As one of the original directors of General Motors Chemical Co., Mr. Webb had occasion to follow the progress of "Ethyl" fluid that first year. He knew of the large expenditure of time and money that went into the research leading up to it. He knew, too, that the product was of definite value in increasing the efficiency of gasoline. But he also knew that the product was new and untried except in a small area in Ohio.

The business of General Motors Chemical Co. was something less than spectacular. At the end of 1923, it had three customers. True, one of these was Standard Oil Co. (Indiana), whose endorsement of the product was to mean a great deal during its formative years. But, meanwhile, there were plenty of problems to be solved.

How Ethyl Was Formed

One of these problems was met in 1924, when consulting chemists of the Standard Oil Co. (N. J.) evolved a more efficient and less expensive method of making tetraethyl lead: the ethyl chloride process. After a series of conferences between GM and Jersey officials, it was decided to form a jointly-owned company to succeed the General Motors Chemical Co. Thus it was that Ethyl (Gasoline) Corporation came into being in August, 1924. Charles F. Kettering, who had directed Tom Midgley's search for a successful antiknock agent, agreed to serve as its president for a time, until the pressure of his research duties compelled him to give all of his time to the research laboratory.

Less than a year after it began operations, the infant corporation came near a precipice. It ran into toxicity problems related solely to experimentation in connection with a new method of manufacture of the concentrated tetraethyl lead. These problems had nothing to do with the use of the fluid in gasoline, but there was considerable publicity which was grossly misleading in this respect. As a result, the Board of Directors on May 5, 1925, suspended operations except in a very limited area to afford a committee of experts appointed by the Surgeon General of the United States an opportunity to make an examination to determine whether there was a health hazard in the distribution and use of "Ethyl" antiknock compound in gasoline. In January, 1926 the Committee reported that there were no good grounds for prohibiting its use if controlled by proper regulations. Ethyl Corporation's staff spent the next four months putting the Committee's recommendations into effect, as well as the Corporation's own improvements.

When Ethyl Corporation resumed business in June, 1926, it not only had to start from scratch; its sponsors were deeper than ever in the hole. That deficit added up to several million dollars before the corner was turned.

In 1926, with a clean bill of health and the merits of the product as its principal assets, the Company convinced twelve oil companies of the advantages of "Ethyl" gasoline, in addition to resuming contractual relations with its seven previous customers. In 1927, it added ten more customers; in 1928, another six. Finally, in 1929, when 29 additional oil companies became customers, it was able to pay the first dividend to its stockholders.

Meanwhile, as it prospered, Ethyl expanded its usefulness and service to the oil industry. Its central re-

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search laboratories – which were successively quartered in a former garage and an automobile showroom until they acquired their present 26-acre site in Detroit – grew from an original six-man team to a well-rounded staff with specialized departments. The first of Ethyl's chain of gasoline testing laboratories was established. Other services which have become as familiar as the "Ethyl" emblem were started or strengthened.

Industrywide Problem

During the early 1930's, despite the developing depression, "Ethyl" fluid was being marketed to a still-growing number of oil companies. But, meanwhile, a disturbing development was taking place. Motorists in increasing numbers were turning to lower quality gasoline, even though it entailed a severe sacrifice in engine performance and fuel economy. This affected the fortunes of the oil industry at large, as well as those of Ethyl Corporation.

As this situation began to make itself felt throughout the oil industry, Mr. Webb reported to Ethyl's Board of Directors that a number of oil companies were desirous of adding an antiknock compound to their regular grade gasoline. The problem was long debated. Finally, after much deliberation and study, an affirmative decision was reached, and "Q" Brand of antiknock compound was offered to the oil industry, beginning in April 1933. It marked the first time that an antiknock compound was added to household gasolines. Interestingly enough, the same year also saw sales of Aviation Mix of "Ethyl" fluid reach a sufficiently large volume to justify a separate classification on the Corporation's sales charts.

Three years later, the demand for its antiknock compounds showing a steady increase, Ethyl's Board decided to build a completely integrated manufacturing plant in Baton Rouge, La. Construction began in 1936; the first shipments of finished "Ethyl" fluid were made a year later. Since then, this modern plant has fulfilled its every expectation, and is today the largest of its kind in the world.

Ethyl Corporation has come a long way since 1925, when its very existence was touch-and-go. From a speculative venture with a dubious future, it has become an integral part of the oil industry. From the handful of companies which, with some misgivings, tried out its new product, Ethyl today is privileged to serve 240 companies in the oil industry. Meanwhile, its antiknock compounds have come to be used in approximately 85% of all gasoline in the United States, Canada and Mexico, and the greater part of all aviation gasoline in the world.

In reporting the retirement of Mr. Webb, it is gratifying to be able to add that he will continue to serve on Ethyl's Board of Directors. Earle Webb's career in Ethyl is more than a record of achievements, it is an inspiration to the entire organization.

THIS MONTH'S COVER

TYPICAL OF THE many pieces of specialized equipment which have been designed and developed by the Ethyl Corporation Research Laboratories in Detroit is the Spark Advance and Tachometer Indicator Calibration Stand shown on the cover.

The purpose of the calibration stand is to check the tachometer and spark advance indicators of the electronic instrument (shown on top of the calibrator) used in Ethyl's road research programs. Exacting and frequent calibration of these two meters assures complete reliability of readings obtained in road test work. The tachometer indicator must, of course, be true if engine speeds of vehicles under test on the highway are to be recorded correctly, while the accuracy of the spark advance indicator is essential if the spark advance setting at which antiknock ratings are made is to remain reliable.

Basically, the calibrator is intended to simulate conditions under which the electronic instrument is employed in road research vehicles.

Although the calibration stand has been in use as a finished product for only six months, it has created much interest among technical people outside of Ethyl Corporation. Several oil and automotive companies, on the basis of information supplied by Ethyl's research laboratories, have built, or are having built, similar stands.

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A typical airview of Guatemala

JUNGLE AIRLINE

Flying strange cargoes through the wild interior of Guatemala is all in the day's work for these airmen

By George M. Galster

ONLY THE GOAT and the python were airsick. The bumpy weather did not bother the people.

The passengers – animal and human – were standing stiff-legged or squatting in the dim airplane cabin. Some of the people were perched on bags of coffee beans. One golden-brown boy relaxed full length alongside a bundle of maize. The old lady who had the goat in tow kept looking out the platter-size window, intently watching the green treetops and steep mountainsides blur past with dizzy speed.

This was an "operations as usual" flight of Aviateca, Guatemala's jungle airline.

Up front at the controls sat a young American pilot who used to fly global army transports. Unmindful of his motley cargo – bananas, tawny-skinned natives, chicle, machine parts, and sick animals – he now looked at his watch and cut the speed of the ancient Ford trimotor. Ahead of him lay a flat jungle land hemmed in by precipitous hills. The tropical rain had stopped, and a hot sun made the thick vegetation steam like a vast smoldering fire.

There was no beacon here, no striking landmarks; the pilot had to fly in "by the seat of his pants." Suddenly he throttled way back and tipped the nose toward the ground. But no airfield was in sight. Then, in another instant, a rectangular hole appeared like magic in the jungle floor. This was the airstrip – but such an airstrip! It was short, narrow and unpaved. A Piper Cub could land easily – but the pilot was bringing in a lumbering transport.

Yawing the plane into a cross-wind, the pilot aimed straight for the strip and dropped the ship lower and lower. It seemed they would crash in the tree limbs. But with a deft skill many stateside pilots might envy, the pilot stalled his heavy plane neatly onto the grassy runway and braked her to a jerky halt.

No sooner had the plane stopped rolling than a score of shouting, grinning natives came running on the field. They were followed by barking dogs and wailing "chicos" in the raw. Some of the men brandished fierce three-foot machetes as if poised to attack. But they were not angry. Far from it. They were very happy, for again the noisy airplane had brought them their only contact with the outside world, and soon they were exchanging excited bits of gossip with the plane's passengers.

Flying the jungle run in Guatemala, "The Land of Trees," is no cinch. It has many aspects of the oldtime movie thriller. You never know what is going to happen next among the uncharted jungles, volcanic peaks, sudden storms, and weird cargoes.

ETC 23421

But the pilots – most of them Americans – like it. And the siesta-loving passengers accept the thrills along with Mayan ruins, ox carts, poisonous snakes, and Sapodilla trees.

In this lush neck of Central America, an airline pilot – they call them bush pilots or jungle jockeys – must be a philosopher, grease monkey, navigator, weather prophet, and businessman rolled in one. And the seat of his pants must be intuitive. Often, that is all he has to fly by.

Air penetration of the rich Guatemalan highlands began in 1929 when a U. S. citizen and weathered flyer, Alfredo Denby, brought in a single-engine Curtiss monoplane. Since then, the fleet has grown to two DC-2's, two DC-3's, a Norseman, and the trustworthy Ford. In its stormy career the company has changed ownership and name several times, has been twice expropriated by the Guatemalan government, and was once blacklisted by the U. S. Department of State.

Today this company is called Aerovias de Guatemalteca – Aviateca for short – and is managed by the local Air Ministry. Actual operations of the line, though, have always been handled by a small but proficient group of airmen from the States.

Any similarity between this jungle air service and a commercial airline in the United States is purely coincidental.

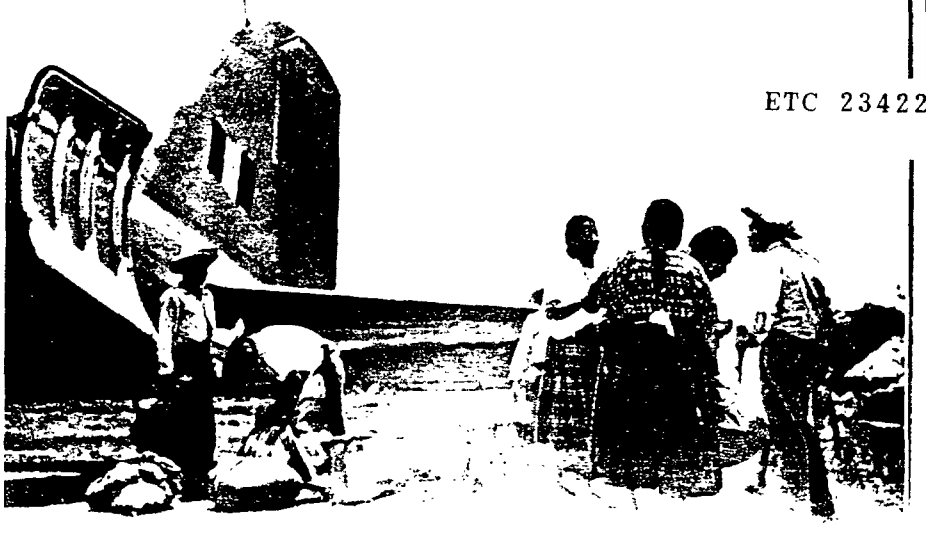
George Shleppy, Aviateca's chief pilot and head of operations, laughs when you mention schedules. The schedules, he says, are "fluid" – meaning that flights are made when and where they are needed most. Outlying station masters relay information by radio each afternoon and let the head office in Guatemala City know how things stand. From this data, a tentative schedule is made up for the following day. This is adhered to – unless something happens. Then the pilot flying the plane uses his own judgment.

One time, Johnny Matthews, a Parks Air College alumnus, was skimming along near the mountains over in the western section, when he received a hurry-up radio call. A man had been gored by a bull. There was no doctor, no roads – could he please help?

Johnny found the spot the message came from and managed to land in the limited space. The wounded man, groaning, was loaded on board and the plane began its take-off run. But then it stopped. The field was soggy, the cargo heavy, and it looked as though Johnny were stuck. Suddenly pilot Matthews came to a decision. He dumped all the cargo he had previously been carrying, and with the lightened plane, he cleared the trees at the edge of the field and got the man to a hospital in time.

Another Aviateca pilot, Dick Davis, will never forget the time he had two non-paying passengers aboard without his knowledge. Trouble was, they did not come on

Grassy clearings are the runways, and jungle huts the terminal buildings, for this venturesome air service. Barefooted passengers who have never seen a train or car nonchalantly unload their baggage at a way station



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the plane in the usual manner – they materialized in flight. Twins. Their Guatemalan mother thought there was something angelic about having them up in the blue sky like that, while the father gratefully named one of them Ricardo, after the pilot.

But even twins take second place to inanimate cargo in Guatemala. The government encourages commercial distributors to cover the whole country by offering flat air rates of seven cents a pound for luxury items and four cents for staple goods. Soap, movie films, safety razors, powdered milk, DDT, tires, oil, and wagon wheels often get priority over mere human air travelers.

If you were to drop around to Guatemala City's proud airport, Aurora, some 5 A. M., when the sun is edging over the nearby mountains, you would see native mechanics move sleepily about topping off gas tanks and tying down cargo. The array of variegated air freight, solemn passengers, and assorted animals might lead you to think a carnival was headed for the clouds.

Pythons, incidentally, are common passengers. Many native families keep a small species of harmless python around their huts, in order to ward off mice and other rodents, and take them along with them when they move. But the pythons, like most animal passengers, frequently get airsick and cause the pilots more trouble than the human air travelers.

In a land with few roadways but plenty of matted undergrowth and towering mountains, the airplane people are doing things that no other form of transport could do. They are making regular flights to Flores, for instance, almost daily. About 90 minutes by air from the capital, it would take two weeks and cost twice as much to get to Flores by land.

Guatemala, most populous of the Central American republics, is also rich in undeveloped natural resources. El Petén, the dense jungle area in the north, covers nearly a third of the entire country but has only one person per square mile. Many of these jungles have defied exploration. Only here and there do you find a chicle-gathering settlement where the Sapodilla tree is tapped for the basic ingredient of chewing gum. Into such virgin areas the pioneering American pilots bring their sky wagons laden with machinery, jeeps, building materials, and technicians. They are boosting a static 19th century way of life into a thriving and industrial 20th.

People, Products and Progress

Eight out of ten people in Guatemala go barefoot. Most of them live in the *templada* region, ranging from 3,000 to 8,000 feet in altitude, where the days are warm and the nights cool.

A passenger on an Aviateca plane could look out his window and see mountain slopes covered with green coffee trees. Sixty percent of this small republic's famous Arabica coffee is exported, much of it to North America. They have a virtual monopoly on chicle growing – and, again, we buy almost the whole output. As many as four million bunches of Guatemalan bananas are sent to the United States yearly. Other things that Aviateca's venturesome pilots are flying out of the interior include *cinchona* (quinine), sugar, timber, and pure sulphur produced by active volcanoes.

The young North Americans who enjoy zipping through clear tropic skies regret the fact there are only two paved runways in Guatemala. One of these is at the capital, 800 miles south of New Orleans. The other is at Puerto Barrios on the west coast. In most spots the landing strip is a grassy plateau, a stretch of level beach, or a postage-stamp clearing in the jungle. At Dos Lagunas, for instance, the strip can be used in one direction only and a pilot likes to wait for the wind to blow that one way. This often causes delays and close calls. Much of Guatemala, by the way, is uncharted.

When it rains, it rains buckets in this small, high country. The grassy fields get spongy. A pilot must know every danger spot like a Mississippi river man knows his reefs and shoals. During the dry season, drowsy cattle munch grass in the clearings, and before a pilot can land his plane, he frequently has to buzz the field to shoo the bovines away.

Some acute observers have said that the operations of Aviateca's crews and planes have accelerated development of the Guatemalan backwoods by 150 years. This is easy to believe when you see the faces of old Indians up near Poptun near the Mexican border.

It is near here that the republic is building an agricultural colony entirely sustained by airplane. Limestone, machines, seeds, implements, and farm specialists are all flown in. Near the site of this ambitious social experiment sits a tiny and ancient village that once saw the golden days of the Mayan Empire. Natives still talk Mayan dialect in the streets and visit the crumbling temples not far away.

When the shiny and noisy metal bird alights from the sky and lets out its cargo of bright new tools, jeeps, and other modern gadgets, these aborigines just sit in the sun and watch. Their faces show they have much in common with Buck Rogers – expressions of perplexed amazement at these unreal things and men, seemingly from another world.

ETC 23423

To the President

Spontaneous gifts pour into the White House almost daily, in a custom dating back to George Washington's time

By Mildred Diefenderfer

EVERY DAY, it seems, is Christmas at the White House. For, hardly does a 24-hour period pass during which at least one gift addressed to the President of the United States doesn't arrive at the famous mansion at 1600 Pennsylvania Avenue.

Probably no American is the recipient of more unsolicited offerings than the nation's Chief Executive, and whether it's a ceremonial garment from a remote African clan or a Bible from a church society back home, a majority of the gifts are presented to the President in person.

Last year, President Truman received over a thousand gifts (besides nearly two million personally-addressed messages). The volume of gifts was about twenty times as large as that received by Presidents Wilson, Harding or Coolidge.

The gifts poured into the White House from people in all walks of life all over the globe. But most of them, of course, came from Americans, individually and collectively.

Not all the gifts came from well-wishers, however. Some donors, like a disgruntled poultry farmer a cou-

Top, President Truman in 1946 receiving a new model Ford from Henry Ford II. Left, Boy Scouts from Wisconsin presenting a new trout fishing rod to President Coolidge

ETC 23424

A 1400-pound cheese was given to President Jackson by New York State residents. It was exhibited in several Eastern cities, and then cut up at a White House public reception (left). People hacked at the cheese for hours, leaving the President with next to none

Foodstuffs of all kinds are one of the most popular gifts to the President. Witness (right) this oversized Thanksgiving pie given President Taft some 36 years ago

A California hunter gave the bear chair (above) to President Johnson and the elk horn chair (below) to President Lincoln

President Hoover's 58th birthday cake was baked by the head baker of the S.S. Manhattan, which made its maiden voyage the same day

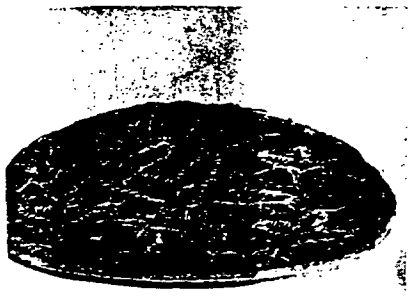
ple of years ago, used this means of calling the President's attention to their personal plight. This particular farmer shipped a crate of baby chicks to the White House to register his dismay in not being able to get feed for his brood during the shortage-plagued war years.

Although by far the majority of bestowals made upon Presidents have gone to our present Chief Executive and his immediate predecessor, the custom of giving gifts to the President dates back to the birth of the office.

Even before the White House was built, George Washington penned thank-you notes for apples, cheeses, Jerusalem artichokes, flower roots, seeds, and unidentified "salt water delicacies."

Another of Gen. Washington's treasures was a pair of Spanish swords. A century and a half later, swords from all corners of the earth were presented to the two men who occupied the White House during World War II.

Among Franklin D. Roosevelt's collection was a specially-designed Damascus steel sword in a diamond-studded scabbard and hilt. It was with the compliments of King Ibn Saud of Saudi Arabia. President Truman's gift sword array includes, among others, a kukri, or ceremonial sword, given him by the commanding general of Nepal.

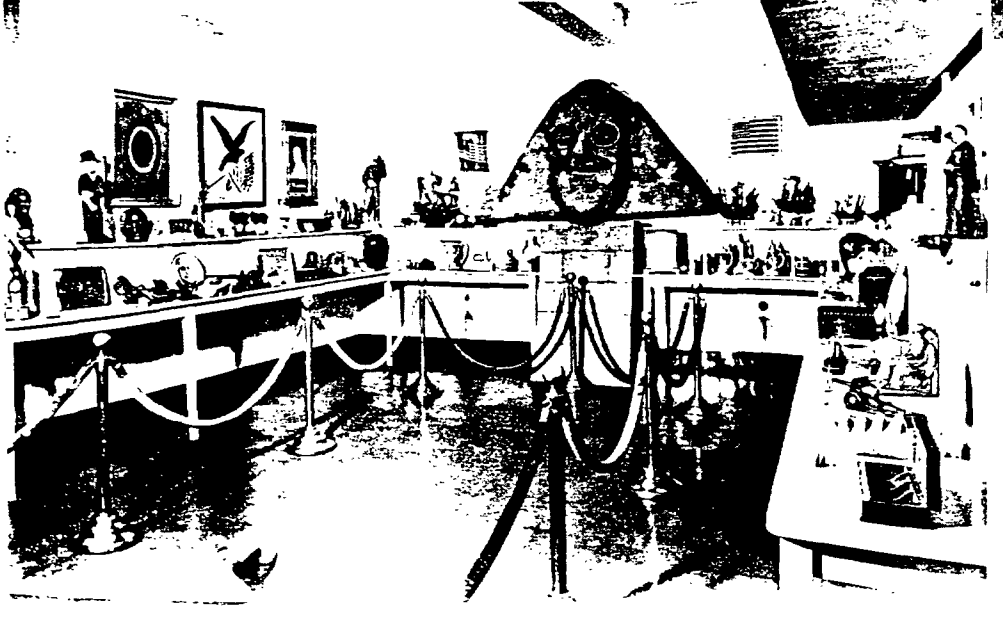


This model of the French battleship Richelieu was a wartime gift to President Roosevelt on behalf of the French people

But outranking swords as more popular gifts are foodstuffs and delicacies. Sixty-pound Pennsylvania cherry pies and 45-pound salmon, such as have been given Mr. Truman, are typical examples.

Of all the gifts that have come President Truman's way during his three years in the White House, however, probably none had such meaning as one presented him by the Sioux Nations of South Dakota back in September, 1945. The Sioux, it will be remembered, had joined in declaring war on the Japanese right after Pearl Harbor. Their gift to Mr. Truman was the pipe of peace which the tribal chiefs had just smoked to mark the end of the hostilities.

From a group of young Alabama farmers, President Truman received an Aberdeen Angus calf. The presentation took place on the White House lawn



The hundreds of odd gifts received by the late President Franklin D. Roosevelt are on public display at his Hyde Park, N. Y., estate. In the Oddities Room (left) may be seen such presents as German beer mugs and hand-carved clocks

Speak Up, Man!

By Pat Kelly

Supervisor of Announcers
National Broadcasting Company

You, too, can speak more easily, clearly and effectively — whether your audience is one or ten thousand people

HENRY JONES was what you would call a nice fellow, had a good job and money in the bank, and was well-liked in his community. He could always be counted upon to help out in any worthwhile cause, until the time he was asked to take the stump on behalf of a charity drive.

The way it happened, the citizens' welfare group asked Henry if he would make a few talks around town in order to help raise money for a new child care center.

Henry, of course, agreed. But though he knew his subject thoroughly and sincerely believed in the cause, Henry was something less than spectacular as a speaker. He hemmed and hawed on the rostrum, got stage fright and froze up – even though many of the people in each audience were his own friends and neighbors. The result? Henry's speeches brought in only nickels and dimes to the community chest, when dollar bills were needed.

The fourth group Henry addressed was a women's club. His wife was in the audience and was shocked when she heard his bumbling efforts. When they got home that night, Henry heard from his wife, but plenty.

"Heavens!" she cried, shaking her head. "If I'd closed my eyes today I'd never know that was *my* husband speaking up there." She looked at her spouse with concern. "Honestly, Henry, why don't you relax and just be yourself. You'd be much, much better."

Henry shrugged his shoulders. "Well – uh – I just seem to sort of get tied in knots when I'm talking to a bunch of people like that . . ."

"Yes, and that's not all," Mrs. Jones broke in. "The way you fidgeted! Didn't know what to do with your hands. And sometimes you mumbled just as though you had a mouthful of oatmeal, and then at the end, bang! you went like a house afire. Goodness! Those girls won't bite you!"

All in all, Henry had a pretty bad day. In some ways, it was a good deal his own fault.

You see, Henry Jones is not much different than a lot of us. When a crowd of eyes and ears are aimed at him, he becomes flustered and tries to recall what he learned in his high school elocution class. Or he apes the hand motions and speech inflections of a good speaker he saw one time at his Rotary lunch. But for Henry, somehow, these things do not quite come off – and for simple reason. Henry Jones, as a speaker, is straining to be something that Henry Jones as a person is *not*.

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Like our woeful Mr. Jones, many people have found that man is his own worst enemy. By mauling words, stumbling over "uhs" and "er-ahs," by lack of self-confidence, and by strait-jacketing their muscles, they cramp their own style.

But there's another side to this business of speaking. Nearly every person can, by his own efforts, improve his speaking ability. And, as has been proven time and again, surprising rewards and a pleasant deep satisfaction come to the man who can stand up and talk easily, clearly, and convincingly. This applies whether your audience is a political rally of ten thousand or just one person in an office.

Who are some common speech duffers among us?

Well, we all know the Hem'n Hawer. He is not too sure of what he wants to say, and jerkily bumbles through his speech while his listeners frown and yawn. There is the Guilty One, who talks quickly out of the side of his mouth and shifts his gaze about as if looking for a cop on the corner. Then we have the Parrot – he who looks hypnotized and talks mechanically as a phonograph to his audience while watching them with lack-lustre eyes. The Elocutionist dreams he is a second Billy Sunday, sweating more over his gymnastics than over the meaning of the words he speaks. There is also the Windmill, full of breeze and bluster; and the Know-It-All, the Patronizing Father, the Marathon Champ – the list is endless.

Perhaps you are not one of these. If you get that pleasing sensation of talking "with" instead of "at" people; if you are at ease with yourself and feel you are getting your ideas and beliefs over to them with no strain, then you may classify as the Happy Choice.

Here, in essence, lies the only reason we talk at all – to transfer our thoughts and feelings to the mind and heart of another human being. The better we do this, the better our chance for success every time we use our talking apparatus.

And we do use it often. Every businessman knows the value of speaking effectively. Salesmen must talk with conviction to every prospect. Parents talk to their children for instruction, for shaping their very lives. An employer uses his talk-ability when he speaks to employes, stimulating them to greater effort or explaining company policy. In casual social gatherings, you talk to amuse, to inform, to inquire, to praise.

Pat Kelly, the author of this article, instructs a class at the NBC Announcers School in the fine points of delivering a radio script most effectively

Study of speech will not overnight make you a "leader of men" nor will hordes of "friends" swarm around you. But if you *want* to improve the effectiveness of your talk, honest practice of better speech habits will help you develop your ideas and express them with clearness and strength. You may never become a Lincoln or a Barrymore, but you can become a more useful and respected citizen, business man, and personality. And, more important, you will be on better terms with yourself.

Most of us have trouble hearing our "outside" voice – the voice that others hear. When we talk, the sound tumbles around inside our skull and resonating bones so that we hear a confusing mixture of vibrations, echoes, and a distorted version of our spoken voice. For the uninitiated, it comes as a real shock to hear what they actually sound like on the outside.

Many speech coaches make their students speak into a paper cone or against a flat wall – thus, throwing some of the true speech back to the student's ears. Radio announcers have a simple trick which helps them hear themselves. They put the tips of the fingers just back of the ear with the palm facing close to the cheek. Try it and hear your voice "project" itself more. You'll sense when your tone is too monotonous

or your pronunciation is muddy.

Of course, a recording of your voice is perhaps your best analysis. Listening to your own voice on wax, you are likely to say, "Do I sound like THAT?" Every colloquial accent, slurred word, and whine or grumble will show up plain as day.

By these methods you can see for yourself if there is anything you feel needs changing in your speech machine. If there is, the job now is to take specific faults one at a time and put them in proper working order. Teachers and books may be of help, but the only final cure is up to you.

Here, briefly, are a few fundamentals that public speaking teachers always stress.

Number one, obviously, is your bodily health and bearing. Singers and speakers never perform too soon after a heavy meal. And, since speaking is a physical, as well as mental, technique, it is practical to be in top shape at all times. Stand and sit "high" so your spine is not hunched or caved-in. This will leave your chest cavity open and flexible and your throat passages relaxed.

While talking, you should breathe more deeply than usual. Think of a bagpipe or accordion – your diaphragm performs the same function: to supply a steady source of air for the sound valves. Breathe "into" your stomach. Note the way the filling "reservoir of air" in your diaphragm will press out the lower ribs. Control of breath is the most important single aspect in singing or speaking. Feel you have a constant supply – and replenish it often before you run out. Breathe often when speaking. In 'quick, out slow.

Forget "Stage Fright"

When you feel jittery or weak as you step out to face an audience, don't turn and run. Every good speaker gets "stage fright." Instead, take a few deep belly-breaths.

Above all, relax. A speaker "tied in knots" or stiff with fright may as well put a gag in his mouth. Besides, he makes his listeners feel the same way. Let your muscles go – not by sheer will power – but by thinking about what you want to say and how you are going to say it. It will also help to release any tension on your throat, tongue, or chest muscles. Waggle your jaw a few times. Yawn and feel those resonating chambers loosen up. Grin and pucker your lips to unparalyze your face muscles. Even a couple of knee bends will do wonders for your poise.

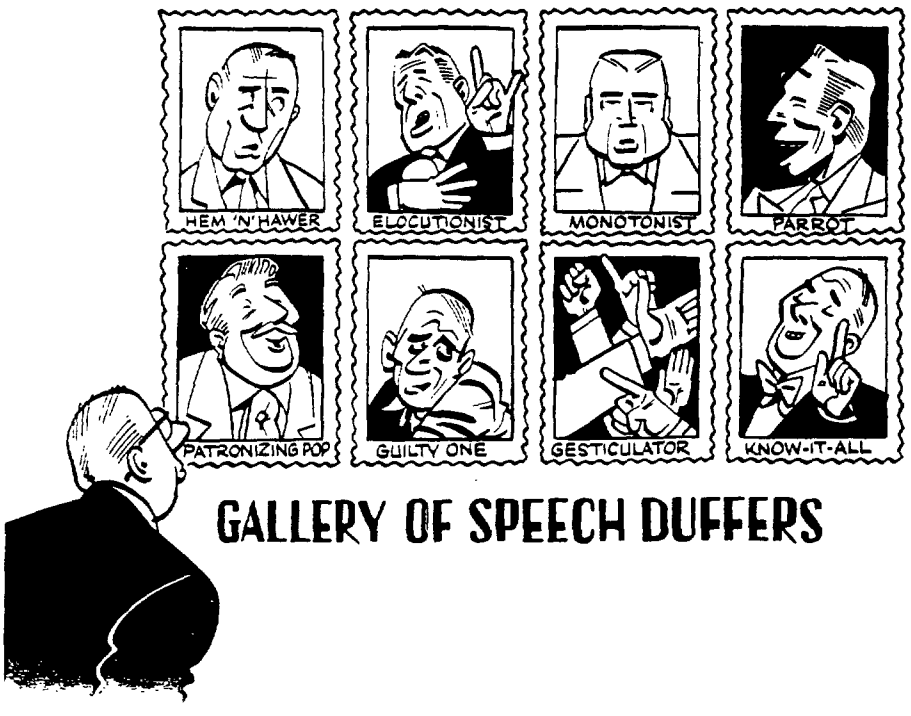
Three common reasons many people have difficulty being heard or understood are the "lazy tongue," the "rigid jaw," and the "wooden lips." These tools are meant to be used; move them freely when you talk. And when you speak, remember to pronounce the consonants correctly – enunciating them distinctly and yet lightly.

Form words high and forward in your mouth, not back in your gullet. Let your jawbone drop wide on vowels – and there's a vowel in every word. Forget about your throat. If your voice is supported by a full column of air from an active diaphragm, your vocal chords will take care of themselves. This is a sound practice in speaking or singing. Many well-known people of the stage and public life take singing lessons as a matter of course.

Try this little stunt. Pull in a quick breath as though you were going to yell "Hey!" But don't yell – let out that air pressure on a long-drawn "ah," and note how the breath literally spills up from below. Your voice should vibrate the front bone structure or "mask" of your face when you do this. Or grunt vigorously on "Hmm." Feel where your voice is "placed" in the roof of your mouth – not in your nose or throat. This is where it should be.

These, then, are the first basic steps toward easier, more powerful speech – breathe deeply, keep an open throat, a loose flexible mouth and tongue, and talk "up and over" in the roof of the mouth. When you find elements that will help your speech, practice them over and over again. Make them habits and make them natural. When listeners suspect you are using conscious

(Continued on Page 22)



GALLERY OF SPEECH DUFFERS

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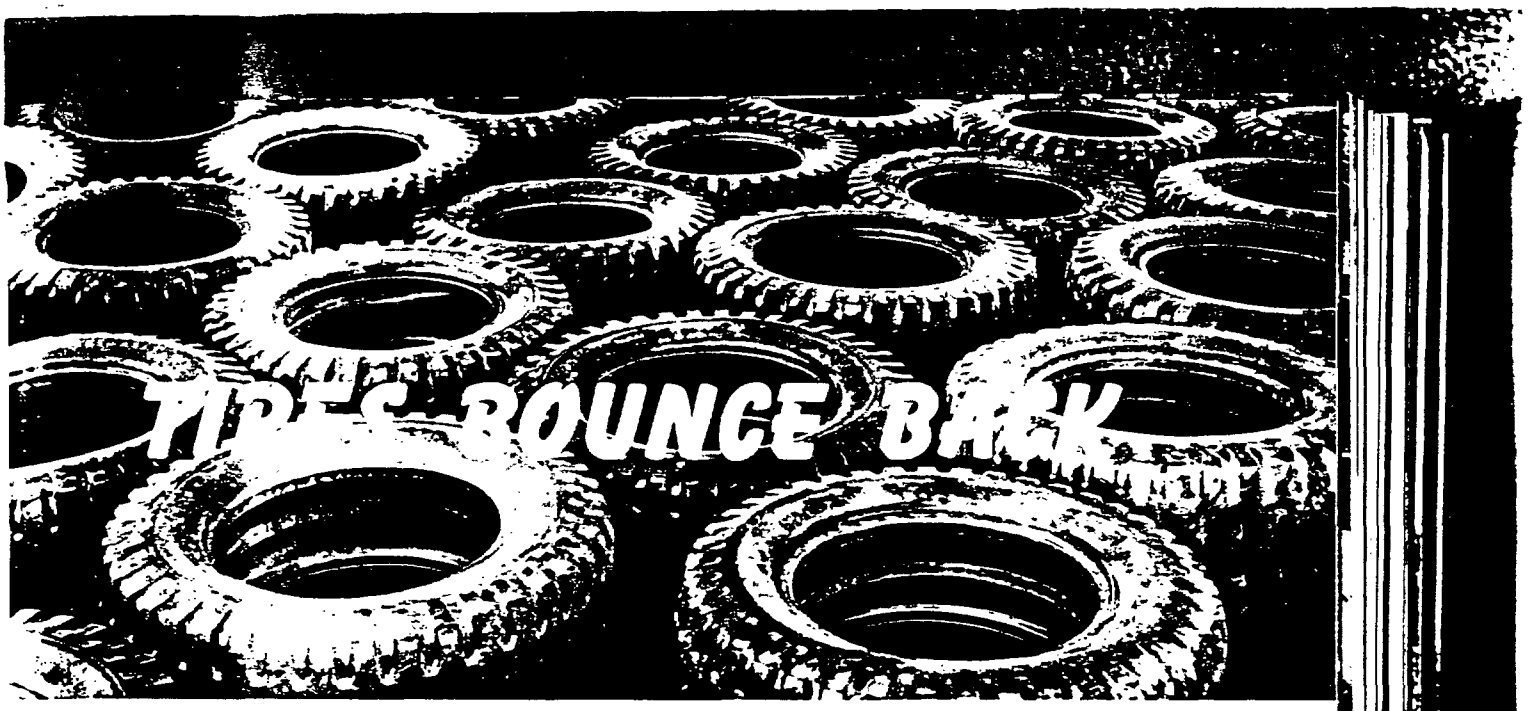


TIRES BOUNCE BACK

While many problems remain, the tire industry in 1947 set a new record and is now introducing many new improvements

IT MAY STILL be difficult for the average car owner to obtain a new model as quickly as he would like, but tires – after six years in short supply – are back on the market in abundance.

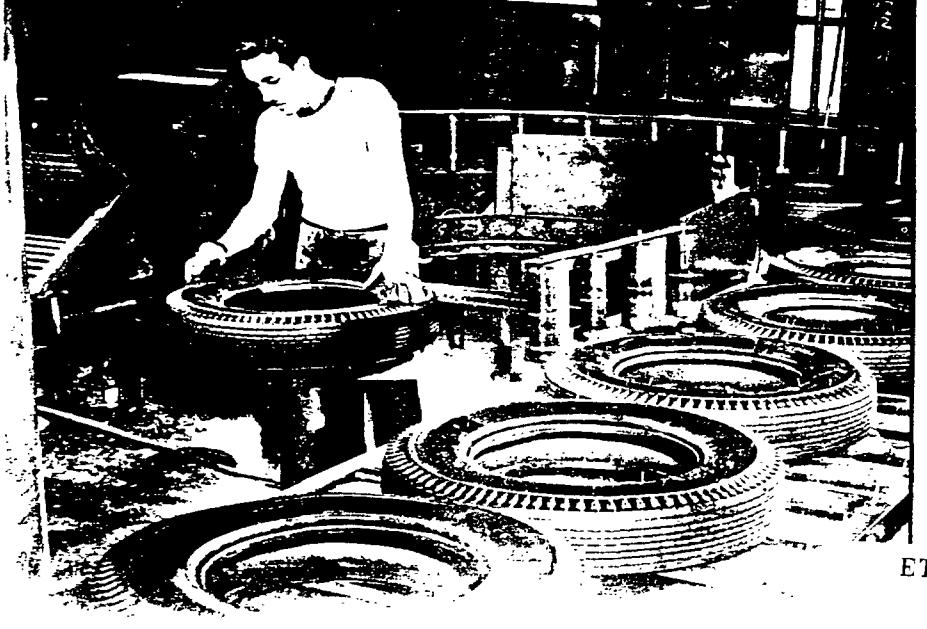
Last year, the industry turned out around 95 million tires and 79 million tubes, establishing an all-time record in both categories. This meant not only equipping new model cars, trucks, and buses, as they came off the assembly lines, but also replenishing the needs of cars on the road.

This is not to say, however, that the industry is entirely out of the woods. For one thing, natural rubber is not yet available in sufficient quantities and at prices reasonable enough to meet the industry's requirements. Meanwhile, the industry continues to operate under government restrictions requiring the use of certain percentages of synthetic. And overshadowing everything else is the future of the nation's synthetic rubber program.

With natural rubber supply still below normal, industry spokesmen agree that only through the availability of synthetic rubber was it possible to achieve and exceed production goals in 1947.

The use of a minimum percentage of synthetic in tires and tubes is required by law. In view of this, the question has been raised as to whether the tire manufacturers will continue to use synthetic to any great extent when natural rubber is again abundant and government restrictions have been removed. The answer depends on many contingencies, including the comparative price of natural and synthetic, developments in the research laboratories, and long-term legislation governing the stockpiling of natural rubber and the production and use of synthetic rubber. However, it is significant to note that the voluntary consumption of synthetic during 1947 was far in excess of the minimum required by law, according to statistics released by the Rubber Manufacturers Association. This may indicate a trend, although tire spokesmen are not in

Car, truck, and bus tires rolling off the production lines last year not only exceeded the year's goal, but broke all records



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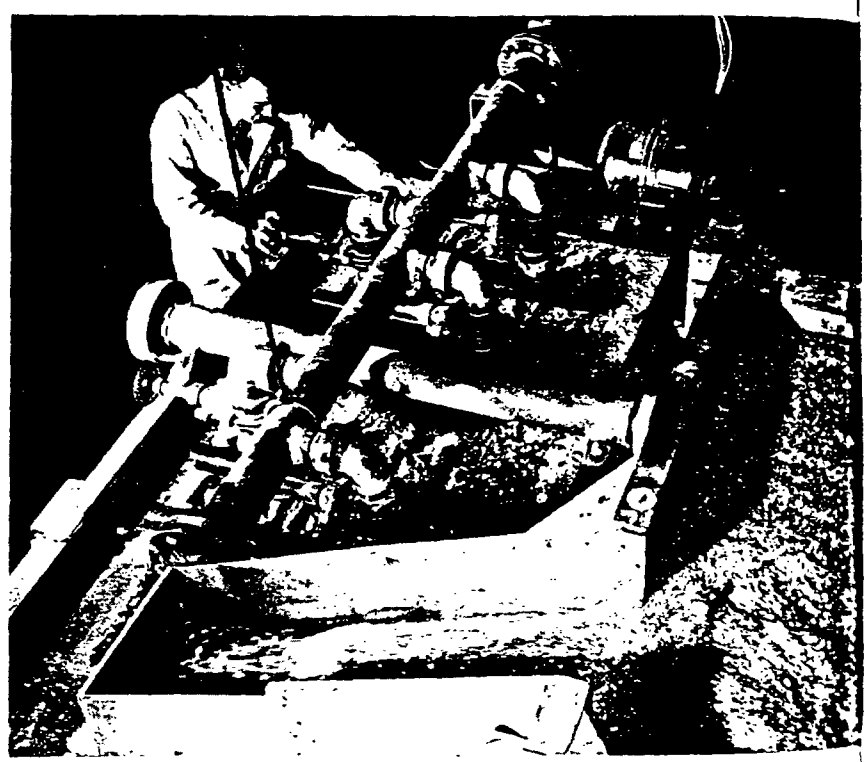


Supplies of natural rubber from plantations in Liberia (top), the East Indies and elsewhere are still below tire industry requirements. Synthetic rubber, of which an intermediate manufacturing step is shown here (bottom), made possible the outstanding production record for tires and tubes during 1947

agreement on the subject. They agree, however, that the really tough problems concerning synthetic have been solved and that synthetic very definitely contains qualities which natural rubber lacks. For that reason, among others, many manufacturers are of the opinion that synthetic rubber will continue to be used in future tires, even after natural rubber again is plentiful.

A Place for Each

The consensus seems to be that both natural and synthetic rubber have and will continue to have a place in the tire picture. At a recent congressional committee hearing, the industry expressed confidence in the future of synthetic and urged retention of general-purpose synthetic rubber capacity equal to 600,000 tons a year, the amount produced in 1947 by American synthetic plants. Approximately -- per cent of this total was used last year together with some natural rubber to produce the industry's 93 million tires and 79 million tubes. And most of these tires and tubes are regarded by the industry as superior to prewar all-natural rubber products.

Be that as it may, the rubber industry seems to be ready to move in any direction that will result in the continued improvement of motoring.

Tire experts pronounce today's combination synthetic-natural rubber tires to be as advanced as scientific research and field testing can make them. It has been said that these tires differ from the tires of forty years ago as much as an automobile then and now.

The tire industry freely admits that the first synthetic tires were poor substitutes for those made of natural rubber. With nine-tenths of its basic raw material lost after Pearl Harbor, the industry was forced not only to produce a substitute raw material "overnight" but also to learn how to make satisfactory tires out of it. The first tires to come out of this rapid change-over were bound to be far from perfection. But six years of experience, research, and testing have brought tremendous progress.

Tests indicate that today's tires do not wear out as quickly or crack, overheat, and tear apart as they did

in 1942. Skid-proof qualities have been immeasurably improved, also. Today's best synthetic tire, using a combination of synthetic and natural rubber with rayon cord, is said to wear as well or even better than pre-war tires made entirely of natural rubber. Through construction changes and improvements, both carcass and tread have been made stronger and safer than ever before. Today's tires, industry spokesmen say, are lighter, cooler running and more resistant to the harmful effects of heat, cold, sunlight, cuts, bruises and chemicals. In addition, they can safely take several retreads.

Truck and bus tires, which undergo heavier wear than passenger car tires, contain a higher percentage of natural rubber, because natural rubber does not "heat up" as quickly as synthetic. Tire men point out, however, that heat is the major cause for all truck tire failure whether the tires are natural or synthetic. By the use of improved cotton, rayon and nylon cord, the performance and safety of these tires have been immeasurably improved.

New Low-Pressure Tire

One of the most recent trends in the tire industry is toward the so-called low-pressure tire, which combines more air volume and less air pressure than usual. Instead of "bouncing" over an object, the low-pressure tire is reputed to "roll" over obstructions, absorbing more road shocks than the ordinary passenger tire. Many new model cars, it is predicted, will carry the low-pressure tire as original equipment. It is also believed that the low-pressure principle will eventually be incorporated in a wider range of tires.

"Butyl" tubes — first introduced to the general public in 1940 — continue to be popular. These tubes, tests show, hold air [illegible] times better than a natural rubber tube and perform much better after being punctured. Research on tube construction is keeping pace with that on tires themselves, and some industry spokesmen predict outstanding developments in this field in the near future.

Tubeless Tire Introduced

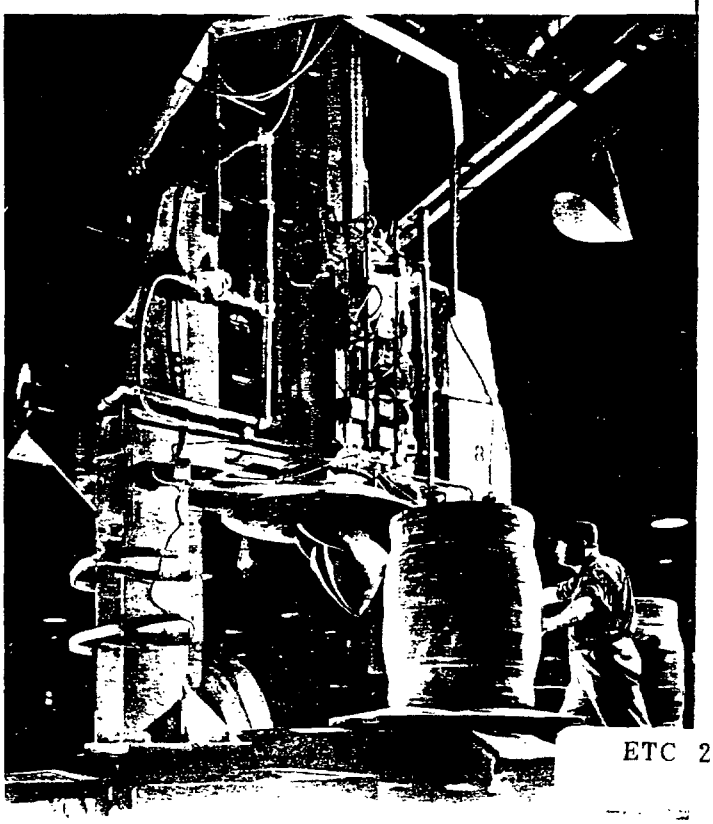
Other developments, too, are coming along. The long-awaited tubeless tire was recently introduced. This new-principle tire is reported to reduce the possibility of blow-out to a minimum. Research on the use of wire cord to replace textiles has long been under way; several companies have reported successful tests of "wire" tires. Until recently, the major disadvantage of wire cord has been its low fatigue life, especially in heavy-duty tires. Rubber technicians are confident that a solution to this problem is not far off.

Glass fabrics, which show excellent heat resistance and tensile strength, are being tested hopefully. Inelasticity, their principal disadvantage, is being successfully overcome.

Research continues in the newer synthetic fibers, such as rayon and nylon, which show better resistance to bruises and blowouts and are longer wearing than conventional tire fabrics.

Through research, producers are continuing to make cotton more uniform, stronger, more heat-resistant and less expensive than in the past. Cotton fabrics, incidentally, are still widely used in passenger and light truck tires, and have not been "counted out" of the tire picture by any means.

In sum, new and varied uses and combinations of synthetic as well as natural rubber can be expected, industry spokesmen say. Whereas it was once predicting a "100,000-mile" tire, the industry has raised its sights much higher. "Why not a million-mile tire?" an informed tire man asked recently. That statement seems to be representative of tire industry thinking today.



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Heavy duty tires, shown leaving the building room, have been made stronger and safer by the use of rayon, nylon and improved cotton

Under-Water Highways

Whether it's deepening a river channel, digging a canal, or helping to control floods, it's all part of the interesting work done by dredges

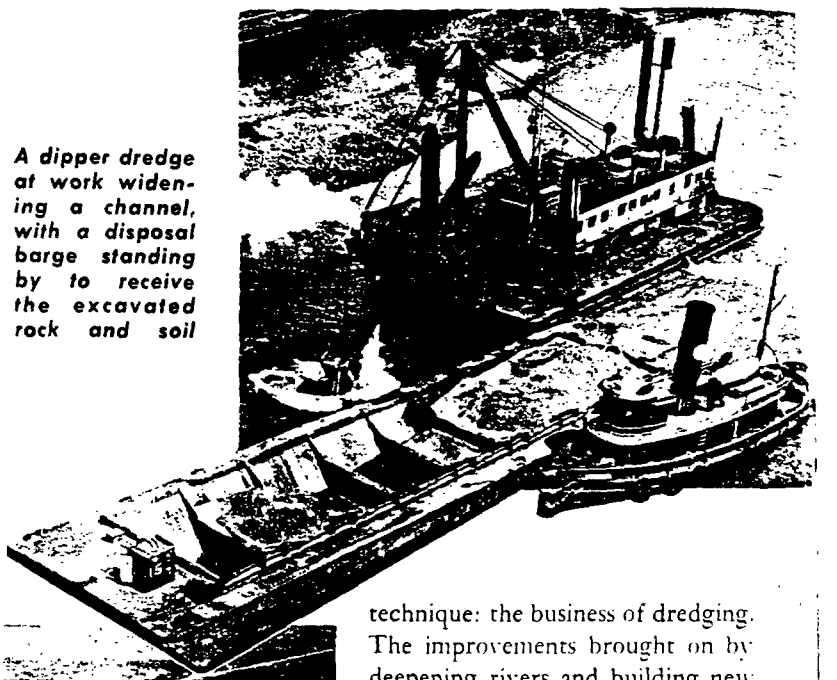
IT'S EASY TO SEE the benefits to a community or a region when a new industrial plant is erected, a bridge is put across a river, a modern highway is built.

But not so readily apparent are the benefits created when rivers and harbors are improved. This includes the deepening of channels to insure a safe passage for ships, the building of new canals to expedite the flow of water-borne commerce, and such things as straightening out river bends and building floodways, in order to lessen the danger and damage of floods.

Yet, without such necessary waterway projects, consider what might happen to that new industrial plant, highway and bridge.

The plant, for instance, might not be built for want of a navigable waterway, near at hand, for obtaining its raw materials at low cost and shipping its finished products out again. Or, with no man-made means of controlling it, a rampaging river could inundate the highway, blocking all movement of traffic, and even topple the bridge in its fury.

This underscores the importance of a highly interesting industrial technique: the business of dredging. The improvements brought on by deepening rivers and building new waterways may not always be visible to the naked eye, but they are still very tangible and real.



A dipper dredge at work widening a channel, with a disposal barge standing by to receive the excavated rock and soil

Houston, Texas, witnessed a tremendous change when its famous Ship Channel was dredged, connecting that lusty city with the Gulf Coast over 50 miles away — and thence to the rest of the world. Once a landlocked city, Houston today is

Houston, Texas — whose turning basin is seen here — became a major seaport after its famous ship channel was built

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one of the busiest saltwater ports in the country.

People who live in Stockton, California, can also testify to the value of dredging improvements. Time was when this city was as inland as if it were in the center of an Illinois prairie. Today, Stockton is also a thriving port for deep-sea commerce, a transformation made possible by digging a 30-foot channel to the Pacific Ocean, 76 miles away.

In like manner, ports throughout the entire country owe their growth and importance, in large measure, to improvements made by dredging. In fact, nearly every navigable stretch of water in the country, whether it be a river, harbor, canal or seaway, had to be dredged before ships and vessels could make use of it.

Interestingly enough, besides cutting through places where water could freely travel, dredging is also responsible for creating a number of dry land areas. Places like Miami Beach, the Davis Isles in Tampa Bay, and the huge Idlewild Airport in New York City were all actually built up with underwater soil brought in by dredges.

Today, the United States is making greater use of its inland and coastal water routes than ever before. Freighters and passenger liners enter and leave its coastal seaports by deepwater channels made navigable by dredges. In addition, the vast network of internal and Great Lakes water routes, developed and improved by dredging, carries more tonnage more miles than any other waterway system.

With nearly half the U. S. merchant fleet consisting of tankers alone, navigable channels and berths along the seacoasts are essential to the oil industry. So, too, are the inland waterways, which the industry uses extensively.

Transporting oil by water began in the 1860's, when the first Pennsylvania wells began flowing. Oil was moved on flatboats which were steered by poles and floated with the current from the upper reaches of the Allegheny river to the Pittsburgh area. Since then, with the creative dredging of deeper channels, water transport of oil has become an outstanding factor in its distribution.

Digging cut-offs, such as this one, along the Mississippi has done much to lessen the danger of floods

Size of Inland Waterways

There are now more than 26,000 miles of navigable water in the United States, one-third of which has a depth of nine feet or more. Modern river towboats of 2,400 horsepower can push along twelve 9,000-barrel barges at a clip, making a total capacity for one tow of 108,000 barrels of petroleum products.

A good deal of dredging, as anyone who lives in a major port can tell you, takes place in harbors and seaways where shifting tides and sand erosion keep dredges constantly on the go. It is seldom you can find such a thing as a "natural" harbor or docksite. Though a body of water may look ideal when seen from above [illegible] under-the-surface terrain may [illegible] veritable Grand Canyon, with all sorts of hull ripping peaks, [illegible] boulders, and hallow plateau

That [illegible]by, in New York Harbor, for instance, sandy shoals and rocky [illegible] had to be cleared out by dredg[illegible] before deep-draft navigation [illegible] possible. It was only 15 years ago [illegible] the giant *U. S. Colorado* [illegible] badly damaged when it went aground on a submerged ridge called [illegible]ood Reef, within sight of the [illegible] of Liberty. Boston and other [illegible] in the world's busiest seaports [illegible] been blasted and dredged [illegible] existence. Almost every pier and [illegible] of that frin[illegible] Manhattan [illegible]obile, Baltimore or Boston [illegible] matter [illegible] originally [illegible] rous sloping coastline that had [illegible] excavated [illegible] deepened [illegible] ship could [illegible] into a comfor[illegible] berth.

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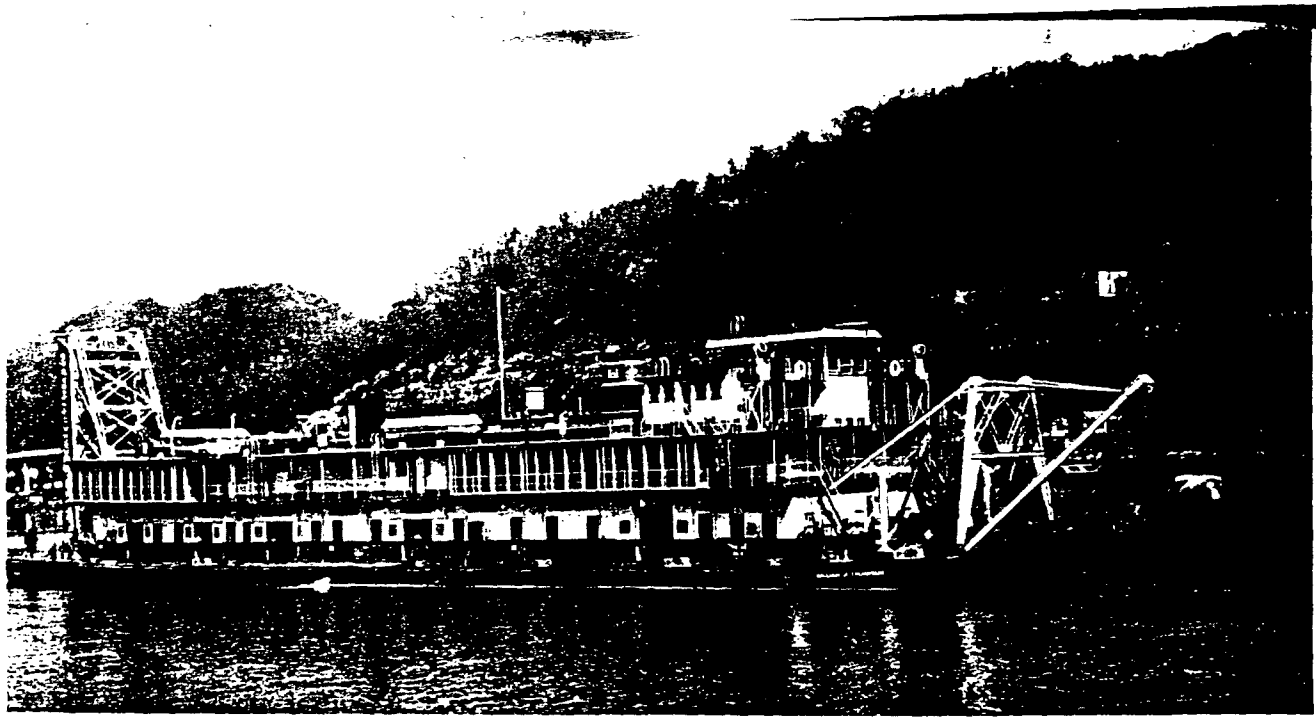

A government-owned hydraulic dredge. Its sharp rotor blades (right) cut loose the underwater material, which is then drawn up by suction and piped to a disposal area

of the millions of tons of sediment and silt that constantly collect.

Dredges, too, play a significant role in flood control work. Here these maritime jacks-of-all-trades do such things as helping to build levees, on the one hand, and digging river cut-offs on the other. And as one interesting sideline, dredges are even used in the swamplands and bayous of Louisiana and Texas, where they figure in oil operations by preparing the sites for drilling rigs.

Almost all dredges are similar in general appearance. Afloat in a channel, a dredge looks very much like an overgrown two-story houseboat, with its slab sides topped by a flat roof. Yet, despite their ordinary appearance, they are expensive pieces of equipment, some of them costing a million dollars and more apiece. In addition, the necessary tugs, scows and other floating equipment that assist in a dredging operation also entail a substantial investment.

The nose, or business end, of a dredge is its distinguishing feature and the source of its nickname. Basically, there are four types of dredges. One is the hydraulic dredge, which works on a suction principle. Lowering a huge pipe down to a river bottom, sharp rotor blades around the pipe opening bite into the bed of a stream. A centrifugal pump sucks the loosened material up through the pipe and pumps it through a pipeline to a disposal area.

Move Earth Efficiently

Hydraulic dredges, it is claimed, can move more earth per hour, and at lower cost, than any other type of equipment. Operating with pumps of 5,000 to 6,000 hp, and with suction and discharge lines ranging from 12 to 30 inches in diameter, these dredges have been known to pump dredged material for distances of 15,000 to 20,000 feet – discharging it in deep water or behind prepared levees. Among other things, these hydraulic dredges are used when wasteland is to be filled in. Several airports were built in this manner, as was part of the site of the San Francisco World's Fair.

A special kind of hydraulic dredge is the self-propelled hopper. This dredge not only draws up waste material from a streambed, but deposits the fill in its hold, later taking the load out to sea for dumping. It is used when no convenient disposal area is available at the excavation site. One such hopper dredge has been kept busy for years in New York Harbor, removing shoals and sediment and sewage like a vacuum cleaner working underwater. What will be the world's largest hopper dredge is now under construction. Being built at a cost of nine million dollars, the vessel will be 526 feet long and will have a fill capacity of 8,000 cubic yards of material.

When harder material is to be removed – material that has to be drilled and blasted – a dipper dredge comes into play. Literally a power shovel on a ship's hull, this dredge can reach down and forward for a distance of up to 90 feet, depending upon the length of its "dipper stick," and dump each load of fill in a barge alongside. Dredges of this type did yeoman service during the war, ex-

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cavating sites for graving docks used in building vessels.

For the deepest kind of underwater digging, a bucket dredge is used. Although it doesn't compare in capacity with other kinds of dredges, it can nevertheless go further down into deep water than any other. This was the only kind of dredge that could dig the deep trench, at the bottom of the Detroit river, in which the underwater vehicular tunnel between Detroit and Windsor, Ont., now rests.

Bucket dredges, whose scoops are attached to long cables, take their name from the kind of bucket used. One of these is a clamshell, so called because its two sides clamp together in the manner of a clam. Another is an orange peel, which means a bucket with four sides, or lips, that come together when it takes a bite out of a river bottom.

Still another kind of dredge is the ladder dredge. But instead of clearing shipping lanes, it is used almost entirely in mining gold and precious metals in the Far West and along the river beds of Alaska. This dredge has an endless chain of iron buckets churning up the bottom of a stream. The buckets dump the gravel and mud into a hopper where it is processed and the metal recovered.

Most of the cost of improving waterways, which includes dredging, has been borne by the federal government since 1822, when it authorized the expenditure of $5,30 for pulling snags out of a river. Two years later, Chief Justice Marshall ruled that water navigation was of national concern, and Congress spent $25,842 to remove treacherous bars from the Ohio river.

For the present fiscal year, Congress has authorized the expenditure of over $117 million for improving rivers and harbors, of which more than half is being spent on dredging.

In addition, another $298 million has been allotted for flood control work, in which dredging also figures. For the fiscal year beginning July 1, President Truman has submitted a budgetary request of $160 million for maintaining and improving rivers and harbors and $381 million for general flood control.

The money spent on dredging goes to pay for the work performed by the U. S. Army Engineers and some 100 private contractors.

Work of Army Engineers

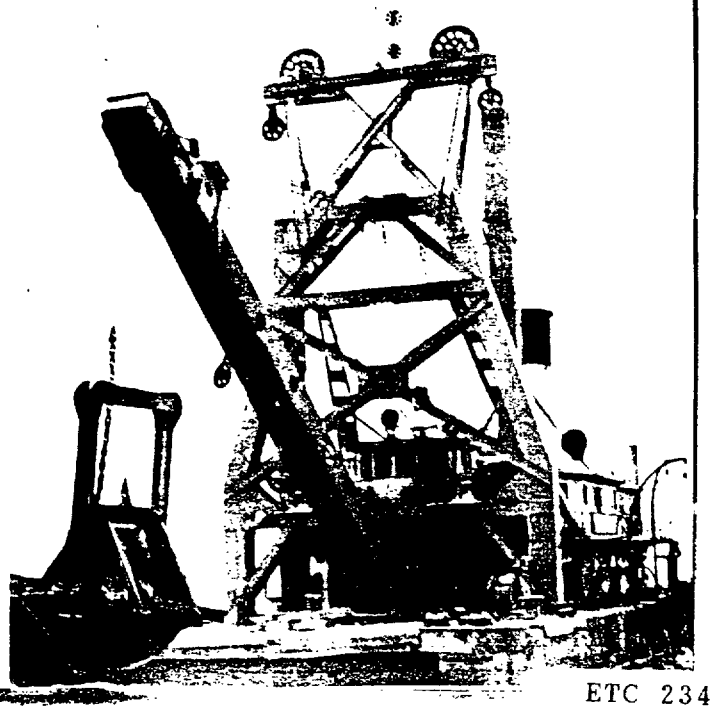
The Army Engineers supervise the development and improvement of all federal waterways. They also do an estimated one-third of all new work undertaken, and the greater part of the work of maintenance, which takes in such things as keeping harbors and ship lanes cleared of sediment and holding the Panama and other canals to a safe depth. The Army Engineers operate a large dredging fleet which numbers many hydraulic suction dredges in its ranks.

The private companies range all the way from small firms owning a single dredge on up to nationwide enterprises operating whole fleets of dredging equipment. Some firms are specialists, handling only hydraulic or dipper work, for example. Others are equipped to do anything that comes their way.

As much as has been accomplished through the construction of new waterways, much more remains to be done. Among the projects which have been authorized are the Florida Barge Canal and the Sacramento Deep Water Ship Canal. Funds for these projects, however, have not yet been appropriated.

In addition, other projects are in the planning or discussion stage. These include the proposed deep water canal from New Orleans to the Gulf, improvements to the Panama Canal or the construction of an alternate route, and the proposed St. Lawrence seaway which came up for Congressional action again this session.

When, as and if these new projects come into being, dredging men say, they will contribute to the country's welfare through improved water transportation facilities.



A bucket dredge in action. Dredges of this kind are used for the deepest kind of underwater work

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SPEAK UP, MAN!

(Continued from Page 14)

"tricks" or voice techniques, they may forget what you have to say and watch your antics instead.

One way to practice your talk is to stand in front of a mirror and critically watch your tongue, lips, and facial expressions. Are they flexible, or strained? Is your face pleasant and assured? Does your voice carry easily across the room with no sense of yelling? Are you conversational, or are you ranting on a soapbox? Read aloud to yourself or to a discerning friend. Your family might not be too objective about it.

Success breeds success – and it's a wonderful feeling. When you catch on to the ideas of better speech, make use of them at every opportunity – at club or lodge meetings, in office planning sessions, social groups, in any of your everyday situations. At the beginning, if you falter a bit, don't crawl back in a shell. Just pause and relax, concentrate on what you want to say, then go ahead to the next step. It is a gradual process, and often, it is a slow but solid growth.

A wise tip one radio network gives to announcers can apply to any of us. "The voice itself is not of prime importance," it says. "The intelligence of the announcer is the fundamental requisite. Except where a script calls for another interpretation, he should speak as an educated American, familiar with various parts of the country, sincere and natural, a man with something to say worth listening to."

In any speech — whether a casual talk with an employe or a speech at a banquet — keep your listener in mind

Let us suppose you have a date to speak before a certain club. It is but common sense to consider some steps in your presentation before you go.

First, of course, you must know the type of people who will hear you; knowing them, you will do a better job on the words and word-pictures you use. You should also have in mind what reaction you wish to create in those people's minds.

Now with purpose and people defined, gather the material and thought for the speech. Then trim this down to essentials, and outline your talk as briefly and clearly as you can. Some of our best speakers always use written outlines, even for short talks.

Whether your listeners are college professors or ordinary folk, remember that plain everyday words and phrasings are always best. Say things simply and directly. Lincoln did. So did Shakespeare.

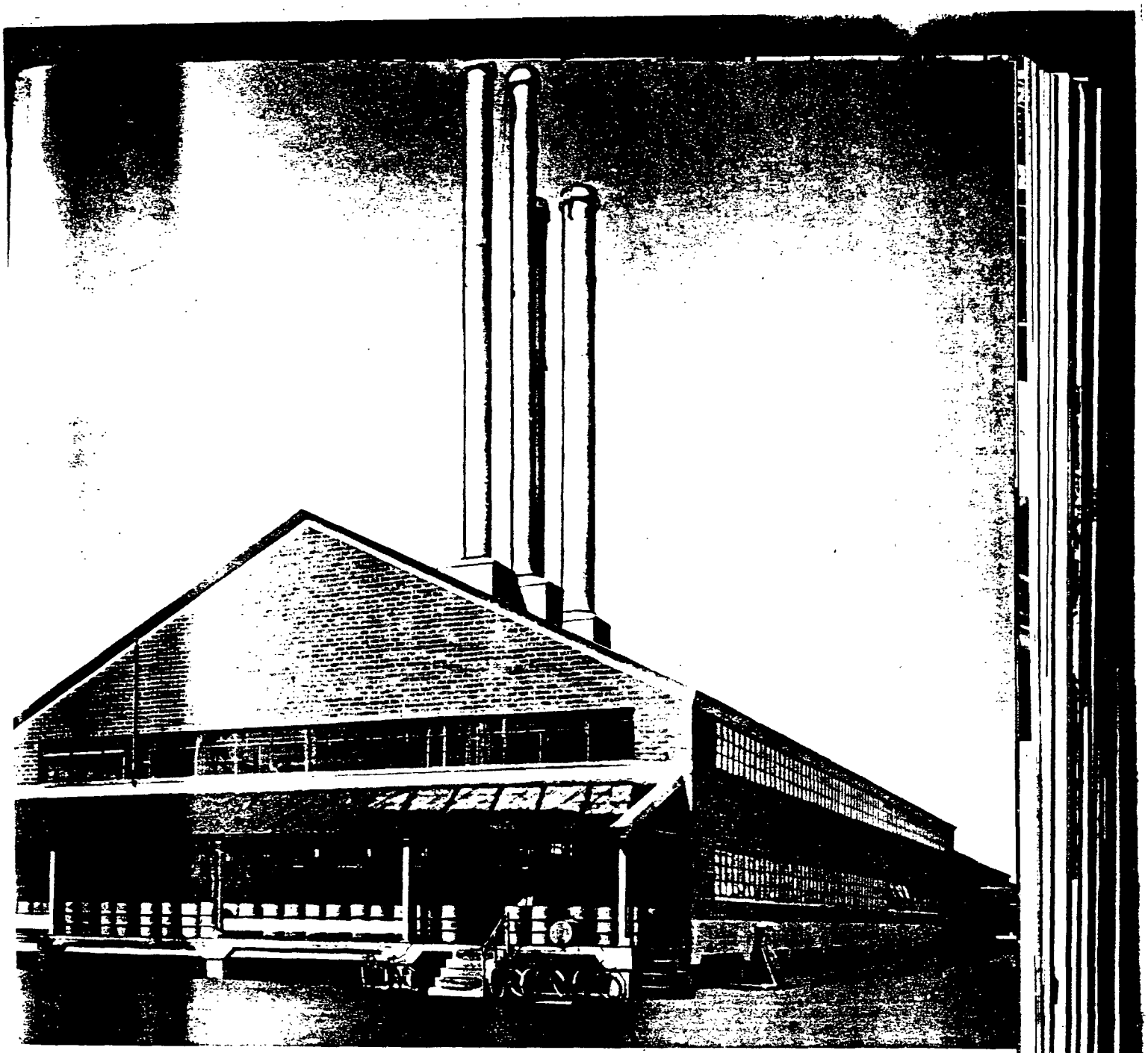
Make your sentences about 8 to 17 words each in length. This will prevent you from running out of breath when you talk – and help your thoughts to sink into your listeners' minds.

There are speeches and speeches. In any speech – a phone call, a pep talk to employes, a thank-you speech at a banquet, or just a casual talk with an acquaintance – remember to keep your listener in mind. Watch his, or their, eyes and faces. See if their expression shows that you are really communicating – getting your thoughts and ideas across with conviction.

Now, let us be up and doing. You feel sure you can speak a little better than you do now; you are confident even a small improvement will flood you with a buoyant sensation that makes you glad to be alive. So –

Take a stomach-full of air. Relax. Look with a smile at your listener. Float your voice high in your mouth on a mountain of air. Get up and speak well, of, and for yourself.

OUR PICTURES . . . Pages 6, 9, illustrations by Harold Newman; Pages 9, 10 (bottom right), 11 (right, top and center), Press Association; Page 10 (top), Bettman Archive; Pages 10 (insert and bottom left), 11 (top left), Culver Service; Page 11 (bottom), Wide World; Pages 12-14, 22, illustrations by Rodlow Willard; Page 13, courtesy National Broadcasting Co.; Page 15 (top), courtesy Rubber Manufacturers Association; Pages 15 (bottom), 16 (bottom), courtesy United States Rubber Co.; Pages 16 (top), 17, courtesy Building America; Pages 18 (top), 19, 21, courtesy Arundel Corp.; Page 18 (bottom), courtesy Houston Chamber of Commerce; Page 20, courtesy Marine News; Page 22, A. Devaney, Inc.



NEW DRUMMING PLANT AT BATON ROUGE

Pictured above is the new drumming plant at Ethyl's manufacturing plant at Baton Rouge, Louisiana, which recently went into operation. The new unit is designed to handle drum shipments of finished "Ethyl" anti-knock compound, supplementing the shipments made from the plant in tank car quantities.

After all the ingredients of "Ethyl" fluid have been blended, in the final manufacturing step, the finished fluid destined for drum shipment is transferred from the blending plant to the drumming plant. Filled drums are loaded into box cars at the left, or west, side of the plant.

Besides its filling and weighing equipment, the new drumming plant also has facilities for inspecting and servicing drums. It represents part of a program undertaken last year by Ethyl Corporation to achieve still greater flexibility of operations in meeting the requirements of customer companies.

ETC 23438

*Scientific data supplied by American Museum of Natural History, N. Y.

When you go to the zoo, the "TRADE-MARKS" OF NATURE

identify the "big cats" you see

Black spots on a yellow background form the unmistakable markings of the **LEOPARD.**

A bobbed tail and the characteristically tufted ears make it easy to recognize the **LYNX.**

When you buy gasoline...the TRADE-MARK "ETHYL"

identifies gasoline stepped up with "Ethyl" antiknock fluid

A streamlined body clearly identifies the **CHEETAH** *—the fastest animal on four feet.*

To get the most mileage from your car, use high quality gasoline improved with "Ethyl" antiknock fluid and have your motor service man tune up your engine to take full advantage of its higher quality.

In these days when the oil industry is working night and day to keep up with the demand for gasoline, you can help conserve gasoline by driving only when necessary and avoiding long trips. Don't drive at high speeds, make "jack rabbit" starts or let your engine "idle" when parked. Have your car serviced regularly and keep tires properly inflated. *Ethyl Corporation, N. Y. —makers of "Ethyl" antiknock compound.*

ETC 23439

ETHYL NEWS

APRIL ★ 1948

ETC 23440

IN THE

ETHYL NEWS

APRIL 1948

Robert W. Adams, who has been a gasoline testing chemist for Ethyl Corporation for 18 years, has been promoted to the position of branch manager of the company's gasoline testing laboratory at San Bernardino, California. He succeeds Charles A. Rankin, who has been transferred to the gasoline testing laboratory in Tulsa, Oklahoma, as branch manager.

Mr. Adams, a native of Ohio and graduate of Ohio Northern University, joined Ethyl Corporation in 1930 as a chemist in the gasoline testing laboratory in Detroit, Michigan. Eight years later he was transferred to the gasoline testing laboratory in San Bernardino where he has served for the past ten years.

In Tulsa, Mr. Rankin will succeed William C. Ludt, who has been transferred to the testing laboratory at North Kansas City, Missouri, as branch manager.

Ethyl Corporation maintains gasoline testing laboratories also in Yonkers, New York, where Fred P. Robinson is branch manager, and at Baton Rouge, Louisiana, where Tucker E. Dawson is in charge.

The five laboratories, supervised by John Clifford Pope, serve oil refiners by regularly testing and analyzing gasoline samples from all parts of the country and providing consulting facilities on knock testing and related problems.

CARS AROUND THE CORNER 3

New model automobiles hold a double meaning for the public this year. Not only are motorists looking forward to a greater output of vehicles, but present and forthcoming models incorporate many new changes and improvements for added driving comfort and efficiency.

DIAMONDS IN THE ROUGH 8

They don't show up in the baseball statistics, but many a ball game has been won — not by hitting or pitching — but by the verbal barbs thrown at opposing players.

ANOTHER ISTHMIAN CANAL? 14

The Panama Canal is the only waterway that was ever built across Central America — but it is not the only route that was ever considered. Today, amid plans to "do something" about improving the Canal, the age-old question of an alternate route has been revived.

POCKETFUL OF MILES 18

Road maps, of which some 150 million copies are distributed annually, provide motorists with the most helpful and comprehensive information that modern cartography can produce.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Julian C. Gonzalez, secretary

ETC 23441

Cars Around The Corner

Besides introducing many new models and improvements, the auto industry this year is shooting for a new production record

IN DETROIT THIS MONTH it's still an even bet that the automotive industry can and will make this the most productive of all its 52 years of automobile manufacture.

Because of first quarter losses in production due to unexpected plant shutdowns, the chances of surpassing 1929's alltime peak output of 5,358,000 vehicles are slimmer than they were at the beginning of the year. But optimism still prevails, and the feeling is that 1948 production, if not a new mark, won't be far off the record set almost two decades ago.

Considering that strikes and operating conditions are still far from normal, the industry's task is a herculean one. Setting an alltime production standard will require the manufacture of some 5½ million passenger cars, trucks, and buses. More than four million of these units will be pleasure cars, if the bull's-eye in the production target is hit.

Admittedly, the industry has the capacity to produce 25% more than last year's volume of 3,558,000 passenger cars. But shortages and other conditions over which manufacturers have no control undoubtedly will limit output well below this potential. The 1947 passenger car production was 65% over that of the previous year and was exceeded only in two other peacetime years, 1929 and 1937. With fingers crossed that there are no crippling strikes such as those of two years ago and that the flow of steel and iron continues at its first quarter level, few doubt that the 1947 figure will be equalled or bettered. Whether the 10% to 15% increase in production necessary to surpass all previous years can be achieved is not as assured. Whatever volume of vehicles is produced, it will go a long way toward meeting motorists' pent-up demand for cars. But it also means an added bur-

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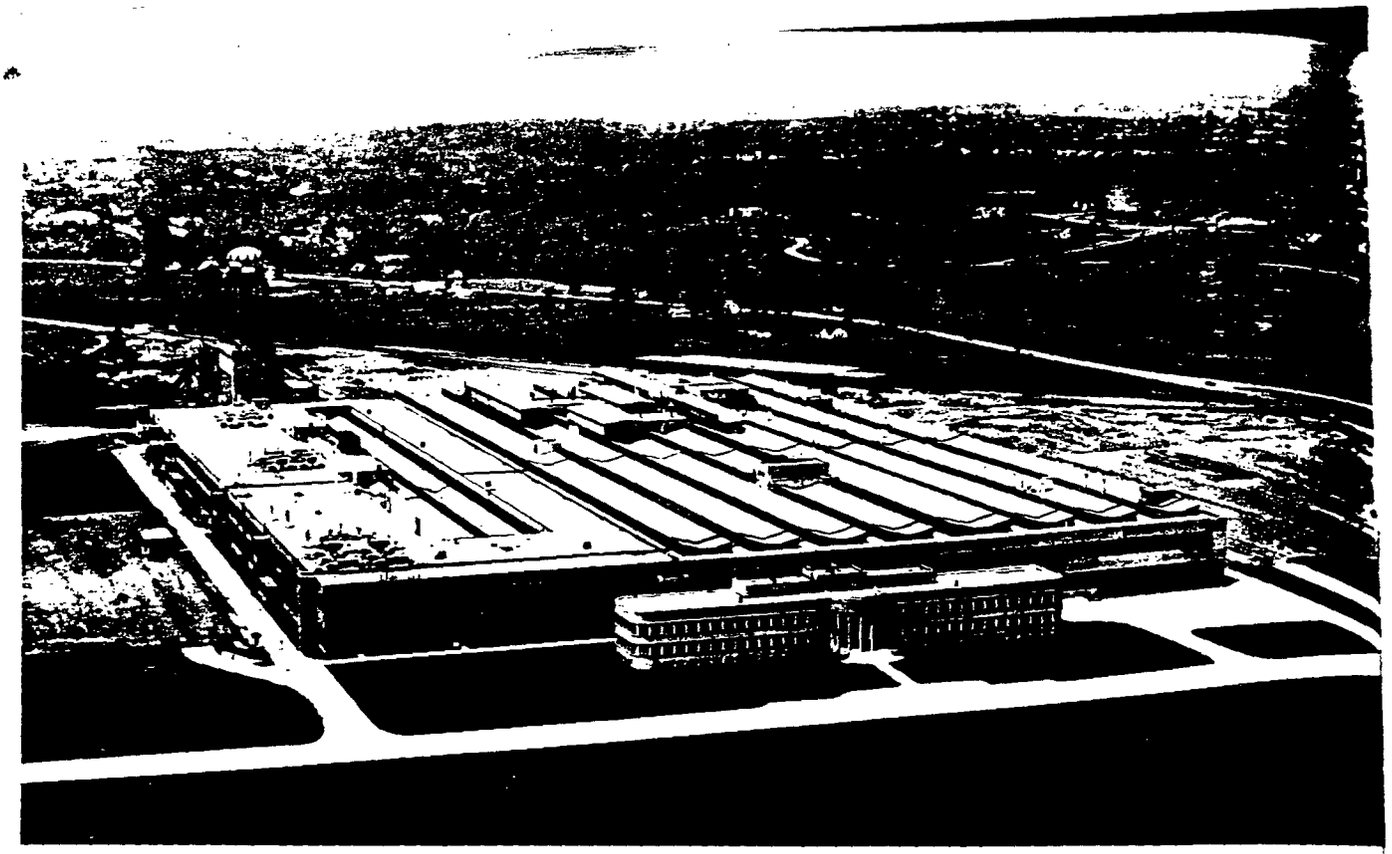

Typical of the new facilities which the auto industry has built as part of its huge postwar construction program is Chevrolet's new assembly plant in Flint, Michigan

den for gasoline to carry, in a period of unprecedented demand.

American and Canadian plants – the latter producing about 5% of the annual automotive output – got off to a flying start in January by turning out 52,000 more units than they did in January 1947. But then a two-week closing of some Detroit plants in February, due to a shortage of natural gas, more than wiped out this gain. However, some of the February loss was reclaimed by working the affected plants overtime.

Steel the Big Problem

As always, steel, along with manpower, is the key to automobile production. Until the coal strike set in last month, the outlook on steel was brighter than at any time during the postwar period, with supplies showing an improvement during the final months of 1947 and with indications of a continued gain. Now, however, the fate of automobile production, tied as it is to steel production, hinges on the availability of coal. And over the longer terms, the industry's plans will be affected by developments being shaped by international events.

Several factors loom large in this connection. The shipments abroad of larger amounts of American products and basic materials under the European Recovery Program will obviously limit the supply of goods available for home use. Moreover, there is the possibility that the government may allocate certain basic materials. In effect, says the Automobile Manufacturers Association, this would mean the arbitrary fixing of production quotas for automobiles, among hundreds of other products.

To increase their supplies of steel, at least two automotive manufacturers are conducting nationwide scrap iron and steel hunts reminiscent of the war years.

Typical of the aggressiveness and far-sightedness it has always displayed, the automotive industry is going to all extremes to satisfy the American public's seemingly insatiable appetite for new cars. Looking to the future, it is completing a billion dollar expansion program that will permit an immediate step-up in production once supplies again become ample. General Motors is spending $500 million in postwar expansion and modernization. Ford has put out $250 million since war's end for new assembly plants and parts and service depots. These examples hold true for companies all down the line.

In the meantime, current production schedules are being met by ingenious ways and means. One company, for example, has been spending as much as $50,000 weekly to obtain supplies by special delivery via air, rail, and truck. At one point, this firm was using chartered planes to shuttle eight tons of manufacturing materials daily from two Eastern cities to Detroit. Another company,

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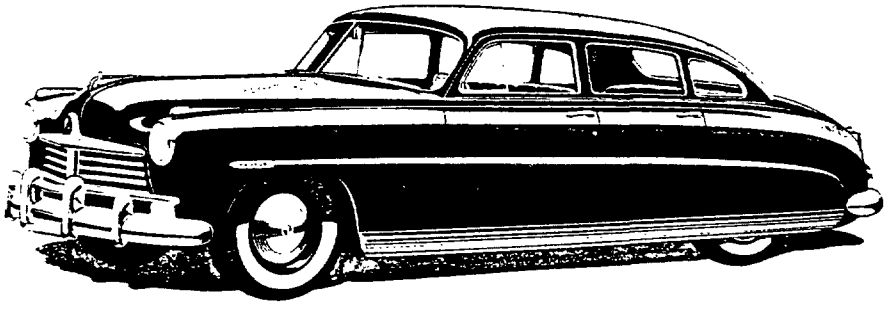
faced with a shutdown because of a scarcity of metal, located 25 tons of steel in Buffalo one afternoon. Cargo planes flew the find to Detroit during the night, and the plant continued operations on schedule when the workers arrived the next morning.

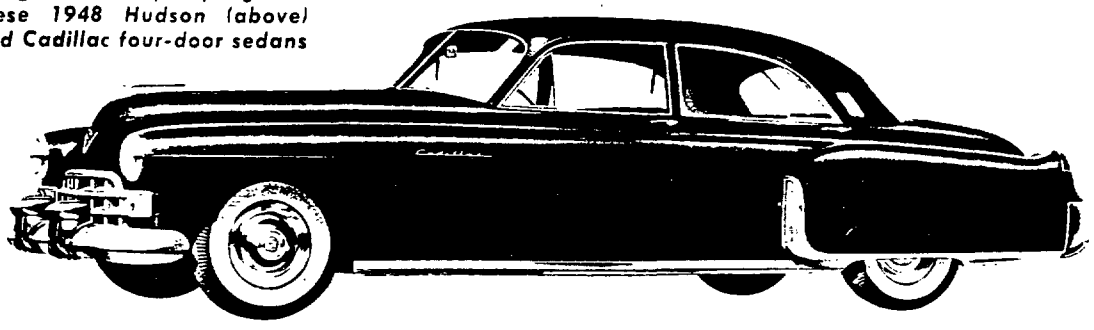
Another achievement not to be overlooked in the industry's all-out effort to sustain America's vehicle population of 37-plus million units is the record output of replacement parts. Nearly $2½ billion worth (wholesale) of such parts were produced for the domestic market in 1947 — more than four times the dollar volume of parts manufactured annually in pre-war years. Included in this staggering total were well over one million replacement engines. Although 1947's huge production considerably eased the parts shortage, demand for and production of replacement parts are expected to continue at a heavy pace in view of the fact that the average car in use today is nine years old compared to 5½ years before the war.

Whatever the industry's concern over its several postwar problems, the automobiles that are rolling from the assembly lines of Detroit, Flint, Lansing, South Bend, and other manufacturing centers in ever-increasing numbers are the sleekest, most powerful, and most eye-appealing ever put together.

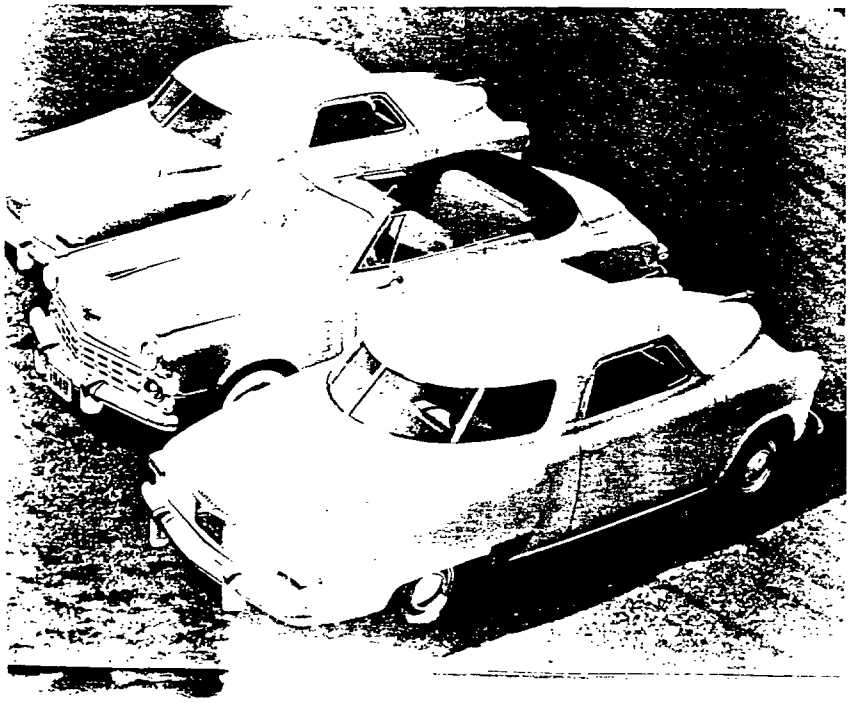
Each make, of course, has its distinguishing characteristics, and each has new features to reflect the modern times. But, basically, the current trends in design and construction seek the same goal: to give a smoother and safer ride in a car having the most powerful engine practicable.

If it were possible to combine the leading features of the new models into one automobile, the result probably would fall in the category of a design engineer's dream. Composite car 1948 is longer, lower, and





Illustrative of the newer designs in body styling are these 1948 Hudson (above) and Cadillac four-door sedans



Three of the new coupes in Studebaker's 1948 lines are, from top to bottom, the business coupe, the convertible, and the five-passenger coupe

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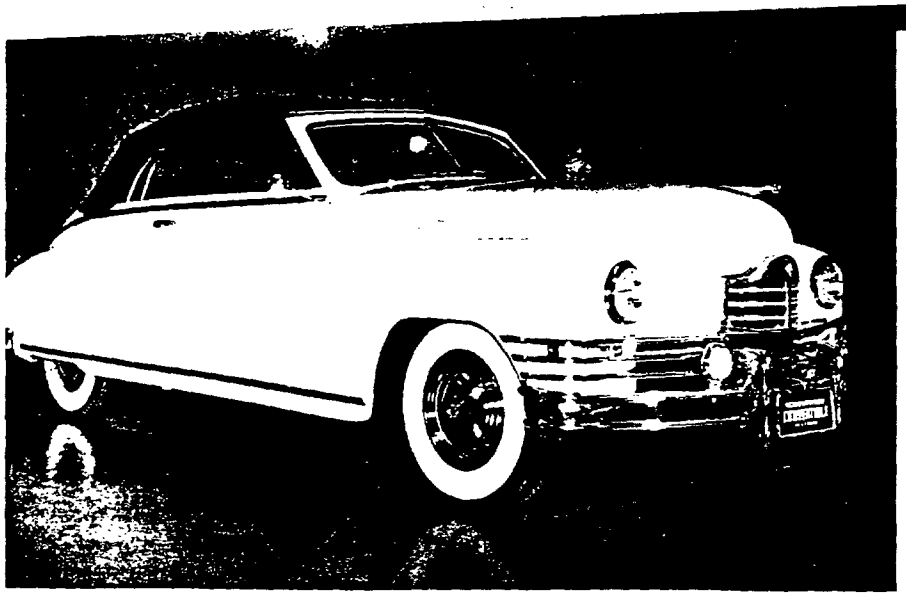

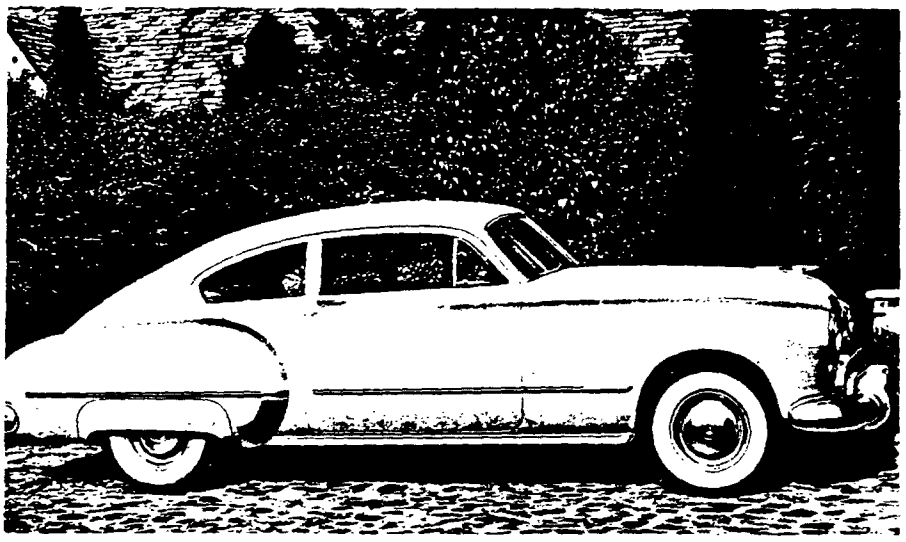

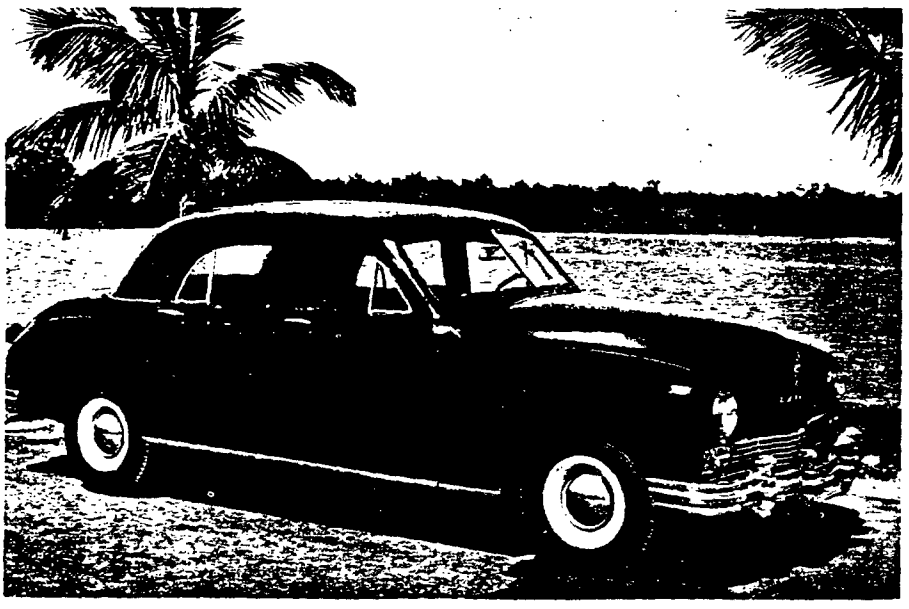

wider than any of its predecessors. Larger curved-glass windshields and rear windows provide greater vision. The front fenders blend into the extended sides of the body, continuing in an unbroken line to the rear fenders. Exterior chrome trim is not as extensive as on previous postwar models.

The tires are the new low-pressure and wide-rimmed type, which are designed to absorb the shock of bumps from the side as well as from directly underneath. As a further safety and ride-easy feature, the car is equipped with a safety rim that makes it virtually impossible to throw a tire, even in a blowout at high speed.

Inside the 1948 composite automobile are roomier, wider seats. The luxurious upholstery rests on a layer or layers of soft foam rubber, and the trim is modern and smart. Automatic heat and ventilation prevents drafts, fogged-up windows and other unfavorable element conditions. The driving instruments, instead of extending halfway across the dashboard, are clustered in a compact group around the steering column. Gear shifting, as such, is eliminated through the use of a fixed ratio type automatic transmission or a torque converter unit. (The torque converter was introduced by Buick as optional equipment on its 1948 models as Dynaflow Drive. This type of transmission enables a vehicle to adjust itself automatically and continually to the various driving conditions.)

On the basis of the average standard compression ratio of 1948 mod-

Typifying the trend toward wider cars with lower centers of gravity are these new Packard, Oldsmobile and Frazer models. Oldsmobile, incidentally, this year is celebrating the golden anniversary of its founding

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els, the composite car is powered by a six- or eight-cylinder engine of 6.73 to 1.

In all likelihood, today's cars cost slightly more than the automobiles of last year, although the price of many models remains virtually unchanged. In a few cases, current prices are even less than those of similar 1947 models. Whether there are further price advances depends almost entirely on how much wages and the cost of supplies continue to spiral upward. Mounting costs recently caused one large manufacturer to lay off its entire night shift to avoid raising auto prices. Yet, it is interesting to note that, pound for pound, the American automobile remains a comparatively cheap commodity. Present models average between 47 and 50 cents a pound, whereas some of the earliest "horseless carriages" sold for two to four times as much on a per-pound basis.

Some of the features of the 1948 representative auto, now exclusive with a single manufacturer, undoubtedly will be incorporated on other 1949 cars. For instance, the swing toward the "pontoon" body styling is expected to continue and grow. More new cars will have a lower center of gravity. Special emphasis will be placed on innovations that make for still safer and more comfortable riding. And some manufacturers are reported ready to adopt the newer types of clutch-less transmissions.

Almost certainly, the 1949 models will carry engines of higher compression ratio than those in the present new cars. As noted, the average standard compression ratio of the 1948 automobile is 6.73 to 1, compared to 6.68 to 1 for 1947 models. Seven conventional cars offer present models with standard compression ratios ranging from 7 to 1 up to 7.3 to 1. They are Cadillac, Frazer, Kaiser, Lincoln, Nash, Oldsmobile's Futuramic series, and Packard. The bantam-size Crosley offers a standard compression ratio of 7.5 to 1. In addition to increasing their compression ratios over 1947, several manufacturers have made optional high compression heads available on a number of additional models. The highest optional compression ratio for 1948 is 7.5 to 1.

New Models This Month

The actual parade of 1949 models is scheduled to get under way this month when the new Lincoln and Mercury creations are unveiled. Lincoln-Mercury announced a few months ago that it was expending $150 million to produce 250,000 cars this year (almost 100,000 more than in 1947) in an effort to capture an additional 50% share of the market in the middle and upper-price fields. The new Lincoln is to be powered with a newly designed V-8 type engine, and will boast a completely new chassis "from road to roof."

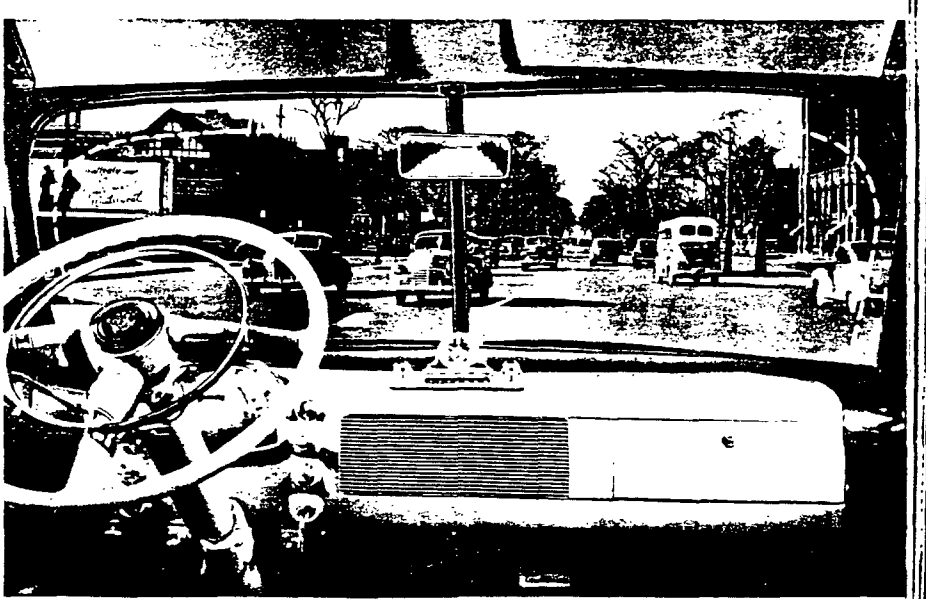
Other companies expected to introduce 1949 models before the latter part of the year are Ford, Nash, and Kaiser-Frazer. Most other manufacturers will not come out with their '49 cars until late Fall. No details of the Nash and Kaiser-Frazer models had been released as this was written, but Ford has said that its new cars, slated for June showing, will be completely changed.

While awaiting next year's models, automotive circles are humming with the usual rumors that two or more of the independent producers are about to merge. But these reports float around Detroit continuously, and aren't taken too seriously. The latest, which may have more foundation than some previous ones, has two of the better known independent manufacturers combining forces before the year is out.

Detroit also is awaiting the projected appearance of several new makes. A number of organizations, particularly for the production of

(Continued on Page 22)

This photo shows how windshield vision has been increased in a representative 1948 model. The broken white line denotes the windshield area in a 1947 model of the same car



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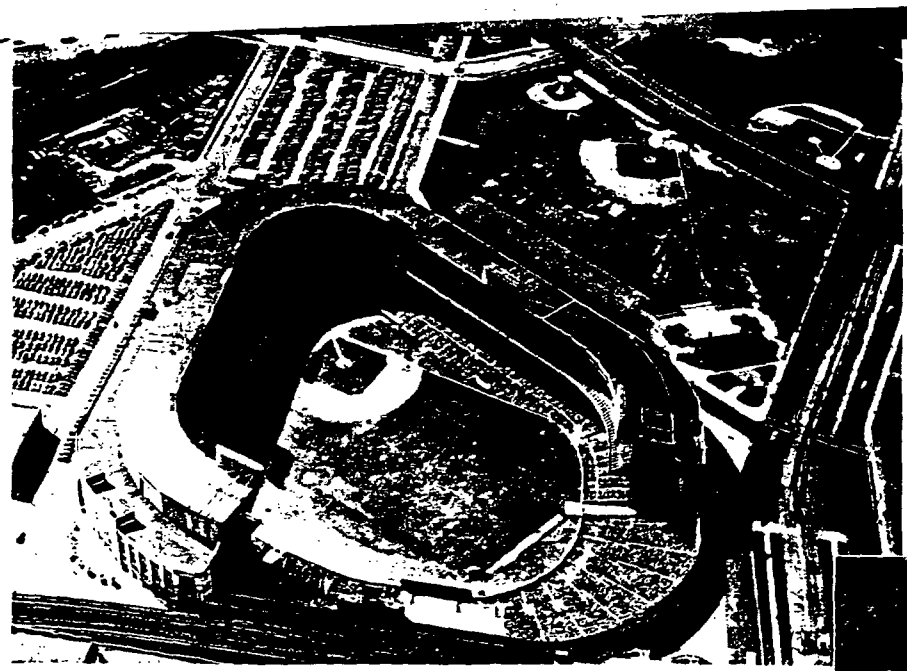

Battleground for some of the world's most highly developed heckling is the baseball park. There, name-calling is an art that frequently wins the game

Diamonds
IN THE ROUGH

By J. K. Westerfield

Dodger Manager Leo Durocher (left) was unrestrained as he told Ump George Magerkurth that he thought his judgment was bad

USUALLY the fans at a ball game can't hear what the players have to say. And if they could there is no doubt that gate receipts would take a fling skyward.

If you are skeptical, consider the Southern ball club owner who secretly had microphones planted in the players' dugouts. The results shocked a lot of the frailer sex, but a few thousand spectators learned that one of their stars had six toes and that he took a merciless ribbing from the visitors. The home crowd heard comments like "Hey, Deegan, do you need extra spikes on dem violin cases you call shoes?" and "Does mother have to make special socks for Mr. Duckfoot Deegan?" Such wisecracks helped make life interesting and exciting for the baseball player.

To the fans in the know, such ribbing is known as "jockeying," and the gents who indulge in this pastime

Keen competition is the cause of most umpire-team arguments, but some are staged in hope of "better" decisions in later play

ETC 23447

are known as "diamond jockeys." Such a character is worth his weight in hot air to a ball club.

When the Yanks lured "Chuck" Dressen away from the Dodgers, they were seeking more than a coach to tell a player when to steal a base. An accomplished heckler like Dressen can win a lot of games with just his mouth and his ability to sling verbal irritants at the enemy. Dressen has developed the art of banter into a communication system between the bench and the pitcher. If Dressen calls an opposition batter a "droopy drip from Dubuque," he really means that his hurler should toss a curve. In that way, his heckling accomplishes a double purpose.

Gents of the diamond, like Lefty Gomez, who is an airplane enthusiast, invite some high-powered heckling.

Lefty had the habit of taking time out every time an airplane flew over the ball park. On many an occasion he'd interrupt his delivery to stop and stare at a passing plane. He'd mutter something about a DC-3 or a P-40 and then turn back to the business at hand. Opposing teams soon discovered this chink in his armor.

One day, at the height of a plane gazing session, the boys on the bench started running around the bull pen making like airplanes. The climax came when the enemy bat boy let fly with a model plane which hit the wide blue over the diamond. Needless to say, Lefty's pitching took a nose dive and Gomez did the rest of his plane gazing that day from the window of the shower room.

Another form of heckling is that done by a batter while at the plate. Ed Stanky, recently of the Dodgers, is a master at the art of pitcher baiting.

According to good baseball strategy, the job of a lead-off hitter is to get on base. Second Baseman Stanky, who isn't a heavy hitter, usually manages to get there.

In a game against the Pittsburgh Pirates, he harassed his way into three walks. On his way to the plate for the fourth time he loudly announced: "I'll make 'em walk me again." Then he turned on the heat.

Wiggling and waggling at the plate as he crowded it, he irritated both Pitcher Johnny Lanning and Umpire George Barr, who ordered him to behave and get back into the batter's box. But it was too late. The count was three and two, and Stanky began to carefully foul any likely ball that came along. He got his fourth ball and then trotted nonchalantly off to first base after he dropped his bat squarely across the home plate as an added insult to the enemy. Pirate Catcher Al Lopez hurt his toe kicking the bat halfway to the pitcher's box. But Stanky's fourth walk soon became the Brooks' winning run.

While "Lippy" Leo Durocher is perhaps best known for his verbal tirades of recent years, he did his name-calling for box office reasons, and was not the type of heckler who heckles to win ball games.

Unquestionably the king of caustic comment is Jimmy Dykes, recent White Sox manager. A few years ago during a game between the White Sox and Boston, Boston's pitcher, a chap unfortunately named Herbie Hash, was doing right well by himself when suddenly Jimmy Dykes turned on the gas. You don't have to be told what Dykes said about young Herbie. One word describes all the comments: "Ham-

Jimmy Dykes (right), former Chicago White Sox manager, is considered a top man among baseball's expert hecklers. George Stirnweiss (below) of the Yanks loses no time in getting steamed up at Ump Parapella

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burger." The taunts reached the ears of Umpire Lou Kolls. He halted the game and approached the Chicago dugout.

"Now, Jimmy," he warned, "you know the rules. Lay off that 'hash' routine!"

Jimmy agreed to be a good boy, but as the diamond M. P. ambled back to his position Dykes cut loose with: "Hey, Lou, do you like yours with a poached egg?" That started off a verbal barrage from Dykes and his boys on the bench. The vexations detailed styles of serving hash without ever mentioning the name of that delicacy. Long before they had skimmed the entire cook book, the Boston chucker was under a warm shower in the Red Sox clubhouse. The razz boys had ridden another mount successfully.

A ball player's private life is luscious and fair game to the obnoxious men of nettle. "Whitey" Moore, a Cincinnati fast baller, ran afoul of the Yankees in the 1939 World Series. The night before the Series game in which he was to pitch, Whitey was out driving, happened to stall his car on a railroad track — and the Yankees got wind of the incident. Whitey's first appearance in the Series drew a tremendous blast from the New York bench.

"Whooooo! Whooooooo!" came imitations of a train whistle. "Get that car off the track, here comes the flier! Whooooo!" The riding cost Moore a few bad minutes, but he got hold of himself and came through without any scars.

As a rule the National League clubs aren't quite so jockey conscious as the American League outfits, but the "Bums" and the St. Louis "Gas House Gang" would give the Society for the Furtherance of Noise Abatement a job for life.

In 1934 (the year of the two Deans) the Cards were due to meet the Tigers in the World Series. "Schoolboy" Rowe, winner of 24 ball games, was being lionized in Detroit as the man who would show "Me and Paul" a few tricks about pitching. But the Tiger star made one mistake. He wound up a radio broadcast by inquiring of his fiancee: "How'm I doing, Edna?"

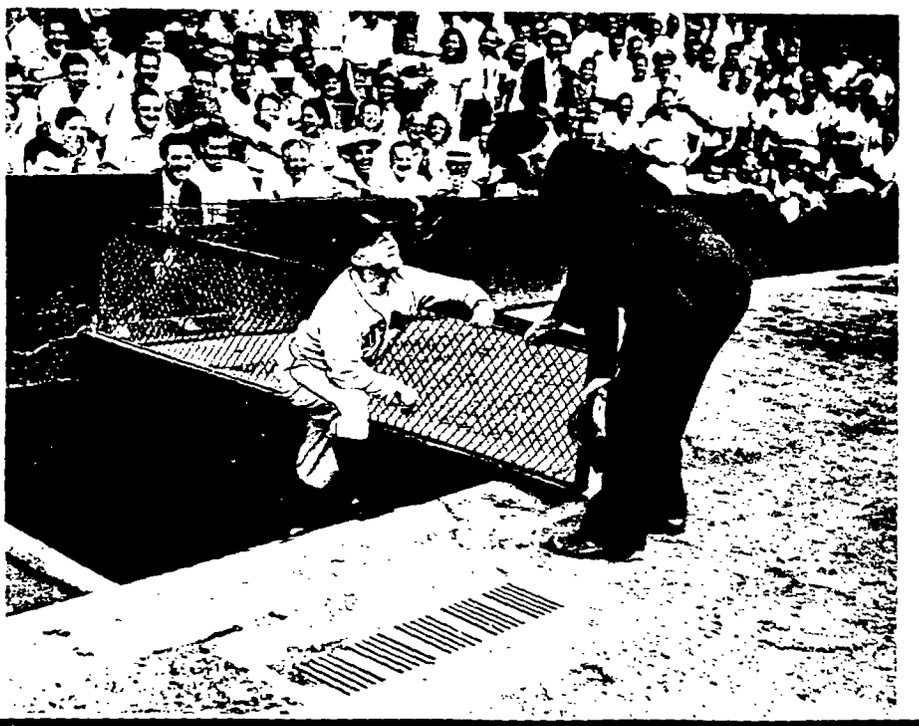
That did it. While St. Louis base hits were bouncing around the outfield the next afternoon, a bench full of "Gas Housers" was dancing up and down screaming: "How'm I doing, Edna?" Oh, yes, Rowe lost the game.

"Jumping Joe" Dugan, onetime Yankee third baseman, was a better than fair boy when it came to dishing out billingsgate. He is known for a now historic comment which is told whenever baseball men gather around the hot stove to reminisce. It was in the 1923 World Series. Joe was at bat in a tough spot, two men were on base, and the Yankees were trailing by one run. Dugan called for time and took a couple of steps toward Jack Scott, the big Giant pitcher.

"Hey, Scottie," he called, "pull in

Vernon "Lefty" Gomez, former Yankee pitcher, liked to watch airplanes so much that he invited cruel razzing from rivals

Fans enjoy incidental banter as much as the game itself. This dispute involved Frankie Frisch, former Pirate manager



your ears. You look just like a loving cup!" That crack so upset Scott that he wild-pitched a run home, making Dugan's subsequent single an anti-climax.

When an opposing player has a few errors charged against him, he is wide open for any kind of comment. "Gee" Walker, the eccentric outfielder for the Tigers at the time, took a hand in winning the 1934 World Series from his seat on the bench. The Tigers had copped the previous game, helped by a pair of errors charged to Bill Delancey, the St. Louis catcher. Walker cut loose his verbal artillery on the already unhappy Card catcher, as soon as he appeared on the field.

"Delancey lost the ball game! Delancey lost the ball game!" he chanted monotonously. Bill stood the Tiger's chant as long as he could and then he let go.

"I'm not sitting on the bench anyhow, wise guy," he snapped.

"And I didn't lose a ball game!" Walker replied happily, and he resumed his chant.

The result: Delancey fanned three times that afternoon, once with the tying run on base.

There is, however, a limit to how far a game of jockeying can go. Aside from a brand of vilification that would provoke an umpire to send a foul-mouthed person to the showers notwithstanding, both players and owners alike have a sort of gentlemen's agreement as to what does and what does not constitute fair comment and criticism.

Some years ago, a certain ball player was known to imbibe too freely at times. Eventually, however, he reformed and faithfully refrained from drinking any intoxicating beverages. The jockeys, however, continued to razz him about his past habits whenever he came within earshot.

The owners of his ball club protested to league headquarters. A man who was courageous enough to stop his bad habits, they insisted, should be encouraged in that direction. The league officials rightly agreed and established an official closed season on the razz artists, so far as this ball player was concerned.

Every now and then the jockeys have to eat their words. During the 1939 Series, the Yankees got on Frank McCormick of the Cincinnati Reds. The Yankee heavy hitters began to give Frank the business about the tantalizing Texas Leaguers he dropped just out of their reach.

The Heckling Backfired

"He's hitting the ball with his thumbs!" they shouted. "Boy, I'd hate to do that. He'll wear 'em right off! He'd better be careful!" But McCormick was unconcerned and he went about his business of acquiring a .400 Series average. After each base hit he'd salute the New York dugout gang. Standing on the sack, he would deliberately look over and laugh scornfully. The Yanks kept up their riding, but it was rather anemic. McCormick was paying them back only too well for their slurs.

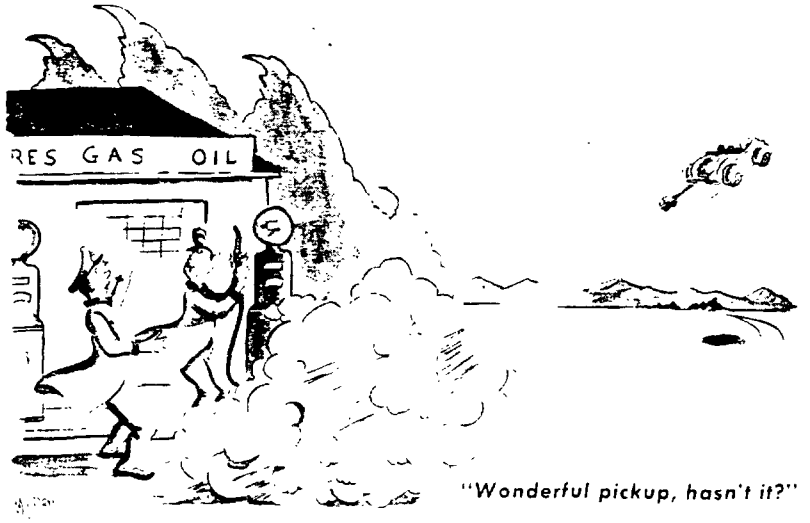
In the days when Mickey Cochrane was making a name for himself as a catcher, he came to bat facing Pitcher Burleigh Grimes of the Cardinals. Grimes started making uncomplimentary remarks about Cochrane's ears. "If you could only run faster, you'd take off!" Grimes shouted from the mound.

Mickey began to get hot under the collar and he snarled, "Is that right, Bluebeard? Just throw one up here and watch *that* take off!"

Mickey took a bite at the next pitch and sent it soaring into the stands. For the rest of the series Grimes was a silent gent whenever Mickey came to bat.

Perhaps the remark to end all remarks from the bench came from Babe Ruth. During the World Series between the Yankees and the Cubs, the Chicago club had been riding Ruth rather hard. Ruth stepped up to bat, pointed to the stands and hit the ball exactly to the spot where he pointed. After a leisurely trot around the bases, he walked over to the Cub dugout and doffed his hat with mock solemnity and said, "When you guys can make $80,000 a year—that's the time to pop off."

A lot of ball players have been trying to think of an answer to that one. So far none has succeeded.



"Wonderful pickup, hasn't it?"

ETC 23450

THE ETHYL CORPORATION SERVES THE PROGRESSIVE PETROLEUM INDUSTRY *Through Research*

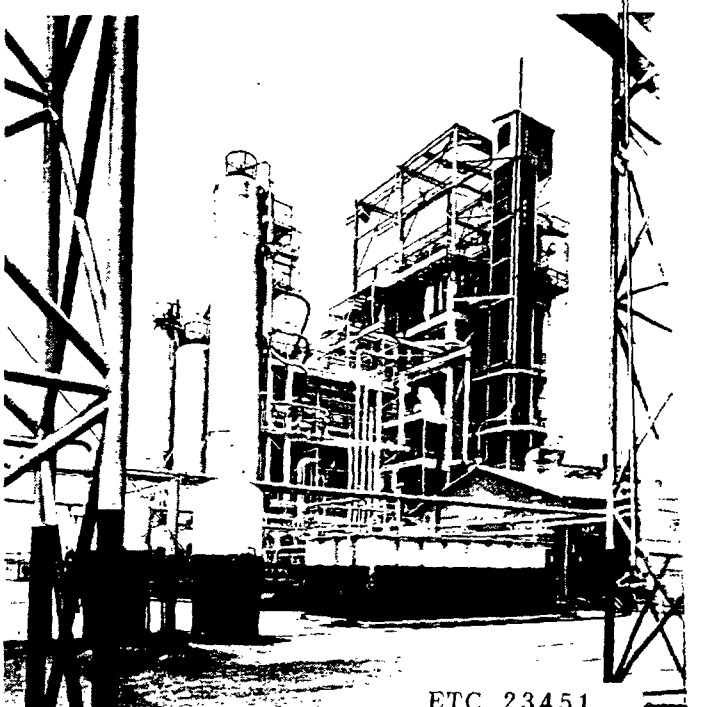
Refiners face challenging problems in producing gasoline for engines now under development...

Photograph—courtesy of Lummus Company, New York.

TODAY in the engineering departments of many automobile companies the development of new engines requiring fuels of higher antiknock quality, and promising new high levels of performance and economy, has reached an advanced stage.

Many refiners are studying means for providing economically the fuels required by these new engines. Six major factors combine to make this a challenging task:

1. Just before the war, many new refining processes to improve fuel antiknock quality became commercially practicable. The war's demands for gasoline forced immediate expansion of refining capacity for high produc-



Photograph at right—courtesy of Houdry Process Corporation of Pennsylvania.

This is the first of a series of messages in which the Ethyl Corporation will discuss problems facing the petroleum refining industry...and the services Ethyl provides to oil companies in planning for the production of tomorrow's fuels.

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Ethyl Corporation's Laboratories at Detroit—as well as at San Bernardino, California—are designed for research and service on problems of fuel-engine-lubricant interrelationships.

tion of antiknock fuels, regardless of cost or of eventual peacetime utility. Consequently, much of the equipment built in the war program involved processes which had not been thoroughly evaluated on a commercial scale for peacetime use.

2. Even without advances in engines, a long period would have been required to find the best way to integrate the new refining processes into peacetime operations. Each process must be studied with respect to the range of conditions under which it may be carried out, as well as in relation to older processes and still others which might be installed. Stocks produced by the new processes must be appraised as components for fuels to be used in automobile engines.

3. Certain new engine developments tend to upset previous concepts of fuel antiknock quality and to reduce the reliability of conventional laboratory knock ratings as indicators of road performance.

4. Stocks produced by the different refining processes may exhibit extreme variation in sensitivity to tetraethyl lead. Fuels which, without lead, are only mediocre may head the list after its addition.

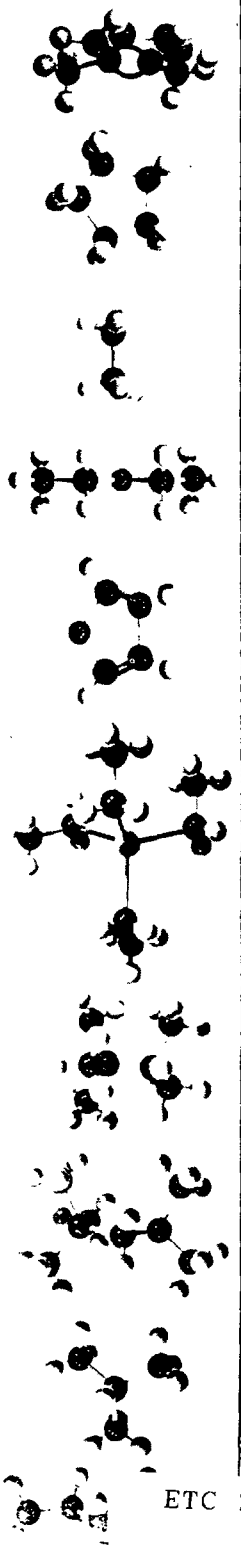
5. The degree of cleanliness with which different gasolines burn in engines covers a wide range.

6. Cost of the finished gasoline and the number of gallons of it obtainable from a barrel of crude are vital considerations.

To sum up, the refiner's problem is one of combining, in proper proportions with tetraethyl lead, a wide variety of hydrocarbons having the proper volatility, stability, antiknock and burning properties to form acceptable, economical gasoline.

Having been closely associated with the engineering departments of automotive companies and the laboratories of oil companies for over twenty years, the Ethyl Laboratories have been able to conduct broad programs to appraise hydrocarbons, singly and collectively, not only in relation to current engines, but, more importantly, with respect to engines of the future. In their service to oil companies, the Ethyl Laboratories draw from the information accumulated in these broad programs and, when specific problems indicate the need, join with refiners in cooperative research projects designed to extend the knowledge.

During the coming period of accelerated technological development, advances in automotive transportation will result from the closest cooperation of the designers of engines and of all who contribute to the production of fuels and lubricants for their operation. The Ethyl Corporation Research Laboratories plan to cooperate fully in making their contribution to this joint effort.



ETHYL CORPORATION

RESEARCH LABORATORIES

1600 West Eight Mile Road
Detroit 20, Michigan

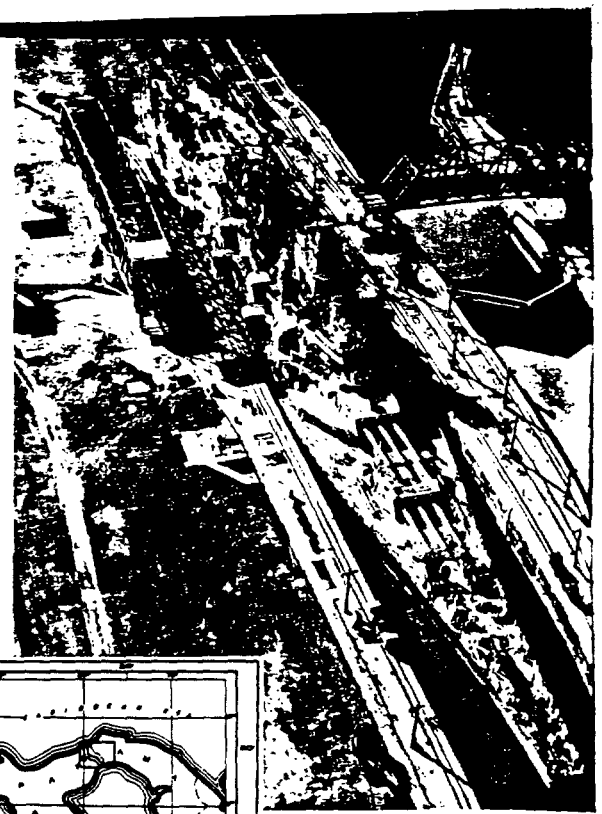
2600 Cajon Road
San Bernardino, California

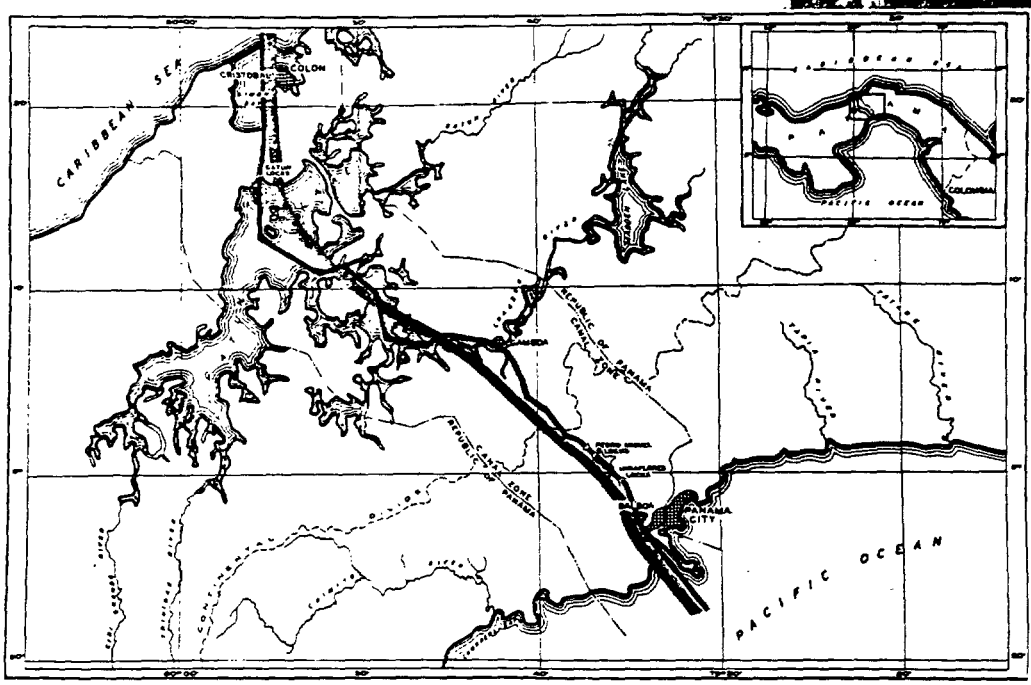
Combinations of hydrocarbons [illegible] molecular structures of some of [illegible] models [illegible]

ETC 23452

Another Isthmian Canal?

The Panama Canal, it is generally admitted, is becoming outmoded. But what to do about it revives a question more than 400 years old





Above, the battleship, Missouri, inching its way through the Panama Canal, shows how cramped for size the Canal has become. Left, the proposed sea-level Panama Canal (gray line) roughly parallels the present route

By John E. Kelly

EVER SINCE THE WAR, the future of the Panama Canal has been a big and growing problem. It is the only man-made shortcut between the Atlantic and Pacific oceans. Its vulnerability to attack in time of war is widely recognized. And it is admittedly becoming obsolete for the constantly bigger ships being built.

The vulnerability of the Canal was a war-long headache to U. S. defense forces. A single bomb hit on any of its three key points – Miraflores Locks, Pedro Miguel Locks, and the Gatun Locks – could put the entire canal out of commission for possibly years, making direct contact between the Atlantic and Pacific meanwhile impossible.

Moreover, the physical limitations of the 40-mile waterway are well-known. At present, battleships like the *Missouri* barely inch their way through its 110-foot lock chambers; the biggest aircraft carriers afloat are too wide to go through the Canal. And considering its capacity, it has been estimated that within another 17 years, the Canal will be unable to handle the anticipated traffic load.

To correct this condition, a host of proposals have been made. They range all the way from making the present canal a sea-level waterway to building an alternate route in Mexico, Nicaragua or Colombia.

Probably the furthest along of all proposals is the one that would build a sea-level canal across Panama, closely paralleling the present route. This project, recommended by the Army, would require only one tidal lock (to adjust for differences be-

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tween Atlantic and Pacific tides), and would cost some $2.5 billion.

However, great consternation was caused when, some months ago, the Panamanian Congress refused to permit the United States to continue maintaining air bases in Panama for the defense of the canal. Following this sudden turn of events, the possibilities of constructing alternate routes have been considered with renewed interest.

Curiously enough, the prospect of a navigable waterway connecting the Atlantic and Pacific has intrigued explorers for many centuries. Even before the true geography of the Americas was understood, early European adventurers sought ways through or around the New World.

Three centuries before Columbus arrived, Norsemen sailed their dragon ships into Hudson's Bay, thinking North America an island. Henry Hudson reached what is now Albany before becoming convinced he had not found the Northwest Passage. The Spaniards combed the coast from Florida to Buenos Aires for a strait leading to the China Sea. Finding none, their thoughts turned to building a canal, and canal planning has been a major Central American theme ever since.

From the first, at least three other countries have vied with Panama as the site of an interoceanic canal through Central America.

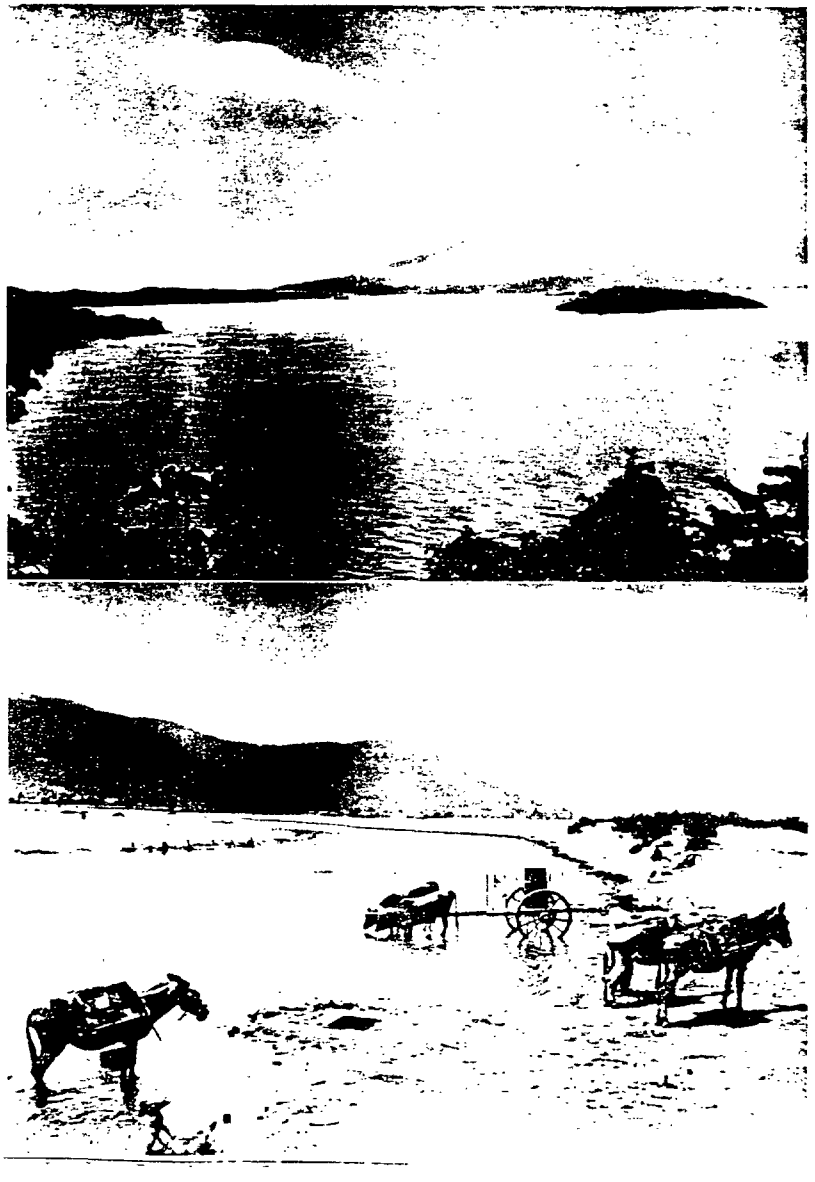
In 1550, a Portuguese traveler wrote a book advocating, among other routes, a canal across the Mexican isthmus of Tehuantepec. This waterway would extend from Puerto Rico, on the Gulf, to Salina Cruz, on the Pacific. The distance is 125 miles and the highest point, Chivela Pass, 735 feet above sea level.

Favored the Mexican Route

Despite these obstacles, the possibility of some kind of route across the Tehuantepec isthmus has attracted its share of proponents in the last century. James B. Eads, who gained fame for taming the mouth of the Mississippi, proposed a ship railway across the isthmus. Judah P. Benjamin, who served as Secretary of War and State in Jefferson Davis' provisional Confederate government, promoted a Tehuantepec Canal Company. Currently, Senator Dennis Chavez, of New Mexico, has proposed that a canal be built across the isthmus.

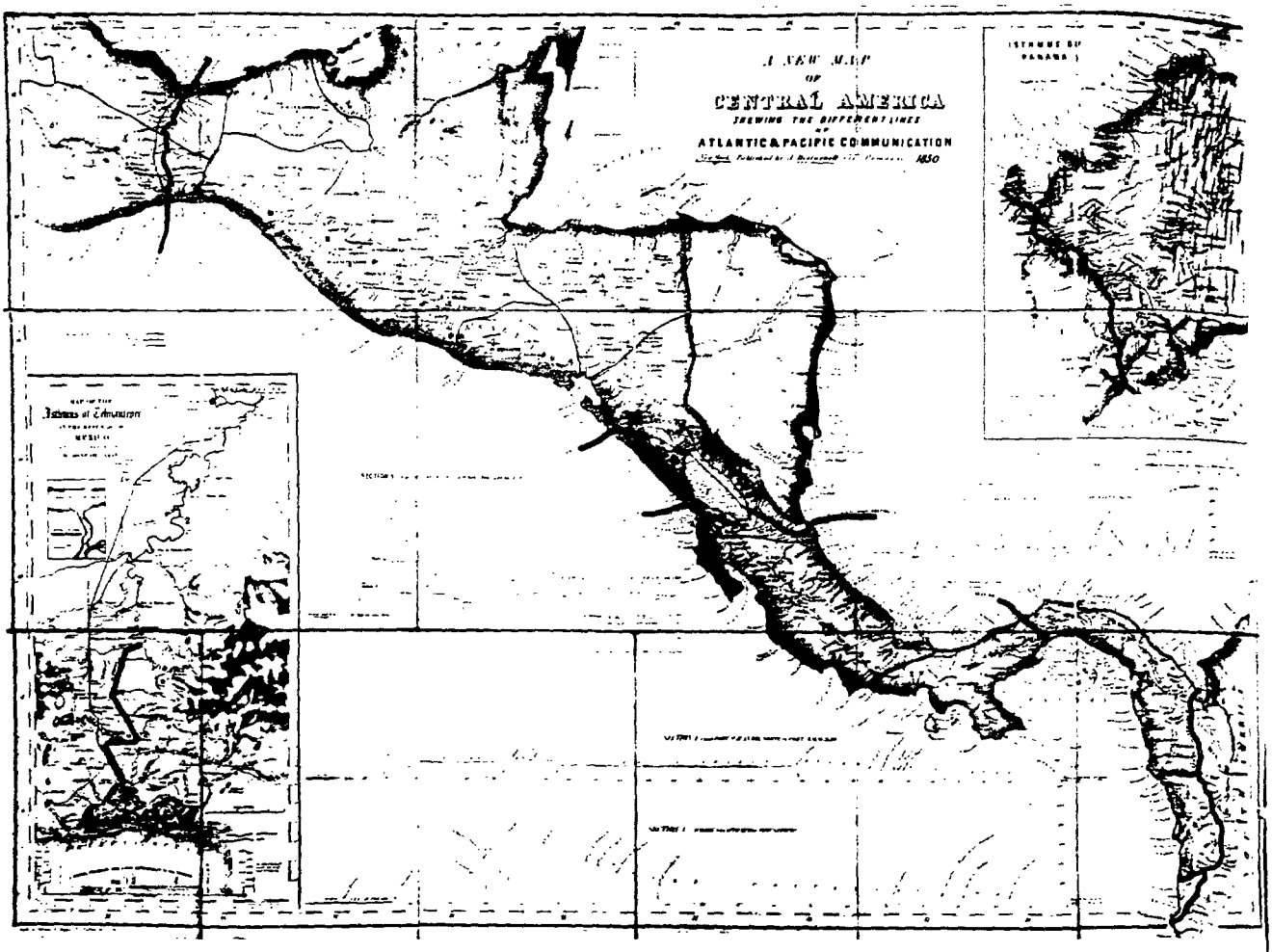
Control of the Tehuantepec route was a factor in the war with Mexico in 1847, and the peace treaty provided for a payment of $15 million by the United States for perpetual rights to build a canal there. While a canal was never built across the isthmus, the Mexican Government completed a 192-mile railway there in 1907.

A second proposal, as old as the



Top, a view of Lake Nicaragua and the mainland. The lake would play a key role in any canal through that country. Bottom, a scene in Tehuantepec, which has also been put forward as a route for a second isthmian canal

ETC 23454



Proposals for cutting a canal across the Central American isthmus are almost as old as the discovery of America. Here, on a map of 1850, are the four routes then considered as the most likely for a canal—Tehuantepec, Nicaragua, Panama and Colombia

Tehuantepec plan, would link the Atlantic and Pacific through Colombia, by cutting a canal between the headwaters of the Atrato and San Juan rivers. This would provide a 300-mile fresh water route from the Gulf of Uraba, on the Atlantic side, to the mouth of the San Juan river on the Pacific, above the port of Buenaventura. However, the route, including the proposed canal, would traverse through hundreds of miles of wild jungle.

Of all the isthmian canal proposals (some 30 plans have reportedly been under consideration), the Nicaraguan project has undoubtedly the most fascinating history. It is among the oldest of all canal plans, progressed as far as the actual start of construction in the 1890's, but lost out in the end to the Panama Canal by a strange coincidence.

The first white man to propose connecting the Atlantic and Pacific by a Central American canal was the Spanish discoverer of Nicaragua (which was named after an Indian chief of that name). The Spaniard was Gil Gonzales de Availa, who wrote his king about it back in 1523. "Matters of state move slowly," runs an old Spanish proverb, and it was not until 1780 – more than 250 years later – that a party of Spanish engineers arrived to survey the route.

Nothing came of these early efforts, however, until the last century, when subsequent proposals came thick and fast. Individual promoters and bankers formed companies. Preliminary engineering surveys were made. The governments of various nations made efforts to put through a canal.

The principal rivals in virtually all canal ventures were the United States and Great Britain. To further their cause, the British seized the Atlantic coast of Nicaragua. The United States countered by signing a treaty with the Nicaraguan Republic, obtaining exclusive rights to dig and operate a canal.

Before 1848, a Central American canal was a political asset only. There wasn't sufficient commerce to

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pay the estimated expenses. The California Gold Rush, however, changed all that.

The quickest, easiest and cheapest way from New York to the West was by steamer to the isthmus, making connection by muleback or afoot to another ship on the Pacific side. The Pacific Mail Steamship Company operated a route through Panama. During its first ten years, the Pacific Mail carried 175,000 passengers and $200 million in gold bullion.

Seeing enormous possibilities in a route through Nicaragua – which would shorten the entire journey – Cornelius Vanderbilt contracted with Nicaragua to build a canal in twelve years, meanwhile possessing the right to transport passengers across the isthmus by lake and river steamers and stage coaches. Vanderbilt's canal-building plan fell victim to one of the periodic political upheavals in Nicaragua, and the war between the states came and passed, and still no canal was dug.

Recurrently, in the latter part of the last century, efforts were made to build a canal. Work was actually started by one company, granted a concession in 1887, but the project was abandoned.

Following a favorable report by the Isthmian Canal Commission in 1899, it looked for a time that the Nicaraguan project might finally go through – under United States' auspices. But then the whole picture suddenly changed when a French company, which had been trying to dig a canal through Panama, offered to sell its concession to the United States for $40 million.

This news reached Washington during a Congressional debate over the Nicaraguan route. The House of Representatives had just passed the Hepburn bill, authorizing construction of a $180 million canal there. It seemed certain that the Senate would concur when a supporter of the Panama venture, Senator Spooner, played his trump card.

One of the "trade-marks" of Central America, which appears on the great seals of several isthmian republics, is the chain of volcanoes lining the Pacific coast. Some smoke continuously, others belch fire, a few erupt at intervals. Nicaragua has its share of the conical giants, including Ometepe on an island in Lake Nicaragua and fiery Momotombo on the shore of Lake Managua.

When Senator Spooner arose to speak against the Nicaraguan canal, he waved aloft a colorful set of Nicaraguan stamps. Issued in 1900, the adhesives portrayed Momotombo in eruption, with lava pouring down its sides. The Senators listened to prophecies of earthquake and disaster, then voted for Panama which has no volcanoes, thank you.

Although the United States completed, and put into operation, the Panama Canal, interest in the Nicaraguan project has not been appreciably diminished through the years. In 1916, the United States paid Nicaragua $3 million, under a treaty, for an option to construct a canal. Several times, since then, the plan has been reviewed, and reports and surveys made.

Nicaragua vs. Panama

The Nicaraguan route has some strong talking points. For one thing, it would greatly shorten a trip, say, from New Orleans to San Francisco, resulting in a saving of time and fuel. The Panama Canal is the shorter route – 40 miles against 174 in Nicaragua – but most of the Nicaraguan route is water, lake and navigable river, with only 27 miles of actual excavation.

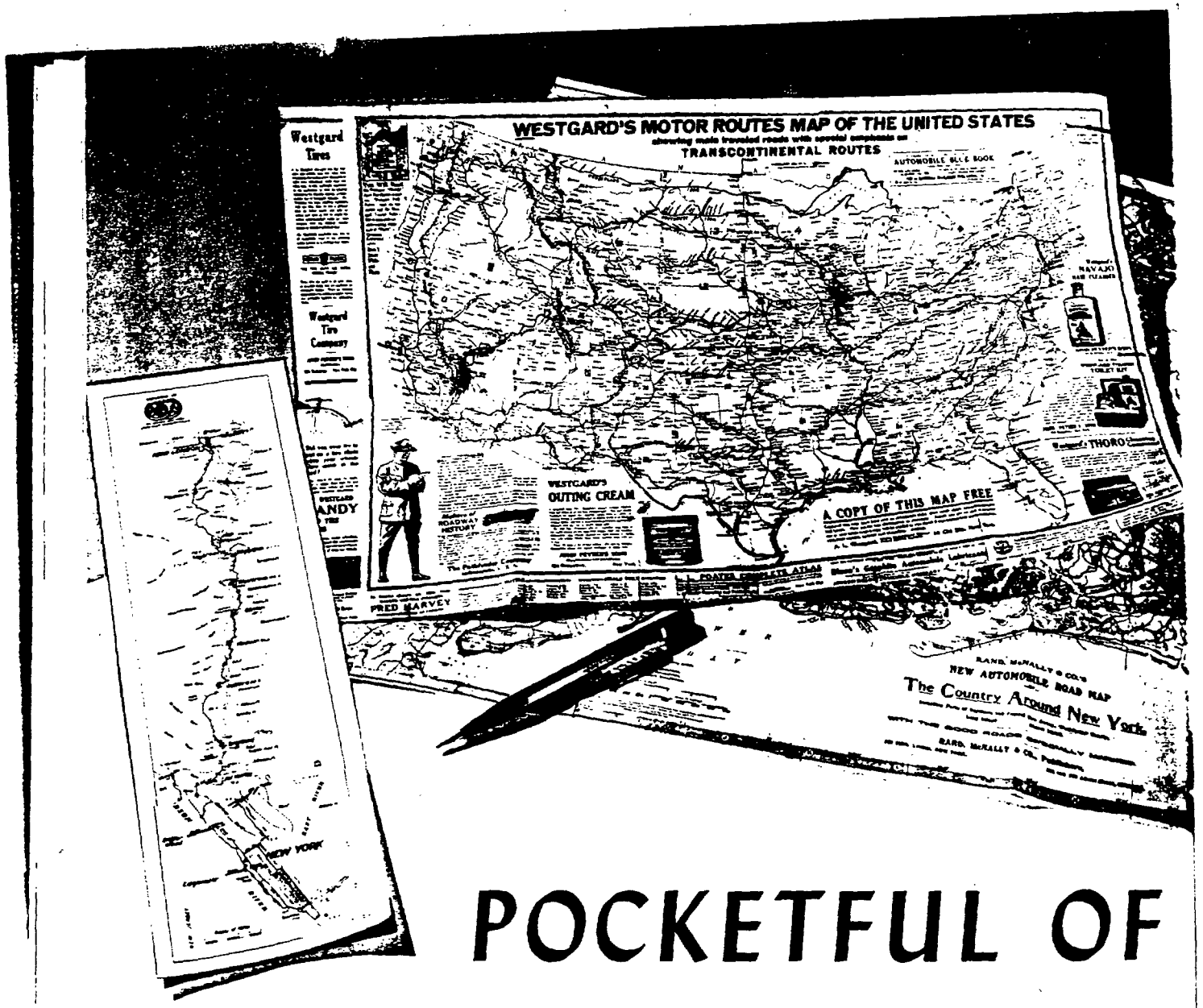
Equally important, Culebra Hill in Panama, which must be completely removed in the widening and deepening operation contemplated, is over 500 feet high, while no point on the Nicaraguan line rises more than 140 feet above sea level. Moreover, the Nicaraguan route would be free of the earth slides which constantly bedevil the present canal.

The Freshwater Sea

In building the Panama Canal, one of the greatest problems, an adequate supply of water for the locks, was solved by the creation of Gatun Lake. The artificial lake, 90 feet deep, floods 184 square miles, or about twice the area of the city of Cleveland. The Nicaraguan canal would be fed by Lake Nicaragua, the largest sheet of inland water between Lake Michigan in North America and Titicaca in Peru. The Freshwater Sea, as the Spanish explorers called it, is nearly twice the size of Delaware and 200 feet deep, and is connected to the Atlantic ocean by the navigable San Juan river, and separated from the Pacific by only 13 miles of low land. In reserve is Lake Managua, itself 50 by 25 miles in area, which empties into Lake Nicaragua through the river Tipitapa. The contemplated route would involve digging a channel on the Caribbean side to the San Juan river, would follow the course of the river and make use of Lake Nicaragua, and would pass through a second canal, to be built, emptying into the Pacific at Brito, Nicaragua.

As this is written, no one knows for sure what action may be finally taken with respect to a canal across Central America. The original plan for rebuilding the Panama Canal may go through, provided that American differences with that country's government are composed. If it does, there will still be those who argue that two canals are better than one – and not without good reason.

ETC 23456



POCKETFUL OF

IF YOU WERE to open the glove compartment of a typical car, the chances are that five road maps, on the average, would tumble out – together with the odd assortment of trinkers and gadgets that every motorist seems to carry as standard equipment.

For that is, roughly, the ratio of road maps to cars in a typical year. In 1947, the map makers turned out an estimated 150 million maps for use primarily by the nation's 30 million car owners.

These road maps were distributed – almost entirely free – by oil companies, state road departments, automobile clubs, Chambers of Commerce, and certain other organizations. The oil companies, by the way, distributed more maps than all other organizations combined.

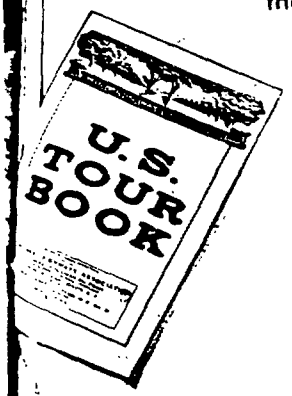
The principal use of road maps continues to be in connection with vacation travel. However, motorists are using them increasingly for information concerning alternate routes, short cuts, new roads, scenic routes, and other phases of their day-to-day driving.

The road map has come a long way from its origin in the "way back when" days of automobile transportation. The date of the first map is disputed, but it was probably around the beginning of the century. Actually, the first road maps evolved from bicyclists' maps that had been popular for a number of years previously.

In the days when automobile driving was still an intrepid adventure, motorists depended on maps appearing in various guide books. Not only did these guides contain maps, but also photographs, rules of the road, and such quaint directions as, "At the schoolhouse, turn right, and continue for two and a quarter miles to large red barn with silo. Jog left and proceed three miles to fork in the road . . . " Roads were then known by names instead of numbers, such as "Woodpecker Trail," "Robert E. Lee Highway," "Boston Post Road," etc. – all of which contributed to the general confusion.

ETC 23457

A lot of care, skill — and expense — goes into the preparation of road maps, which the nation's motorists use by the millions



These road maps are real old-timers. At the left is an AAA strip map of 1917, showing the route from New York City to New London, Conn. At the top is a transcontinental road map of 1917, while underneath it is a map of "the country around New York" in 1904. Directly above is a 1914 tour book

MILES

Other road maps, which rolled up in a cylinder, were attached to the dashboard. Some were even printed on balloons, which were inflated when needed.

It was not long before publishers began improving their product. First, a scale of miles was added; then a description of roads, toll information, census figures, and finally a touch of color. The individual fold-up type became increasingly popular. These were still a far cry from the modern, detailed maps made available to motorists today, but they were a beginning.

The range of information contained in today's maps is encyclopaedic when compared with the maps of the early 1900's. A typical road map of 1948 contains such diverse information as towns and cities, federal and state highways, distances between towns, state capitals, airports, county divisions, military installations, points of historical interest, toll roads and bridges, ferries and ferry schedules, gasoline taxes, waterways, and speed limits.

With the rapid increase in the number of highways and automobiles, map publishers have found that the ordinary road map is really good for only one touring season; after that, so many changes will have been made in highways, bridges, etc., that the map is no longer reliable.

Today, the job of keeping track of three million miles of U. S. highways is truly a herculean task. The map makers must continually keep a fleet of cars on the road, checking mileage and other figures, highway and bridge construction, general information and travel conditions. Furthermore, close liaison must be maintained with the state highway departments.

During the war, roadbuilding and maintenance came almost to a standstill. Now, although plans for the long-predicted superhighways have been slowed, repairs to existing roads are being made in every state, thus adding to the already heavy task of the experts who gather, sort, sift, and check data for road maps. The past severe winter made the situation even worse, to say nothing of the record floods that have left some roads in bad repair and washed out others.

For all their painstaking efforts to avoid mistakes, the publishers occasionally receive letters from disgruntled motorists. "Your map shows highway ..... in ..... state to be a first-class road. Well, let me tell you, it ain't – not by a long shot. I traveled it last week, and you can take it from me . . . "

Off goes a checking car for first-hand information.

When you pick up a map at your service station or auto club, you can rest assured that its reliability is nearly perfect – and that it took a year and longer to make it that way.

A Specialized Business

Today's maps are not usually published by the companies distributing them, because cartography requires too many specialized skills. This is still done by those publishing houses that pioneered in the road map field back in the early 1900's. In fact, about 90% of the road maps published in the United States today come from three of these early firms: Goushá and Rand McNally in Chicago, and General Drafting in New York.

New maps are usually issued in the spring, the first being those of the southern states – then the middle group, and finally the northern states. Demand is so heavy that reorders are often placed monthly.

Many of the distributing agencies have road maps of Canada and Mexico, in addition to the United States. Some offer maps of the Central and South American republics as well as several countries in Europe. Map publishers have just about as much trouble keeping track of European boundaries as the State Department. Preparing a road map of any foreign area, however, requires much more time to produce than a domestic map. One publisher states that it took him over three years to collect the information for a map of one particular country in Central America.

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But collecting information for a map is only the first step. Production and printing may take several additional months.

In preparing the first draft, it is usually necessary to hand-letter all names – a process which may take as long as two months. Then, when it comes to the final draft, each symbol, number, and name must be set in type individually and stamped on the map by hand.

Uniformity in Symbols

Incidentally, map symbols indicating federal highways, state highways, airports, state capitals, etc., are almost identical on all road maps. The various distributors say that they did not achieve this uniformity by getting together and agreeing on symbols. Rather, they separately arrived at the same symbols by trial and error. Drawing in the mountains is the final step in the drafting process. This painstaking operation is done entirely by hand and must be carried out in a manner that will not confuse road lines, place names, etc.

Finally, the map goes to an editor for checking. He goes over the draftsman's work several times – with a magnifying glass – before approving it for printing.

Four printing plates are then made – one for each color. Before this step, however, an "opaquer" must prepare four glass negatives – in each instance, all colors but one being painted out. The plates that emerge from this long, involved process usually last for 100,000 impressions. After printing, folding, and packaging, the maps are ready for distribution.

Methods of distribution vary. State road departments, Chambers of Commerce, and certain miscellaneous organizations furnish maps of their particular areas to persons requesting them. The automobile clubs, as a rule, supply their members only.

As indicated previously, the bulk of the road maps published each year are distributed by the various oil companies. Most oil companies supply service stations with maps to hand to customers who request them; others have established tourist information centers – offices equipped to answer written and telephoned queries from puzzled motorists, in addition to supplying maps. Some half-dozen oil companies have carried the touring service idea a step further and set up offices where motorists may visit and personally discuss touring problems.

There are, broadly, two systems of operating touring services. Some oil companies, knowing that the cartographers have the trained personnel and necessary knowledge at their finger tips, let them handle all aspects of the touring service, under the oil company's name. Others prefer to use their own personnel and handle the whole operation themselves.

Typical of the queries received by the touring services is the letter from a lady on Long Island, which read, "I would like to take a fourteen-day motor trip . . . Can you recommend a good one? Direction does not matter."

And a man from South Bend wrote, "I am taking a trip this summer. We would like to travel about 2,500 miles. The destination doesn't matter because it is going to be our honeymoon. So will you please advise us and send a marked map?"

These are routine queries and easily answered. Some motorists, however, pose tough problems for

Below are some of the steps involved in preparing a road map. Left, a nameplace is stamped on a map with a special instrument. Center, the preliminary draft of a map is carefully checked for accuracy. Right, a twin-pointed pen is used to indicate rail lines. At the far right, the personnel of a touring service are kept busy answering motorists' requests

the routers in the service centers. A doctor wrote, saying that he had a patient who wanted to drive coast-to-coast – but he had to avoid high altitudes because of his health. The routers planned a cross-country trip on which all roads were well under 4,000 feet above sea level, and sent marked maps for the journey.

One tourist who hated repetition asked how he could drive through every state capital without backtracking. He couldn't bear, he said, to travel any part of the same road twice. The tourist center planned the trip.

One winter afternoon, a motorist telephoned a New York touring service office and said that he was driving to Indiana the next day. "Are the roads clear?" he inquired. "Will I have to detour anywhere?" With its up-to-the-minute information regarding travel conditions, the touring office was able to answer this inquiry immediately.

Not all of the inquiries come from motorists. Hitchhikers sometimes ask for a list of the most traveled roads. A man once wrote to a touring service, explaining that he intended to roller skate from Chicago to Los Angeles and wanted to know the route that avoided as many hills as possible.

And from Hampton, N. S., Canada, came a letter written in a delicate, wavering script: "I am a retired school teacher, a bachelor, living alone – and I have rather a lonely life. I derive much pleasure from maps showing places which I read or hear about on the radio. If you care to send me some maps, they will be much appreciated."

The travel offices where motorists may personally discuss their touring problems are located in several of the large cities, usually in a centrally-located office building or hotel. In these offices, several routers stand behind a wide counter, below which are arranged – in neat pigeonholes – maps of every part of the United States serviced by the company.

The visitor approaches the counter and tells a router the destination he has in mind. The router whips out the proper maps, traces the most desirable route in transparent ink, suggests scenic detours and points of interest, and marks the places (if any) where the motorist will encounter highway construction, bridge or ferry tolls, etc. If the motorist is planning a long trip, he may leave the office with seven, eight, or a dozen road maps in his pocket. All of this service is given gratuitously.

The oil companies' latest device in the way of maps is the cruising guide – a chart given to small boat owners. These guides show channels, depths, lighthouses, buoys, Coast Guard lifeboat stations, yacht clubs, etc. – but are not intended to take the place of the charts, coast pilots and current tables issued by the U. S. Coast and Geodetic Survey.

Several organizations are already considering the possibility of air maps, developed along the same general lines as road maps and cruising guides. The demand is not sufficient at present to warrant production of these maps on a large scale, but plans are being made, nevertheless, to supply air travelers' map needs when the "family airplane" becomes a more common feature of the American scene.

Meanwhile, the distributors of road maps take satisfaction from the fact that motorists today are receiving the best in modern, scientific cartography.

ETC 23460

CARS AROUND THE CORNER

(Continued from Page 7)

bantam size cars, have been formed and hope to get into volume production during 1948. The most talked of possible new entry into the conventional passenger car field continues to be the rear-drive Tucker '48. Recent advertisements said the Tucker would be available "in a matter of months."

Interest in the bantam car stems from the fact that certain segments of the public recently have indicated a desire for cars costing under $1,000. While most manufacturers have been concentrating on the production of bigger automobiles, the one established maker of bantam cars is producing in comparatively large numbers and a few postwar companies have displayed pilot models of their small cars.

In shooting for an all-time record production, while at the same time turning out the finest cars ever assembled, the automotive industry realizes that a backlog of six million orders makes it a physical impossibility to produce a new vehicle this year for all who want one. In fact, it may be 1950 or 1951 before it is possible to walk into an automobile showroom, select from a variety of models, and then have that auto delivered to your door the following day.

Until that goal is reached, the automotive industry can do no more than it is currently doing. Manufacturers have pledged themselves to produce every last car, truck, and bus of which their facilities are capable. The target for which the industry is aiming is the highest possible. Given an adequate supply of materials and manpower, it is confident it can write automotive mass production history in 1948.

OUR COVER: In an average year, the automobiles and truck-and-trailer units that make up the fleet of the Ethyl Corporation road research laboratory at San Bernardino, California, travel better than half-a-million miles over one of the nation's greatest natural proving grounds.

On the cover, part of Ethyl's fleet is viewed approaching the summit of 4,301-foot high Cajon Pass, one of the many steep mountainous highways in the area. At the other extreme, on the nearby Mojave Desert, there are long roads of almost absolute flatness. The wide range of topography and weather conditions in the area around San Bernardino permits research on fuels and engines the year round under a range of conditions representative of those encountered in a large proportion of the United States.

Road research, as conducted by both the San Bernardino and Detroit laboratories of Ethyl Corporation, is an essential part of the procedure for evaluating fuels, engines and lubricants. (The photograph was taken by Larry Kelley).

OUR PICTURES: Pages 3-4, courtesy Chevrolet Motor Division. Page 5 (top), courtesy Hudson Motor Car Co.; (center), courtesy Cadillac Motor Car Division; (bottom) courtesy The Studebaker Corp.; Page 6 (top), courtesy Packard Motor Car Co. (center), courtesy Oldsmobile Division; (bottom), courtesy Kaiser-Frazer Corp.; Page 7, courtesy Fisher Body Division; Pages 8 (except top) through 11, and 15 (top), Press Association; Page 8 (top), courtesy New York Yankees; Page 11, cartoon by M. J. Davis; Page 14 (left), Wide World; (right), Acme Newspictures Inc. Page 15 (bottom), Black Star; Pages 16 and 18, maps courtesy Map Room, New York Public Library; Pages 20-21, courtesy Standard Oil Co. (N. J.); Page 22, cartoon, Laughs, Unlimited. Third cover, Philip Gendreau.

"Can't you remember where you hid it?"

ETC 23461

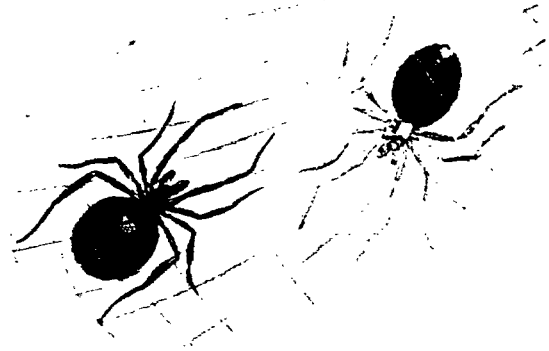
ETC 23462

When you see these "look-alikes"

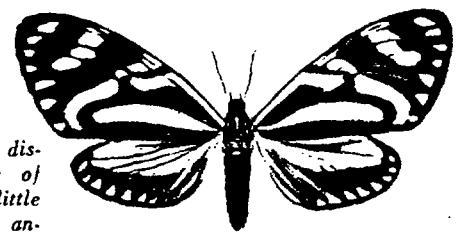
THE "TRADE-MARKS" OF NATURE*

identify which is which

*Prepared in cooperation with specialists of the American Museum of Natural History, N.Y.

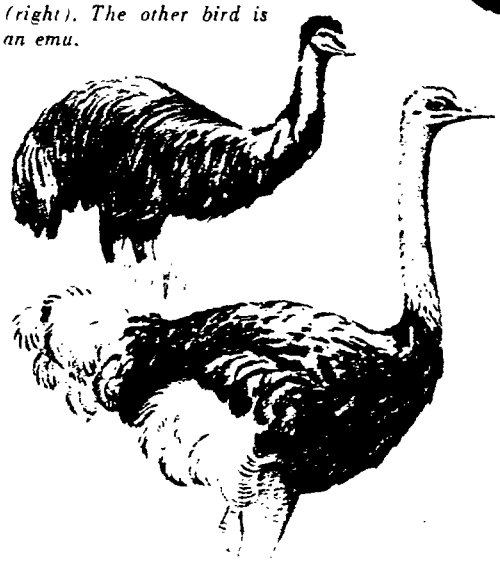


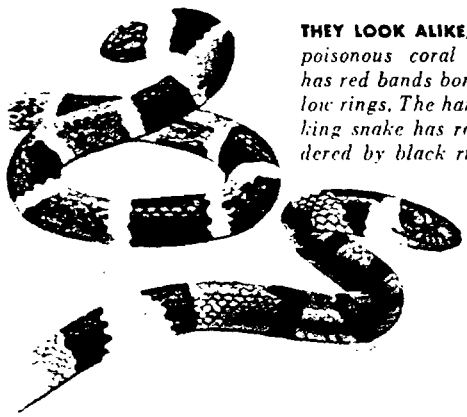
THE BLACK WIDOW, *whose bite may be fatal, is identified by the red hour-glass marking on its stomach. The other spider is a harmless species.*



BUTTERFLY *or* **MOTH?** *The distinguishing characteristic of the butterfly (left) is the little knobs on the ends of its antennae, or feelers. The moth doesn't have these little knobs.*

WHICH IS THE OSTRICH? *The plume-like feathers and long neck mark the ostrich (right). The other bird is an emu.*





THEY LOOK ALIKE, BUT . . . *the poisonous coral snake (top) has red bands bordered by yellow rings. The harmless scarlet king snake has red bands bordered by black rings.*

When you buy gasoline . . .

THE TRADE-MARK "ETHYL"

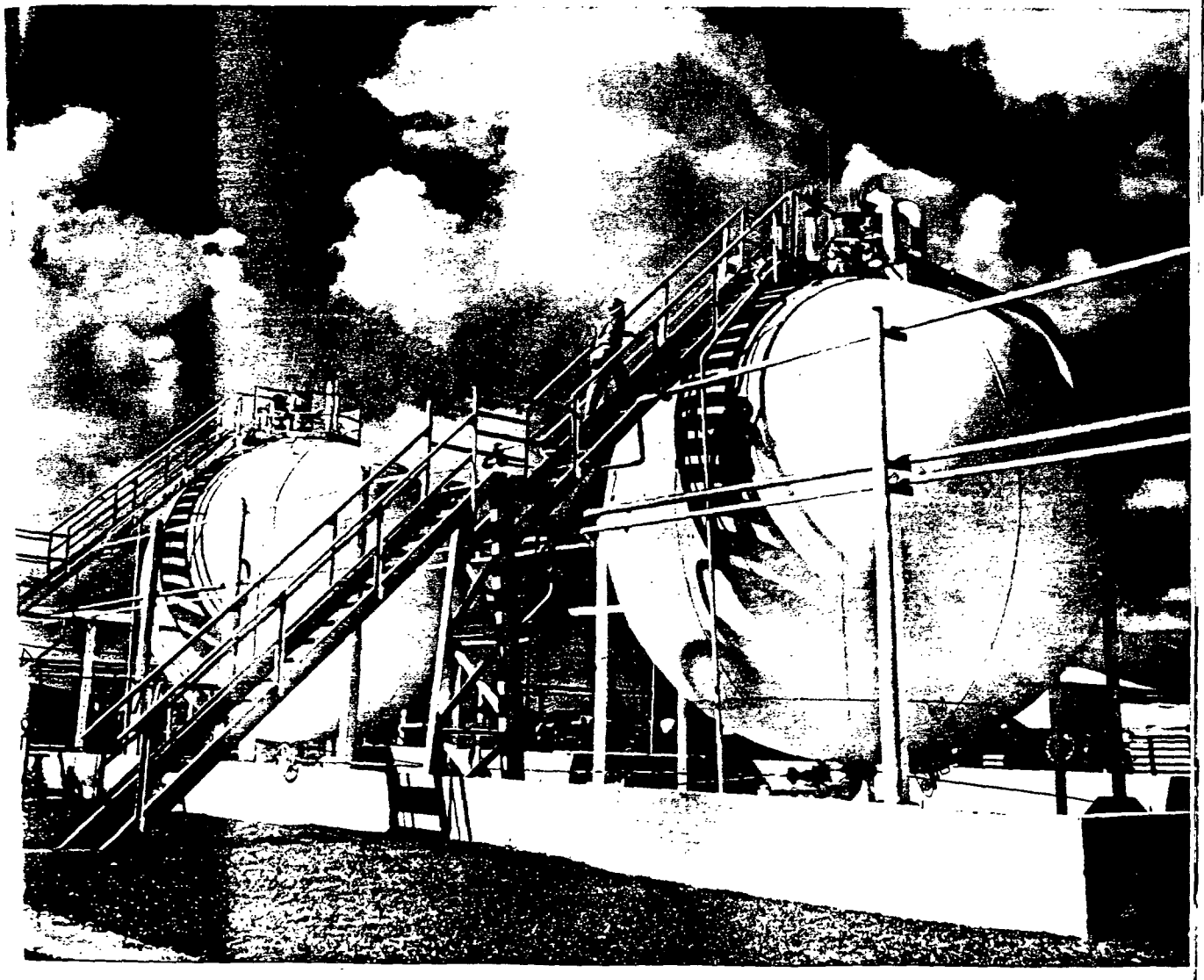
identifies gasoline stepped up with "ETHYL" antiknock fluid

To get the most mileage from your car — use high quality gasoline improved with "Ethyl" antiknock fluid and have your motor service man tune up your engine to take full advantage of its higher quality.

In these days when the oil industry is working night and day to keep up with the demand for gasoline, you can help conserve gasoline by driving only when necessary and avoiding long trips. Don't drive at high speeds, make "jack rabbit" starts or let your engine "idle" when parked. Have your car serviced regularly and keep tires properly inflated. *Ethyl Corporation, N. Y. — makers of "Ethyl" antiknock compound.*

ETC 23463

ETHYL NEWS



MAY ★ 1948

ETC 23464

IN THE

ETHYL NEWS

MAY 1948

Ethyl's expansion program — in which the Corporation is expending more than $28 million to increase its manufacturing capacity — accents the importance of the work of a number of people who direct various phases of the manufacturing operations. Among them is Roy N. Clothier, Manager of the Operations Section at the Ethyl plant in Baton Rouge, La., who is being assigned broader responsibilities to insure uninterrupted smoothness in all manufacturing operations during the course of the expansion program.

One of Mr. Clothier's responsibilities is to have the Baton Rouge plant achieve maximum production with its existing facilities until the new manufacturing units are completed. As part of this, it is interesting to note that an over-all production increase of more than 40% has been attained at the Ethyl plant, as a result of efficiencies, economies and new streamlined operations methods developed during the past year.

Mr. Clothier, who has been associated with Ethyl since 1939, works closely with all section managers in the development, execution and coordination of authorized programs. Superintendents in the three manufacturing areas of the plant look to him for guidance in bringing their separate operations together into a unified pattern. Close to 1,200 men — a third of the plant's personnel — are responsible to him.

A native of Fairvalley, Okla., Mr. Clothier had wide experience in developing and operating refinery processes and facilities for the petroleum industry, before joining Ethyl.

SPEEDWAY TO FAME 3

For ten years, the speed record for the 500-mile Indianapolis race has stood at 117.2 mph. But this year, a new record is more than a possibility as the nation's top drivers prepare for the event.

A NOSE FOR BUSINESS 8

All of the odors known to man can be reduced to a basic four. In so doing, a new odor classification system is proving to be a boon to many businesses.

PORTRAIT OF MIKE BENEDUM 12

To oil men generally, the new Benedum field in West Texas represents the outstanding discovery of recent years. But to Michael L. Benedum — for whom the field was named — the discovery is just another milestone in a lifetime of wildcatting.

NEW WORKSHOP FOR CHEMICAL RESEARCH 16

A new addition to Ethyl's Research Laboratories in Detroit will provide enlarged facilities for Ethyl's research staff.

SIMPLY FANTASTIC 19

Out of the general growth of pulp magazines has emerged a specialized type that blends science with fiction. Today, these science fiction magazines are enjoying a wide appeal — and for a curious reason.

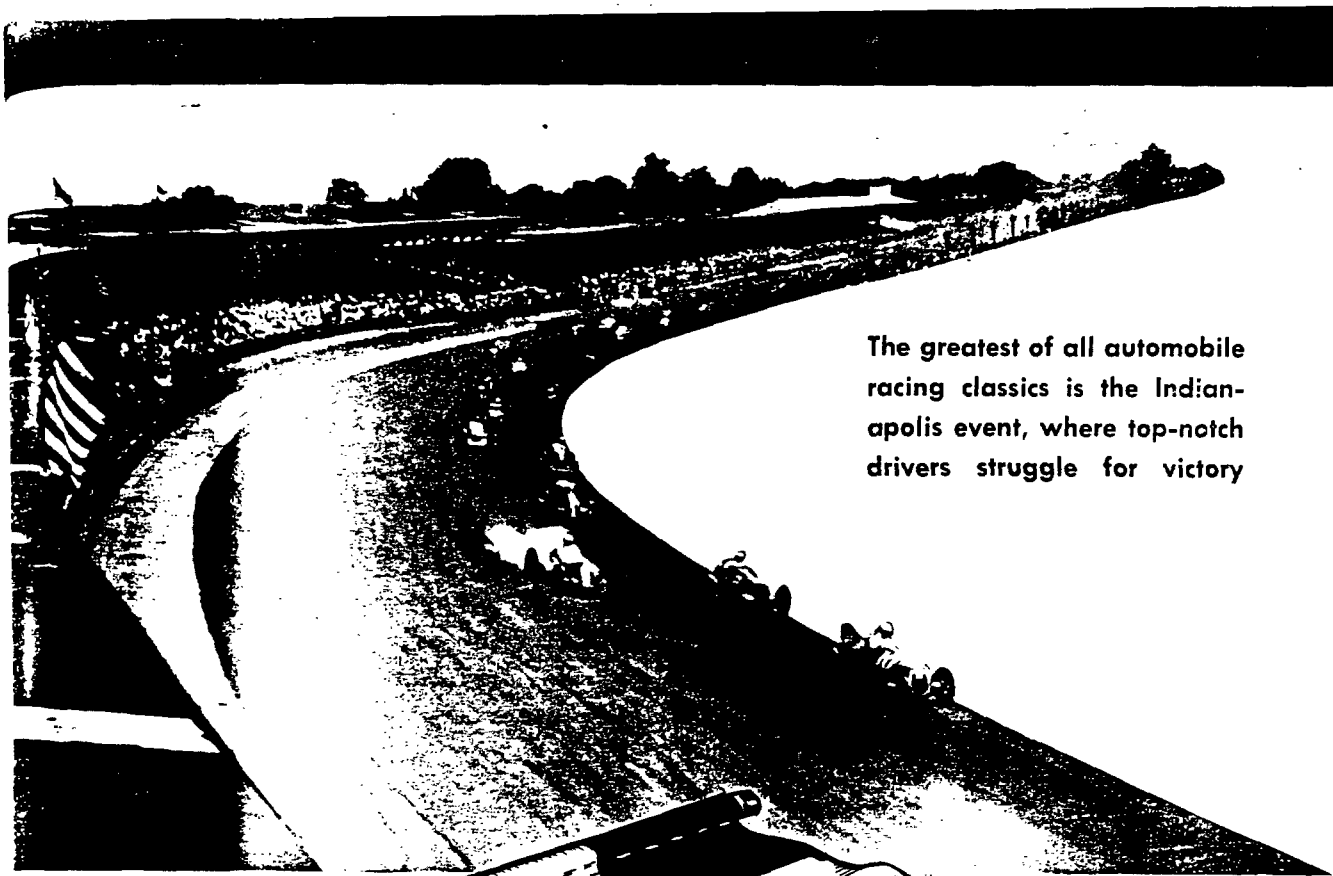
In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Julian C. Gonzalez, secretary

ETC 23465



The greatest of all automobile racing classics is the Indianapolis event, where top-notch drivers struggle for victory

SPEEDWAY TO FAME

UP AND DOWN Hoosierland and for acres around, there is but one main topic of conversation this time of year. Along the banks of the Wabash – and wherever else there are rabid auto racing enthusiasts – the buzzing is of the forthcoming 500-mile Memorial Day race at the historic Indianapolis Motor Speedway.

And there's plenty to talk about, too. For, the breakneck competition, which budded again in 1946 after a five-year span of wartime inactivity, is due to blossom forth this May 31 in all its postwar glory. For this, the 32nd running of the classic, guaranteed prize money is being maintained at the record high set last year, new rules are in effect to make for faster racing times, and foreign models are back on the oval to season the holiday proceedings with an international flavor. More important, from the contestant's standpoint, specialized engine and car parts are again generally available.

Drivers and Cars Must Be Fit

Demon drivers and their highly-trained pit crews spend anxious months preparing for the strenuous 260 minutes – more or less – of competition. Not only the cars, but the drivers themselves, must be in tip-top shape. A man whose physical condition will not permit him to withstand the rigors of the wheeled combat has no place on the Speedway. The stringent Indianapolis regulations also rule out, as undesirable menaces, drivers of the "irresponsible" type.

Traditionally, the Indianapolis whirl gets under way at 10 a.m. (CST). Some four hours and 20 minutes later, the familiar black and white checkered flag waves home the winner. Waiting for him at the

ETC 23466

Wilbur Shaw, now president of the Indianapolis Speedway, wearily waves after his third victory in 1940. The Classic's top prize winner, Shaw won over $91,000 in 13 years

end of the 200 trips around the two-and-a-half mile course are both fame and fortune. His name is blazoned in large type across the nation's sports pages, and his earnings mount high into the tens of thousands of dollars. Perhaps he won't take down as much as the record $65,000 or so Billy Arnold realized from winning the 1930 event, but the champion certainly will have new income tax obligations.

But before he can hope to win the Memorial Day outing, the man behind the wheel first must qualify as one of the maximum 33 starters. To do that, he is required to average at least 115 mph during a 10-mile prerace spin in the days just before the "big whirl."

If it needed such stimulus, this year's "500" carries added importance because a new speed record is more than just a possibility.

The availability of top quality replacement parts and certain metals accounts for the thinking in this direction. Even in 1942 there was a shortage of essential racing car materials, particularly the high type of bearing metals required. Now, however, for the first time since before the war, these important metals are again to be had. So it will not come as a surprise if the 500-mile Speedway record average speed of 117.20 mph, set by the late Floyd Roberts in 1938, goes by the boards.

Another factor that makes for faster times is the lifting of restrictions governing the weight and body style of cars. This was done last year. Prior to 1947, vehicles had to scale at least 1,850 pounds, while being not less than 32.46 inches wide. With these limitations off, the weight of some cars has been reduced as much as 250 pounds with a resultant average increase in speed of three mph. The removal of the minimum width requirements has brought about, among other things, cars barely wide enough to accommodate the driver.

Rules for piston displacement and superchargers for the 1948 race remain unchanged, permitting two types of entries. Cars equipped with non-stock supercharged engines are limited to a maximum piston displacement of 183.06 cubic inches, while the top for non-stock engines without superchargers is 274.59 cubic inches.

This is a far cry from the engines of 1911, when the Indianapolis "500" was first held. The rugged

A group of drivers taking a refresher course on the various flags which are used to signal them during the race

ETC 23467

giants of that inaugural year were allowed a piston displacement of 600 cubic inches, and most of the early engines were huge in comparison even with modern bus and truck motors.

As engineers and designers have strived for – and attained – ever greater power and efficiency in automotive engines of all types year after year, the size and design of the racing car motor have undergone drastic changes. From the mammoth engines of decades ago has evolved today's engines – compact, small, and more powerful than most pioneer racing drivers ever dreamed possible.

Back in 1911, when Ray Harroun piloted his six-cylinder Marmon Wasp to victory at the average speed of 74.59 mph, the gallery at the first Indianapolis event was dazzled. But modern drivers, it has been noted, could run the "500," make a round trip to Louisville, and be back at the Speedway in time to smoke a cigar while waiting to greet the winner of the 1911 contest. Vastly improved engines and car design, plus superior fuels, spell the difference, of course.

From the crowd of about 30,000 that witnessed Harroun's triumph, the Memorial Day speed derby has matured into America's best-attended single sports event. Some 85,000 can be seated in the grandstands, and there is room for 100,000 more in the spacious infield and paddock. And even greater attendances – 200,000 or more – are a possibility in the not-too-distant future, inasmuch as additional seats are planned as soon as government restrictions on this type of construction are removed.

To the average fan, the Indianapolis contest is primarily one between man-car twosomes to determine which combination can outface the other. But there is much more to it than that.

Race tracks in general and the Speedway in particular serve as invaluable proving grounds where engineers may subject new laboratory developments to the most gruelling of all road tests. The Indianapolis plant was built in 1909 specifically as a proving ground for automotive vehicles and, although its original use has changed, it has remained at the disposal of the automotive and petroleum industries ever since.

Paced Many Improvements

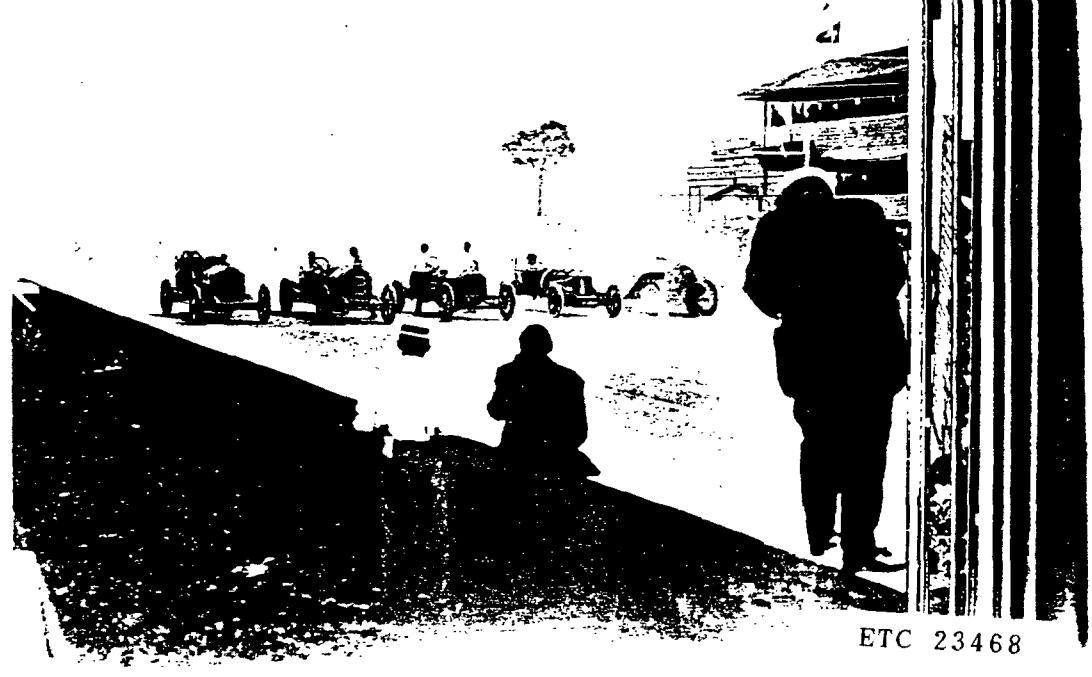
It is not unusual that a refinement or improvement tested during a Memorial Day race will be found incorporated in the passenger car or commercial vehicle of a few years hence. Such, at least, has held true in the past. Among the automotive developments to which the racing classic has contributed are straight-eight engines, four-wheel brakes, high speed balloon tires, long-wear tires, safety glass, and the rear-view mirror.

Many technical men agree that the wear and tear on engines in the 500-mile competition corresponds to 50,000 miles of normal passenger car driving. The continual vibration from pounding over the brick-layered track can literally shake a car to pieces, and drivers often lose as much as ten pounds in a single race. So exacting is the ride that usually only one out of three starting drivers completes the full route. Those who do end up with severely blistered hands and an ear "buzzing" that lingers for days.

Mechanical defects are a constant source of heartbreak to drivers and their crews. Take that never-to-be-forgotten incident of 1912. Ralph DePalma was leading with only a short distance to go when his Mercedes just stopped dead. DePalma hopped out of the car and began to tinker with its engine. When that proved hopeless, the plucky Italian driver did the next best thing. With the help of his mechanic, he pushed his racer across the finish line – and even so only one vehicle beat him to it. But the rules didn't allow that sort of thing, so DePalma stood disqualified at 198 laps.

Frank R. Elliott also saw almost

The first 500-mile race in 1911 was won by Ray Harroun who drove his Marmon to victory at a speed of 74.59 mph



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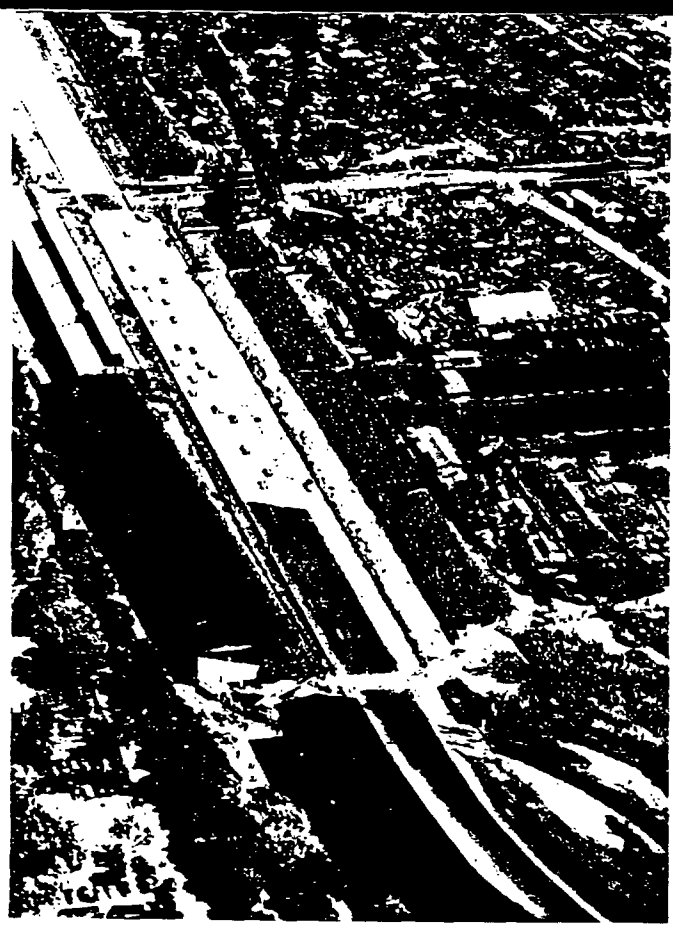


An aerial view of the Speedway. The big 500-mile race usually attracts an audience of better than 150,000 people, who come to see the nation's foremost drivers compete

certain victory turn into defeat – all because 20 cents' worth of engine material failed. Elliott, now an Ethyl Corporation fleet engineer in the Western sales region, was leading the 1926 race and had only 28 laps to finish. Then, suddenly, a valve spring snapped and he was put out of the running.

But such incidents have their redeeming features, as do most such track breakdowns. What happened to Elliott's car, for example, led to changes of design and material which greatly improved valve spring characteristics. In turn, these changes made possible, in some measure, higher speeds in automotive engines.

Ethyl Corporation has in a way participated in the Indianapolis races of the past quarter-century. This it has done by offering the services of its representatives to any entrant who requested advice and assistance on problems relating directly to the fuel.

Needed Better Fuels

Previous to the mid-1920s, fuel was of little concern to the Indianapolis contestants because the low compression engines of those days could operate satisfactorily enough on any good straightrun gasoline with some higher octane fractions and benzol added. But as the piston displacement of the racing engine was steadily reduced – from 183 cubic inches maximum in 1922 to 91⅔ cubic inches in 1926, for example – the need for new and special fuels to eliminate knock in the smaller motors of higher compression became apparent.

Significantly and appropriately, "Ethyl" antiknock compound was developed and first marketed during this particular period of engine improvement.

The first use of "Ethyl" gasoline in Indianapolis racing cars occurred in 1923. Men associated with the development of "Ethyl" antiknock compound took a small quantity of the fluid to the Speedway that year and arranged for a few drivers to run their racers on gasoline treated with it. "Ethyl" gasoline had just gone on the market on a limited scale, and was far from the widely known product that it is today. Thus, its use in the 1923 event was

For many families, the race is an annual outing. They arrive early, prepared to spend the day, and when they lack seats in the grandstand, they put their cars and trucks to good use

purely on an experimental basis.

The following year, however, "Ethyl" gasoline was submitted to a full-dress public demonstration at Indianapolis. One-third of the 21 racers that started the 1924 contest were powered on gasoline containing "Ethyl" antiknock compound. At the end of the grind, those seven cars had won the first seven places.

Increased Power Output

The superiority of the improved gasoline was immediately obvious to racing men. Drivers found that not only did the leaded gasoline permit an increase in compression pressures, but that by controlling detonation it lowered engine temperature. Prior to the availability of the improved fuel, overheating due to knock had caused valves to stick, warp, and burn, to mention just one complaint to be heard along the Speedway's "gasoline alley."

For the most part, Indianapolis racing cars used what was commonly termed a 14-20-50 mix. This was a blend of 14 cubic centimeters of tetraethyl lead, the prime ingredient of "Ethyl" antiknock compound; 20% benzol, and 80% aviation base fuel. Other mixtures also were employed, however, so that the addition of 14 cc. of tetraethyl lead to each gallon of gasoline was neither a set nor uniform blend. Many gasoline-powered racing cars now use commercial aviation fuels of the highest performance number with "Ethyl" fluid added.

In recent years, some race drivers have turned to alcohol mixtures instead of gasoline. Experienced Speedway observers say, however, that the use of alcohol fuels on that track has reached its peak, and forecast that gasoline will remain the favorite fuel of most contestants. Alcohol fuels, usually consisting of upwards of 80% methyl alcohol, cost about $1 a gallon and give four miles to the gallon. Thus, 125 gallons are needed for the 500 miles. In contrast, the 1937 Speedway winner consumed only slightly more than 32 gallons of gasoline.

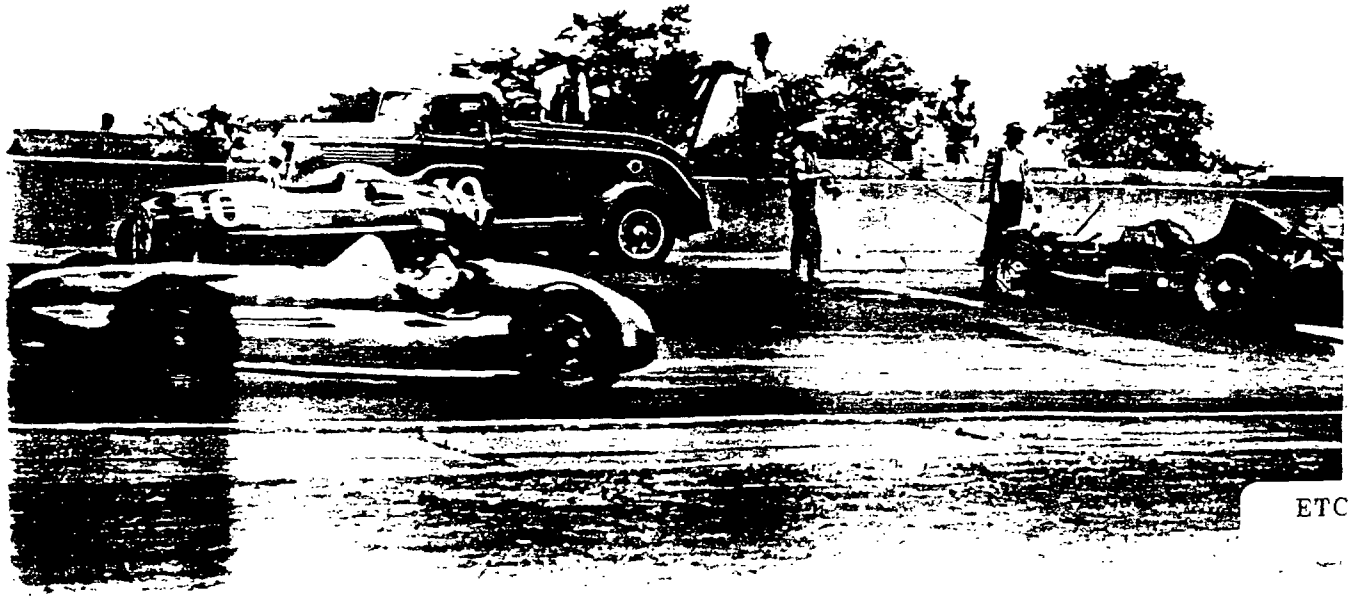
As for rocket-propelled racing cars, one guess is as good as another. A rocket racer was tested on the Indianapolis oval in 1946, but it was strictly a private experiment and was not witnessed officially.

Experiment with Rockets

Using 41- and 70-pound rockets, the driver estimated he upped his speed 20 to 40 mph, respectively, although for only a limited span of time. Opponents of the idea point out that rockets at present are impracticable for one important reason, if none other: The heat and thrust of the rocket, and the ensuing heavy pall of smoke, might injure or temporarily "blind" other drivers.

Whatever the fate of the rocket racer and other future design developments, the Speedway management intends to stand by its fixed policy of making the Indianapolis Memorial Day races "a continuing contribution to the safety, speed, and economy of passenger cars and trucks to be driven by the public in the years to come."

Accidents and injuries are all part of the game to the racing drivers. Here, a driver speeds on while a wrecking crew quickly prepares to carry away two disabled racing cars



ETC 23470

A Nose for Business

By reducing the world of the nose to four basic smells, a new odor classification system is helping industries to make their products smell just right

By E. W. Mac Nab

HAVE YOU EVER SMELLED a wet dog? You'd rather not? But you have smelled strong cheese, and you've dozed by the fire, and you've had beer, or at least lemonade.

Very well, then. Consider yourself a Nose Doctor, that is, a Ph.D. in the profession of smelling. You've had all the experience necessary to qualify you to analyze and describe every odor in the world.

At least that's what Ernest C. Crocker of Arthur D. Little, Inc. will tell you. Little's is a Cambridge, Massachusetts concern of industrial research chemists, the biggest of its kind in the world. Mr. Crocker is Little's Smeller-In-Chief, a man regarded by the profession as one of the world's outstanding odor experts.

About 20 years ago, Crocker, working with an associate, L. F. Henderson, determined to simplify the world of the nose. He succeeded so well he almost eliminated smell entirely. He boiled all the smells in the world down to four basic odors. The four basic odors, according to Crocker-Henderson, are: 1. Fragrance; 2. Acid; 3. Burnt; 4. Caprylic. "Caprylic" comes from a Latin word meaning "goaty." It refers to all animal odors. It's most readily identified as the smell of a wet dog. It's also the most noticeable odor in old cheese. "Burnt" is the predominant odor in burned toast, tar, a wood fire. "Acid" is the main smell in any acid, and in many foods containing acid such as apples and the citrus fruits. "Fragrance" is, of course, the chief property of flowers and perfumes.

One of the Four in All

To classify the world of odors was astonishing enough. But Messrs. Crocker and Henderson went on from there to demonstrate that every smell in the world partakes of *each* of the four basic odors.

In most fruits, for example, fragrance is nearly as prominent as acid. In some fruits such as papayas the wet dog smell may be more prominent than either.

"Wet dog," that is, caprylic, is an important odor component in spicy smells, woodsy smells, burnt smells, even flowery smells. In fact, the most successful perfumes have subtle hints of caprylic to give them sex appeal. Caprylic is the most important ingredient in fishy smells, metallic smells, rancid smells and the smell of infection.

Testing volatile flavors. The success of many a consumer product depends upon its having a proper flavor

ETC 23471

Ernest C. Crocker, using his odor classification system, is able to identify any known smell and express it in terms of a number. That number indicates the degree to which the odor being tested partakes of each of the four basic odors

There's a trace of burnt in every smell, too. Burnt is most noticeable in things which actually are burnt, like charcoal broiled steaks and fires, but it's also obvious in such things as "oriental" perfumes, spices, musty old rooms and festering wounds.

Acid is the most ubiquitous smell of all. It's at least the second strongest component of nearly every odor. It's strong in garlic, for example.

Fragrance is always present, sometimes to an astonishing degree, even in odors which are usually thought of as altogether disagreeable – odors like fish-scales or sour milk.

With smells thus digested and interrelated, Crocker and Henderson decided what they needed was an odor language. So they set up the "Crocker-Henderson Odor Classification System." Mr. Crocker, a quick, intense, chunky, little man who's now carrying on the work alone, is busy using this system to set up an "odor directory" which at present lists hundreds of odors.

To classify an odor, you take a Crocker-Henderson odor classification set, a chess-sized board with 32 bottles in four rows of eight bottles each. The eight bottles in each row represent the eight degrees of intensity of the four basic odors. Then, thinking of the smell you want to classify as a four note chord on the piano, you close your eyes and smell for one note at a time.

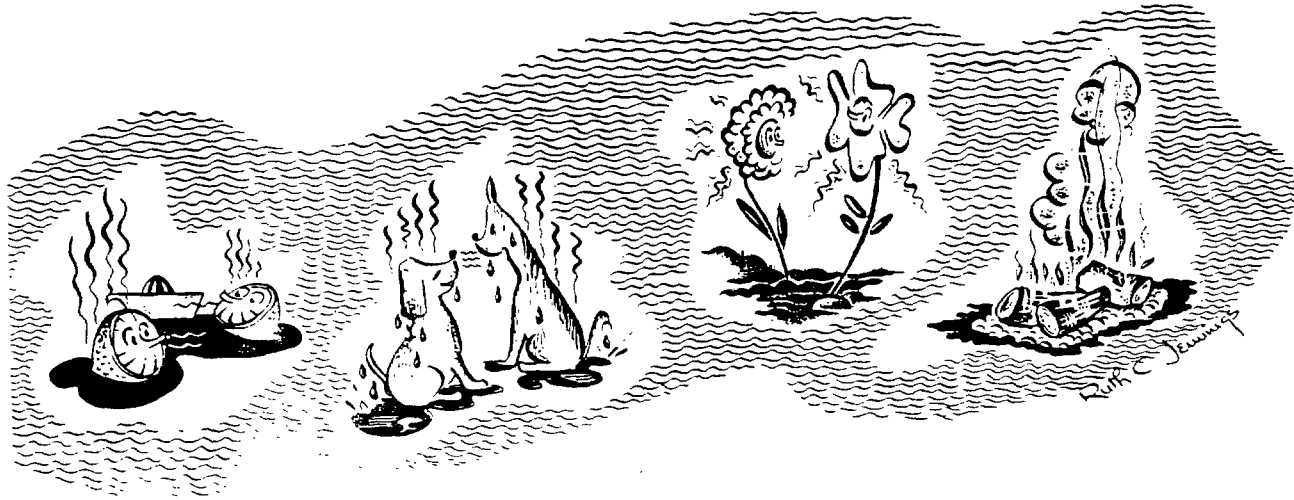
Suppose you've picked up from Mr. Crocker's bottle-forest of a laboratory table something that smells at first sniff like smelling salts. (It's really concentrated orange blossoms; trade name: "Neroli Absolute"; cost, $300 a pound.) Sniff cautiously thinking only of fragrance. If your nose is educated you'll jot down the figure "8." Then for acid you'll put down "3"; for burnt "4"; and for caprylic "5." Your concentrated orange blossom now reads like a telephone number – 8345. That, in brief, is its odor classification number.

Here are a few more odor classification numbers:

Oil of lime – 7333; oil of orange – 6333; (oil of lime is sweeter); lavender – 8224; syn amber (synthetic ambergris) – 8144; mountain laurel – 6565; indole – 6238; coumarin – 5114 (it smells like fresh hay).

All except mountain laurel and indole are pleasant odors. Mountain

The illustrations below represent the four basic odors, as most commonly found in nature — a lemon, for acid; wet dogs, for caprylic; flowers, for fragrance; and a fire, for burnt



ETC 23472

laurel is so pungent it hurts your nose; indole stinks.

Odor classification numbers reveal some weird things about smells. Take oil of peppermint (OCN 7223), add one degree of each basic odor, so that you get OCN 8334, and you have the smell of a rose.

Or take oil of cloves, 7563. Simply add one degree of caprylic, producing odor number 7564, and lo and behold, you have practically the smell of spruce trees (7465).

Actually there's a catch to it. All talk of "adding one degree of each basic odor" is purely hypothetical, because nobody's ever isolated a basic odor: so you can't make spruce out of cloves or roses out of peppermints.

The closest odor technicians can come to altering smells is by mixing other smells with them. But even then you never get one final odor number for the whole blend. You continue to smell each odor separately, if your nose is keen enough.

Mr. Crocker's Odor Classification System, now available at $35 a set (it's manufactured by the Cargille Scientific Co.) to men-in-the-street, is obviously a great deal more than a potentially intriguing toy for parlor games. It is, Mr. Crocker declares, the only means that industries which rely on smells have to standardize their basic products.

Smells play a far more important role in American life than most people have any idea of. The reason American cigarettes sell like hot cakes abroad is that they're subtly perfumed. The perfume disguises the obvious tobacco odor most British and Continental cigarettes have.

Science has discovered that our so-called "tastes" in food are really our smells, that the smell of roast beef, for example, really influences our liking for it a lot more than the way it really tastes. Anyone who's ever tried to eat a delicious dinner with a cold in the nose knows that.

What starts our saliva flowing before a meal is the *smell* of food. The gourmet hates to eat at large banquets because he knows the food is almost certain to be de-aromatized before it gets to him. He can't stand eating in cafeterias either, because he knows that steam-heat under uncovered serving dishes positively guarantees that all the appetizing aromas will evaporate and disappear.

The Little Co. has done a lot of work on food aromas. Ernest Crocker found out that what makes broiled steak taste so good is the smell of burned fat which has blended with it the juices and fibers of the meat. The flavor is mostly in the fat molecules. The flavor, that is, the smell in roast meat, on the other hand, is mostly in the cooked fibers.

Tasty apple concentrates are now being manufactured by distilling off the aroma of apple juice, setting it aside until the residue is concentrated to a thick syrup, then adding water.

Fresh fish depends for its rather pleasing salt water smell not on how recently it left the ocean but on how it was handled after it was caught. If careless fishermen pierce it with their forks while pitching it from schooner to wharf, it's apt to deteriorate rapidly. It becomes infected with its own bacteria which crawl around on its slimy scales looking for a way inside. As a result, its caprylicness increases, its acidity and fragrance decline.

Coffee extract manufacturers are trying to lick the problem of emulating the aromatic freshness of the real thing. They can't help losing it in the drying process. They're experimenting with putting it back synthetically.

If a soap manufacturer comes to Little's and says his customers want to smell as if they've just had a bath, Crocker will work up a perfume with a very low "volatility," meaning, of course, it will vaporize very slowly. If another manufacturer says his customers don't want to smell as if they've just had a bath, Crocker

The proper odor means good business not only for products but also for public places like hotels, restaurants and trains

One big problem, Mr. Crocker finds, is to give medicines the proper flavor. They must be made palatable—and yet not taste too good

will give him a highly volatile perfume.

One of Crocker's most complicated jobs is fooling people who have to take medicine. "We can't make it taste too good," he explains. "We have to leave a hint of bad taste so people will think they're taking something that's good for them."

Another difficulty is that they don't dare to make the flavor exactly like some natural product such as orange or chocolate or wintergreen. "If we did," Crocker says, "they might associate oranges and chocolate and wintergreen with being sick and they'd never want to touch them again." A final goal in flavoring medicine is to put in something that will give the medicine a hand in its job. That's why fruit flavors are so common in laxatives.

Although Crocker fools around with every smell you can imagine, and some that you probably can't, he has no illusions about perfume. "Don't ask me if we create new perfumes," he declares. "There aren't many more to be created."

Crocker feels that the great French perfumers of the early twentieth century, especially Coty, his personal idol, composed most of the more obvious symphonies in the world of fragrance. They explored natural fragrance, he says, and with the odorants then available they made every conceivable mixture of natural with synthetic fragrances. The best prospect for a really "new" perfume which Crocker holds forth is a new synthetic fragrance.

You can actually weigh and measure a smell. What the human nose detects as fragrance is simply the evaporation of solutions and substances. It takes an awful lot of evaporation to make a smell. There are billions of molecules in one sniff. Probably only an organ as extraordinary as a nose could cope with the problem. Fortunately a nose, human, is so sensitive it will notice the presence of odor even when one part odor is diluted with a million parts air.

Human and animal odor preferences vary by age and by species. Most children like fishy smells. They'll down cod liver oil quickly. Grown-ups, on the other hand, it has been pretty well established, like beer and whiskey (acid odors) a lot better than most children do.

Humans in general like fragrant smells best, acid smells second best, burnt smells next, and caprylic smells least of all. But dogs and other animals seem to prefer caprylic, Crocker has learned. In fact, he says, it's not fair to people to say that dogs are better smellers. True, a dog's area of nasal sensitivity is four or five times as large as a man's, but most dogs have no interest in fragrance at all, very little of acid, but very much in burnt, and most in caprylic.

People can train themselves to beat dogs at the smelling game, Crocker believes. For one thing the human nose has the remarkable ability, given proper training, to smell a substance exclusively for one of the four basic odors, oblivious momentarily to the other three. That's why it's possible to analyze and describe smells in such detail.

Also on the side of people as compared with dogs is that while dogs aren't interested in fragrance, people can actually learn to like caprylic. "We don't mind it any more," Crocker says, waving his hand around the lab and including half a dozen assistants. "We can't afford to stick up our noses at any smell. We have to be dogs around here. And do you know? We've found there's some good in every smell."

ETC 23474

PORTRAIT OF MIKE BENEDUM

Michael L. Benedum

The new Benedum field is generally known as 1947's outstanding discovery — but to one man it represents simply another milestone in a lifetime of wildcatting

By Robert P. Brundage

FORTY YEARS AGO, when the gasoline buggy was just catching on with the public and the nation was working up an insatiable thirst for oil, a young West Virginia wildcatter named Michael Late Benedum struck oil — the famous Caddo Field in Louisiana.

After World War I, when the country began to spin its present web of highways and the automobile began to drink unprecedented quantities of gasoline, this same "Mike" Benedum continued to search for oil — and made a number of notable discoveries.

Then again last December, amid a renewed wave of oil shortage talk, Mike Benedum, now 78 years old, was responsible for opening up a new oil field in the United States — a field which experts say may be one of the biggest discovered in the last 15 years.

It was a well in a wild, wind-swept prairie in Upton County, West Texas, a hundred miles or so southeast of the southeastern corner of New Mexico. It was jointly owned by the Plymouth Oil Co., one of the many concerns which Mr. Benedum controls, and the Slick-Urschel Oil Co. of San Antonio, Texas, which completed the actual drilling job.

Within a month after "Alford Number One" came in, drilling contractors and petroleum geologists were describing it in terms ranging from "greatest oil discovery of 1947" to "greatest oil discovery in West Texas." Paying tribute to the man whose faith was rewarded by the discovery, the Texas Railroad Commission named the area "the Benedum field."

While it is impossible to foretell how much oil the Benedum field will, ultimately yield (more test wells will first have to be drilled), there seems to be no question that it will become an important producer. On the basis of its first discovery well, preliminary estimates of its reserves range all the way from 100 million barrels to 500 and 600 million barrels. Whatever its ultimate position, most people agreed that the Benedum field ranked as

Bringing in a wagonload of supplies to the Caddo field of Louisiana, discovered by Mr. Benedum in 1909. To date, the field has produced 175 million barrels of oil

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the outstanding discovery of 1947.

But instead of resting on his laurels, Mr. Benedum meanwhile embarked on another venture that promises to be at least as exciting – exploring the Gulf of Mexico. In competitive bidding last November, one of his companies was a successful bidder, together with a number of other oil companies, for a total of 600,000 acres of offshore submerged land offered for lease by the state of Texas. To develop his acreage, Mr. Benedum formed a new company, the Melben Oil Co., which is reportedly planning to drill four test wells.

Oil men like Mr. Benedum believe that the submerged lands in the Gulf of Mexico promise to add huge new oil reserves to the nation's total, just as the California tidelands have long since become important producers.

Dramatic proof of this came some months ago when three companies – Kerr-McGee Oil Industries, Inc., Phillips Petroleum Co., and Stanolind Oil and Gas Co. – brought in the first producing well in the world completely out of sight of land. Located ten miles off the coast of Louisiana in the Gulf of Mexico, the well is estimated to indicate an underwater oil field of possibly 100 million barrels. Other companies have been engaged in exploring for oil in the Gulf, or have announced plans to do so, with more than 1,800,000 acres of offshore land under lease from Louisiana besides the 600,000 acres off the Texas coast previously noted.

In participating in the search for oil in the Gulf of Mexico, Mr. Benedum is embarking on merely another venture in a lifetime of wildcatting.

Made Important Discoveries

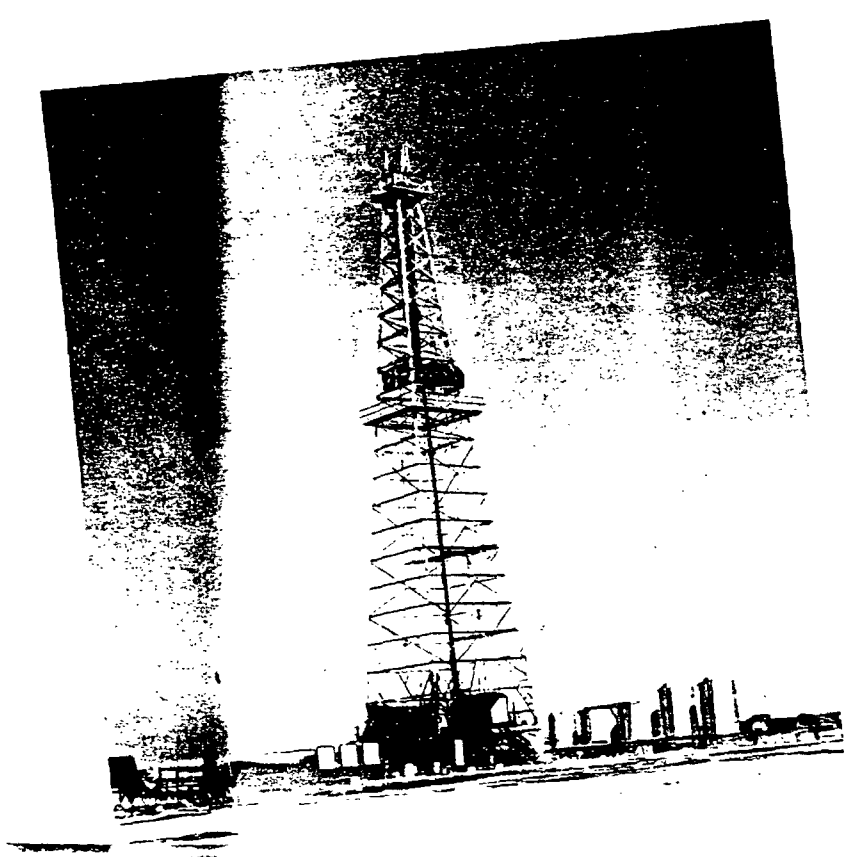
Starting on a shoe-string in West Virginia at the end of the last century, he went on to make the first big oil strike in Illinois, prove the Louisiana "Caddo," and help develop important fields in Texas, among many others. His drills roamed the world. He opened up Colombia's famous "Tropical" field and was among the first to probe for oil in Roumania's Ploesti fields, at Queen Marie's personal invitation.

Even at 78, wintering in Florida from January to May, Mike Benedum keeps a keen eye on all his enterprises: The Plymouth Oil Company, The Big Lake Oil Company, The General Oil Sales Corporation, The Republic Oil Refining Company, the Duvall Gasoline Company, The Duvall Pipeline Company, the Republic Pipeline Company, the Hiawatha Oil and Gas Company, The Ben-tex Oil Company, and the Benedum-Trees Oil Company.

Mike is a man with one supreme ambition: finding oil. The money oil means is incidental. Mike loses interest in a project once he's struck oil, his associates say; all he cares about, then, is the next well.

Each day Mike can tell you precisely how many wells he has drilling, in which quarters of the world, and what depth they've reached. His interest in such matters is as keen as another citizen's would be in major-league batting averages, Hooperatings, or how the race horses have been finishing.

Devotees of such statistics could do well to emulate his serenity. His followers say they've never known a man who had the ability to "write off" his failures, mentally and emotionally, the way Mike does. "When he misses he accepts it, and never talks about it again," one of them observed. "He starts thinking right away about the next one." When people tax Mike with being an "in-



The successful completion of Alford No. 1, the discovery well in the Benedum field, finally brought to a happy ending a half-million dollar gamble lasting nearly 10 years

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Walter S. Hallanan, president of Plymouth Oil Co., is well known throughout the industry

corrigible optimist" he replies: "Of course. You have to be to survive in this game."

He is also something of a spartan in his personal habits. He goes to bed at nine each night, never drinks, doesn't smoke at all, and never comes closer to cussing than "By Jingo!"

But though Mike is tough, mentally and physically, he's not "rough" as the popular legends about successful oil men would have you believe. His manners are polished, almost debonair, and he is very dignified, a characteristic expressed in the military erectness with which he holds himself. Though history already knows him as "Mike," only a few old friends call him that to his face. Close associates refer to him as "M. L." The rest of the world still addresses him as "Mr. Benedum."

Many have called Mike Benedum one of the "great gamblers" of history. Mike resents that. He denies that he's a gambler in the ordinary sense of the word. He's apt to lecture his own employes on the evils of gambling. "If *you* win," he's apt to argue with a would-be gambler, "you win somebody else's money. If *I* win, everybody wins; nobody loses."

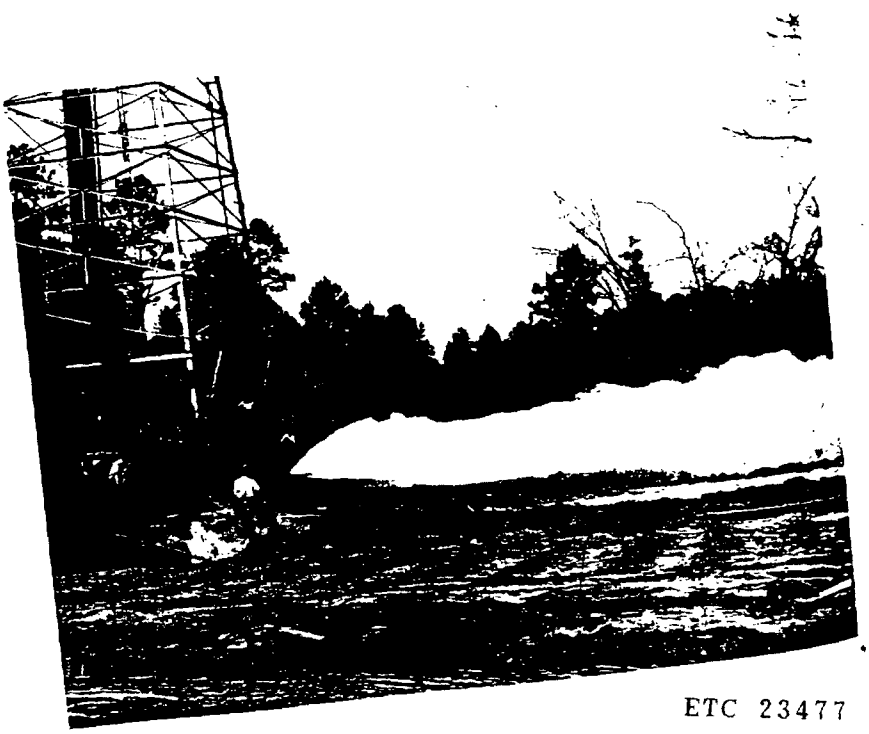
When Mike says "everybody wins" you can almost take him literally. More than a few of the secretaries and humble staff members working in the Benedum-Trees Building have won a great many thousands of dollars through buying shares in leases Mike has offered them. A number of Benedum employes are said to hold royalty worth $2500 an acre near the Alford which Mike bought for them several years ago for $10 an acre.

To men who grew up thinking oil was the sweetest smelling thing in the world, no oil has ever smelled any sweeter than the oil the Alford brought in. As a saga of victory over doubt and successive setbacks, the Alford is a fine symbol of the determination and courage that goes into the nation's treasure hunt for oil — and of the possible rewards for this herculean effort.

Plymouth Oil Co., run by one of Mike's top lieutenants, Walter Hallanan, started drilling the Alford in May, 1941, near the middle of a block of 12,000 acres. Benedum and Hallanan felt the well was a very good gamble, because several years before oil had been found only nine miles away in a limestone formation called the "Ellenburger." They were trusting that this "Ellenburger" continued north to their lease. The only trouble was the Ellenburger was 9000 feet deep where oil had been struck. This meant they might be in for drilling problems.

They were. They drilled 10,000 feet in five months without hitting the Ellenburger. It took them seven months to make the next 384 feet. One day the hole would cave in, the next they would wear out a bit trying to bite through the toughest of all underground formations, chert, the next they would lose their drill in the hole and have to spend weeks fishing it out. Once they wore out two bits in 24 hours drilling six inches.

Finally they decided to let the hole "cool off" for awhile. This was in 1942, and during the war it was hard to get drilling supplies, so they didn't return until 1946. Then they faced new disappointment. They



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found that the "liner," the steel sheathing they had sunk in the hole to keep it from caving in, had caved in itself. They couldn't get the drill pipe through it. By this time they had already spent half a million dollars and it was costing them $800 a day just to keep a drilling rig on the site.

They found a partner in Fred Turner, a lifetime oil man from Midland, Texas, who agreed to complete the hole in return for a half interest in the 800 acres immediately surrounding it and a third of the remaining acreage in the 12,000 acre block. Turner, in turn, got a "free ride" when he made a deal with 31-year-old Tom Slick of the Slick-Urschel Oil Co. to take his place in the partnership with Plymouth and to complete the well in exchange for a one-eighth interest in whatever oil Slick-Urschel struck in the Alford or the rest of its acreage.

Drilled At an Angle

Slick-Urschel backed up the hole Plymouth had dug, cut a "window" in the liner at 8,400 feet and drilled back down at a - degree angle. Using improved drilling tools they were able to penetrate the chert, and they hit the Ellenburger and oil at 11,020 feet. They kept on happily through 1002 feet more of pay formation without getting to the bottom of the Ellenburger.

The drilling crews who made the Alford pay off operated under the kind of conditions that allows Texans to boast you have to be tough to live down there.

The West Texas area where the Alford is located is a barren, windswept waste which once looked so unpromising to the University of Texas that they called off a geological survey of it, claiming it wasn't worth it.

When the Alford finally came in last December it reminded some of Mike's old cronies of Stiles Number 4, his well which proved the Louisiana Caddo field 40 years before.

Looked Better and Better

Mike's brother-in-law John Lantz was running the drilling crew, so the story goes. When the well came in at a depth of 2,212 feet – as deep a well for those days as the Alford's 12,022 feet is for today – John flogged a horse to Vivian, the nearest town and called Mike and his friend and informal partner, Joe Trees, in Pittsburgh. "She's in, Mike, and doing 1000 barrels."

"Fine," Mike said. "We'll leave Saturday."

Three hours later Lantz was on the phone again. "I just wanted you to know," he said. "This well's a humdinger, doing better than 2,500 barrels."

"Fine," Mike replied. "We'll start tomorrow."

Once more that day Mike's telephone in Pittsburgh rang and there was Lantz breathless on the other end again. "Mike, she's doing 5,000 barrels and hasn't begun to settle down."

"John, don't you bother to call us any more," Mike is supposed to have replied. "Joe and I are coming right away."

Alford Number One also kept looking better and better. Neither Plymouth nor Slick-Urschel could quite credit its potentialities. They tried to keep it a secret until they were sure, and succeeded so well that word didn't leak out to the public until a month after it came in.

But after the news was out, people were quick to realize that the Alford was not simply a successful wildcat but that it indicated a field of major importance. Some placed its potentialities at greater than the Big Lake field, which Mr. Benedum developed and which since 1923 has produced almost 100 million barrels of oil. Others went even further in their praise. Said Ernest O. Thompson, chairman of the Texas Railroad Commission, in a message to Plymouth and Slick-Urschel, "You have brought in a tremendous new oil field at a time when oil is sorely needed. It is perhaps the greatest discovery in Texas since the East Texas field 1- years ago."

Touched Off a Boom

Completion of the Alford set off the fiercest oil fever in the recent history of Texas. Land near the Alford has been leasing for $1000 to $3,500 an acre. Plymouth and Slick-Urschel have a joint interest in the 800 acres immediately surrounding the Alford. Then, in a square surrounding this inner area, Plymouth owns 8000 acres and Slick-Urschel 4000 acres.

Royalty directly under the Alford has sold for as high as $6000 an acre. That's as much as the best citrus and avocado orchards were bringing at the peak of the wartime land boom in southern California.

The discovery of the Benedum field symbolizes many things. To Mr. Benedum, as it would to any wildcatter, it represents a personal satisfaction and reward for a half-million dollar gamble that lasted for nearly ten years. To the oil industry, it represents a new oil field of great promise, after a war-long period in which exploration efforts were severely hampered. But to the country at large, it demonstrates that a lot of oil still remains to be discovered beneath our soil – and will be brought in as long as men of vision are free to do it.

nedum gas well coming in. The of considerable size, is located e Shreveport section of Louisiana

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new workshop

Completion of a new building, and conversion of an existing structure, will provide enlarged facilities for Ethyl's staff

FOR CHEMICAL RESEARCH

One of the planned features of the modern Ethyl Corporation Research Laboratories in suburban Detroit is that they are designed and equipped to permit such expansion in physical size and scope of activity as may be necessary to help solve the many complex technical problems of the engine-fuel-lubricant relationship.

For the past six years, since their completion early in 1942, the present Laboratories' accommodations have proved adequate. Now, however, it has become necessary to enlarge the facilities available for chemical research activities.

This is the new 7,500 square foot Chemical Workshop building in Detroit immediately after its completion

To supply the extra working area needed, a new Chemical Workshop building has been constructed on the 26 acres of Laboratories property. This structure provides Ethyl's research staff with approximately 7,500 square feet of additional space in which to carry on studies and experiments. The building is of one-story height and 50 feet wide and 150 feet long, and its architectural style is in keeping with that of the four other principal research buildings.

As a further part of the program to enlarge the chemical research facilities, an existing building, heretofore used for chemical workshop operations, is being converted into additional laboratory space for general research on chemical products.

Contained in the newly-built Chemical Workshop are a general processing room; an alloy preparation room; a distillation room, a shop for the repair and maintenance of chemical engineering equipment; a room for air compressors, a supercentrifuge, and a Dowtherm heating system; three offices, a storage room, a wash room, a shower room, and a locker room.

Largest of the 12 individual rooms, occupying one-third of the structure's area, is the general processing laboratory. Here, among other equipment, is located a complete 1/100 scale tetraethyl lead manufacturing plant, which formerly was housed in the original Chemical Workshop building, now being remodeled.

This plant makes available an autoclave for the various tetraethyl lead manufacturing process studies conducted at the Ethyl Laboratories. A rocking autoclave capable of operation at pressures as high as 5,000 pounds per square inch also is provided for hydrogenation experiments. The autoclaves are tested at pressures substantially higher than their working pressure, and are equipped with frangible discs to relieve excessive pressure.

Also located in the general processing laboratory are a glass-lined kettle and a glass-lined condenser having drain valves also lined with glass. Typical of the new equipment being installed in the building, this apparatus is of the latest design and construction. The glass-lined equipment is used in studies or preparations involving corrosive reactions.

The apparatus for distillations in the Chemical Workshop building has capacities greater than the columns in the Ethyl general chemical research laboratories and is employed, of course, to produce batches of fuels and lubricants larger than laboratory samples. The largest still has a 50-gallon capacity, and can be heated to a temperature of 300 degrees C. This still is equipped

with one each of 3-inch and 5-inch packed columns, and has a special reflux control and light-ends condenser.

Part of the distillation room has been set aside for tests concerned with the storage of gasoline samples at constant temperature. A hot air bath, capable of closely controlled temperatures in the range of 90 to 150 degrees F., is available for such storage tests.

In the alloy preparation room, where small batches of alloy are made and where alloy manufacturing studies are conducted, temperatures up to 700 degrees F. are produced by an electrically heated crucible furnace. In addition to the normal apparatus, the alloy preparation room contains a new piece of experimental equipment called "flame study" apparatus. This is used for research on the process of combustion.

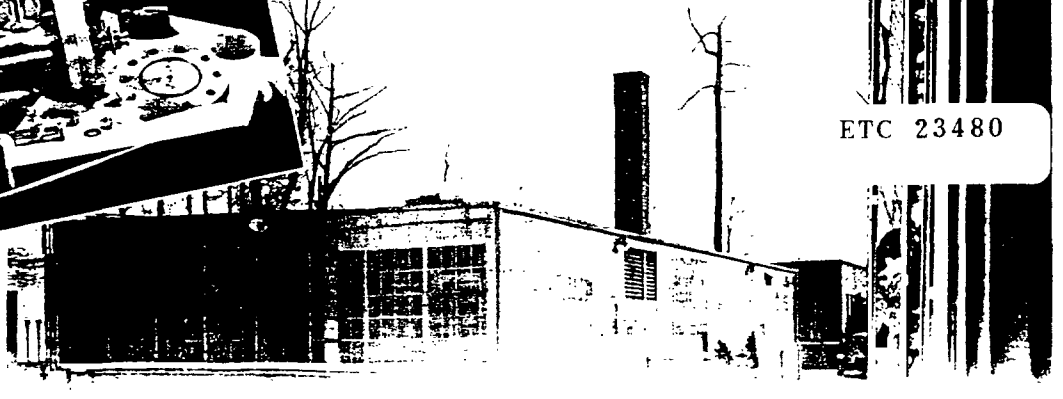
The Chemical Workshop building has a central system which can heat reaction vessels to temperatures as high as 300 degrees C. Also available is a three-ton portable refrigerating unit, which can be moved about the structure as needed for cooling purposes during certain research operations. The unit will produce any desired degree of coldness down to minus 15 or 20 degrees F.

All modern safety and utilitarian features have been combined into the new Chemical Workshop building. In those rooms where operations involving combustible vapors are conducted, electrical installations are of the explosion-proof type. Utility and service pipe mains are equipped with plugged T fittings at intervals of not more than 10 feet to permit the addition of future branch service lines without cutting into present lines.

One of the unique features of the new building is its ventilating system. This consists of a large blower connected to a duct with controlled louvred outlets to supply fresh air to four rooms and a separate air discharge blower in each of those four rooms. The large blower is capable

Left: Small scale quantitative studies are an important phase of the constant research effort to improve the process of manufacturing "Ethyl" fluid. Because of the complexity of the reactions involved, some of these studies are made, through the use of small bombs, in many chambers, and the results determined by statistical methods

Left: Studies of many chemical reactions call for special equipment, which in turn requires conferences between chemists and design engineers. Here, a group discusses a small-scale stirred autoclave used in research on the manufacture of tetraethyl lead. Below: This building, which formerly served as a chemical workshop, presently is being remodeled into general laboratories for research on chemical products



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of supplying 20,000 cubic feet of pre-heated fresh make-up air per minute, and the exhaust blowers vary in capacity from 2,000 to 4,000 cubic feet per minute. The four rooms which are ventilated by this system are the general processing room, the alloy preparation room, the distillation room, and the shop.

Turning on any of the exhaust blowers starts the fresh make-up air blower into operation and also opens the controlled louvred outlet which serves the room in which the operating exhaust blower is located. A Pressurestat in the fresh air duct modulates a damper on the inlet of the fresh air blower to keep pressure in the duct slightly above atmospheric pressure. Each blower can be controlled individually, or all can be operated at the same time.

The system for make-up and exhaust of air can be operated in three ways — to balance air exhausted, to build up a slight pressure, or to create a slight vacuum.

When the switch for the make-up air blower motor is set in the Automatic position, and an exhaust blower unit in an area is turned on, pre-heated fresh make-up air is automatically supplied to that area in volume equal to that being exhausted.

With the switch for the make-up blower motor set in the Manual position, fresh air is forced into all rooms. This procedure will be employed with the windows tightly closed when it is desired to use the rooms under a slight pressure. It also will be followed on Summer evenings in order to force stale warm air out of the rooms through slightly opened windows and to cool them for use the next day.

With the make-up air blower motor switch set in the Off position, no make-up air is supplied when the exhaust blowers are started. This makes it possible to maintain a slight vacuum in the rooms when desired.

The system was conceived by Karl Kuhn, staff architect of the Ethyl Laboratories, who prepared plans and specifications for both the new structure and the remodeling of the former Chemical Workshop.

In taking over the floor space of the former Chemical Workshop building, now being remodeled, the general chemical research laboratories will add nine experiment and study rooms and an office to their facilities. This building, incidentally, was the first constructed and put into use at the present location of the Ethyl Laboratories on West Eight Mile Road. That was in 1936. Three years later, the chemical research laboratory was moved to the present location from the original Detroit site on East Milwaukee Avenue. The engineering and aeronautical laboratories, together with the Technical Service Division and other personnel, completed occupation of the new facilities early in 1942.

In their entirety, the Ethyl Corporation Laboratories are devoted to research that will bring about ever better fuels and ever better engines. To achieve that goal, the Laboratories operate in close liaison with the industries which they serve. On the one hand, Ethyl research personnel cooperate with refinery technologists in developing petroleum products to meet the advancing requirements of engines. And on the other, they cooperate with engine manufacturers so that future power plants may best utilize advancements in fuels and lubricants.

It is to permit this research to expand both in application and scope that the Ethyl Laboratories are undergoing their first post-war enlargement. Like the current $28 million dollar construction program at the "Ethyl" antiknock compound manufacturing plant in Baton Rouge, the erection of the Chemical Workshop building in Detroit is another expression of Ethyl's conviction that great gains in engine and fuel progress are yet to be recorded.

SNAKE OIL ON THE HOOF

Most people think of a pitch as something a man does with a baseball or a horseshoe. But some 40,000 glib, fast-talking and alert Americans know better. A pitch, to them, is strictly a business matter. It is also a place of business, a show window, and a free show which pays off — for them.

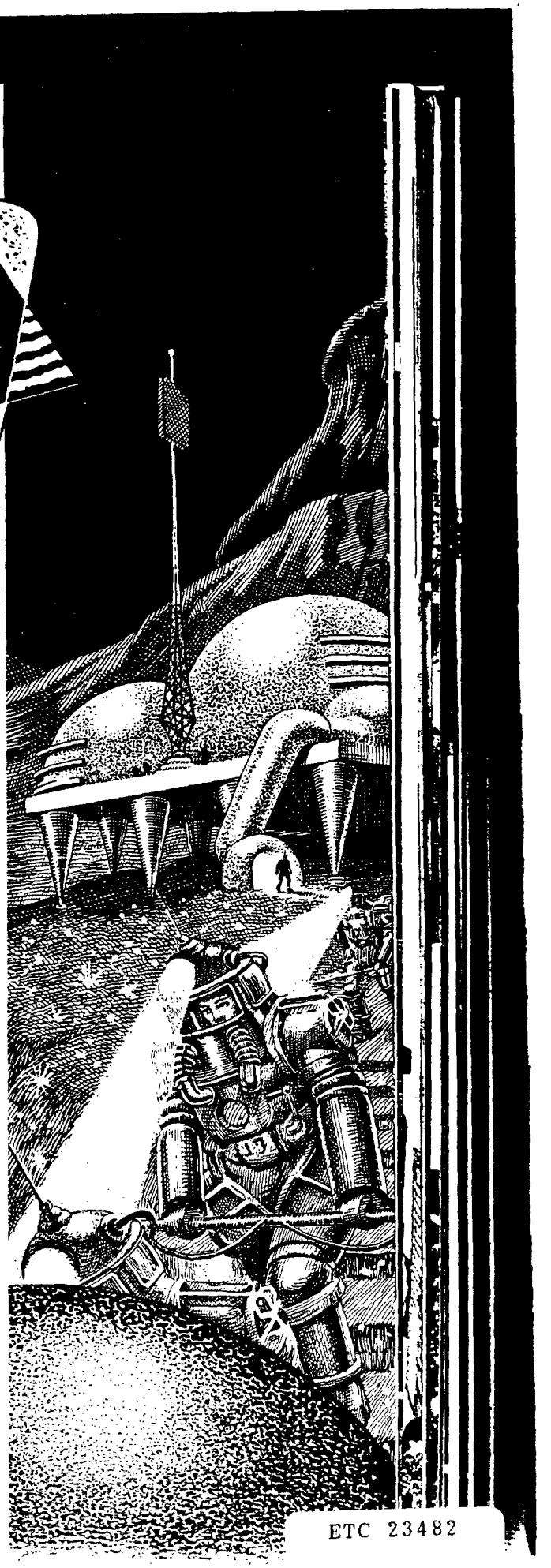
A pitch man — or woman — is a sidewalk sales person. He sells anything light, cheap, and portable. It might be an inferior silverware polish — "flukum" in their sidewalk lingo — which is easily compounded in a bathroom at three cents a jar, and which they sell for 35 cents. Other stock in trade are what they call "blocks," which are watches costing $3 and selling at $12. "Inksticks," or fountain pens, are still another favorite item of merchandise, which the pitchman marks up from half a dollar or less to whatever the traffic will bear.

When the cops are not too "hoss-tile," a good pitch artist will make 50 "spiels," or talks, a day, sometimes in as many different locations. A middle-aged Chicago woman, who has been in the business since she was 15, averages $7,000 a year and travels with the seasons. Others earn as much as $15,000 a year. The total take is said to be more than $100 million annually.

Police records indicate that there are about 1,500 women in the profession. The tools of the trade are a trip or tripod, which forms part of a collapsible table, and a keister, or suitcase, to carry the merchandise. In a few big cities good for long stays, the pitch workers take out "readers," or city licenses. But most of them would rather take a chance on the small fine usually imposed when they are run in. As a rule they are just chased — and they like it.

ETC 23481

SIMPLY FANTASTIC



Want to take a trip to the moon, learn about microbe men, see how things will be 100 years from now? You can — through the medium of a science fiction magazine

As Jimmy Crane looked into the magnatron microscope, the full impact of what humanity was facing struck home. Here was a world, a completely unknown world of microbe-sized men, whose scientific achievements dwarfed those of the big world. "This is mad," Jimmy said to Professor Garund. "Here is a world of microscopic proportions plotting to overthrow us. Lord knows how many midget worlds there might be, how many planets. Why these people even look like us and if it wasn't for your remarkable microscope we'd never know they existed."

Fantastic, you say? A piece of fiction? You're right on both counts. Not only is the foregoing excerpt a piece of fiction, but it is a special kind of literature—known as science fiction—which is hungrily devoured every month by thousands of avid readers.

In that wonderful realm of scientific fantasy, anything can happen and usually does.

Heroes fly rocket ships to the moon, engage in interplanetary wars, explore the remotest corner of the universe. Robot men, devised to be slaves, turn on their human masters. Races of microbe-sized people are discovered. Insects grow to gargantuan proportions and engage in titanic struggles with the people of the world. And, quite casually, time moves forward, backwards or stands still – whatever the author's whim.

Not only are these things taken for granted, but readers of science fiction years ago heard of the scientific marvels which today are shaking the world of real life. Jet propulsion, television, telepathy (including brain waves) and electronic calculators are all old stuff to the readers of science fiction, who take them as casually as you take turning on your radio.

There are about a half-dozen magazines devoted to science fiction. They are known to the public under such names as *Amazing Stories*, *Fantastic Adventures*, *Thrilling Wonder Stories*, *Startling Stories*, *Astounding Science Fiction*, and *Planet Stories*. Each magazine is read with great relish by about 150,000 persons, and the readership of the entire group probably totals close to a million individuals.

Most science fiction magazines are

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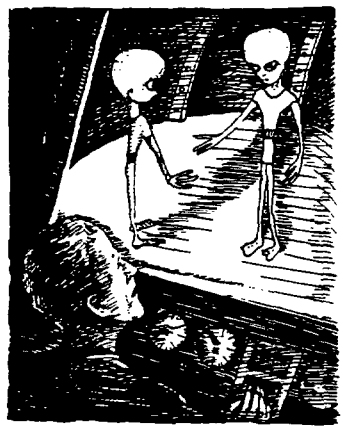


sold on newsstands and each copy is read by probably five or six individuals before it goes to the rag man or becomes a treasured part of a science fiction fan's collection. Testimonials of the long life of each science fiction magazine could come from almost any reader who has had his name in the letters-to-the-editor column of a given issue. In one case, a reader reported receiving correspondence 11 years after a magazine first published his letter requesting a "pen pal."

Today's science fiction magazine is known as a pulp magazine because it is printed on inexpensive pulp paper. Like other "pulps," it has its roots in the dime novel of a bygone day. All of the pulps have come a long way since their dime novel days when all the villains were ultra black and all the heroes super white.

Those were the days when the authors got their characters into unbelievable jams, but thought nothing of using super-human abilities to get them out. One typical case involved the writer of a serial who left his hero stranded in an "inescapable hole 30 feet deep, face to face with a deadly rattlesnake." In the next instalment, the author calmly wrote, "With one mighty spring Terris jumped out of the well. . . ." Today, Terris would have to be endowed with supernatural powers to pull one as fast as that—even in the pulps.

The pulp magazines, which are read by about 10 million readers, are classified as Westerns, detective, romance, adventure, or whatever other broad field they may cover. The science fiction pulps, however, are in a class by themselves, and are, in fact, considered the aristocracy of pulpdom.

Half of their readers are high school or college students, and the other half are adults. It has been estimated that more than 10% of all science fiction readers are professional people such as doctors, physicists, professors, and lawyers. The readers are a loyal, intelligent group, and once a science fiction magazine is well established, it pretty well manages to hold onto its circulation.

Offer Relaxation and Escape

How is it that a science fiction magazine can attract such highly intelligent readers? The biggest reason is that these fantastic stories offer them a means of relaxation and escape from the concentration of their daily tasks. More than one erudite college professor has been caught with a science fiction magazine under his arm, probably sandwiched between some technical reports he was taking home to study. Says an industrial chemist, an avid reader, "After working all day on experiments that just will not work, it's real relaxation to read about these science fiction scientists whose experiments always work."

Science fiction has enjoyed a sustained growth in popularity through the years. One reason it appeals to its audience, particularly its non-technical readers, is the high batting average of its authors in predicting future scientific developments. In books and in magazines these writers have at times been uncannily accurate in foretelling things to come.

The classic example is Jules Verne, who in his book "Twenty Thousand Leagues Under the Sea," predicted things years ahead of his time. So accurately did he describe a submarine periscope around 1865 that 20 years later, when Lewis Nixon, head of a submarine company, applied for a patent on the device, he was refused it on the basis that the invention "was not new." Another example is the late H. G. Wells who predicted world upheavals as well as scientific developments. Back in 1933 he predicted a naval war with Japan in 1937 and a war between Poland and Germany in 1940. For 1955 he forecast a "Raid of Germs" which will destroy half the world population, and 1968 calls for a "landslip" to destroy London. And long before the recent war, another science fiction writer described radar with reasonable detail, but he called it a "meteor locator."

And to show how close science fiction writers can sometimes come to actual developments, consider this excerpt from an article by Anson MacDonald, which appeared in a 1941 issue of the magazine *Astounding Science Fiction:*

Someone in the United States government had realized the terrific potentialities of uranium 235 and . . . had rounded up every research man in the country and had sworn

them to silence. Atomic power, if ever developed, was planned to be a government monopoly, at least until the war was over. It might turn out to be the most incredibly powerful explosive ever dreamed of, and it might be the source of incredible power. . . .

We were searching . . . for a way to use U-235 in a bomb that would be a whole air raid in itself, a single explosion that would flatten out an entire industrial center. . . .

We had all the genius in the field that the United States could pro-

duce, men from Chicago, Columbia, Cornell, M.I.T., Berkeley, every radiation laboratory in the country, as well as a couple of broad-A boys lent to us by the British . . . Canada supplied us with all the uranium we asked for — tons of the treacherous stuff — from the Great Bear Lake, up near the Yukon.

When government intelligence agents read MacDonald's story they dropped in on the editor of *Astounding* to find out "who was talking." The editor had a hard time convincing them that his writer really wasn't "in the know."

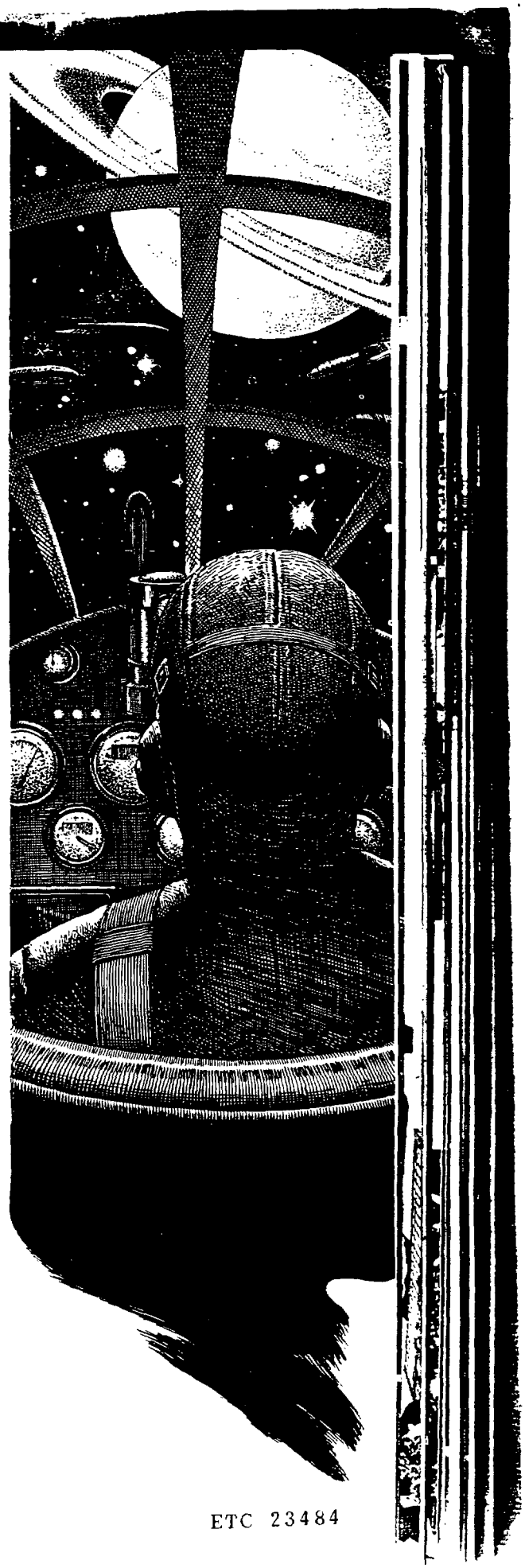
Science fiction writers can give free rein to their imagination in describing future scientific wonders. But they have to be careful to be technically accurate when actual scientific progress catches up with them. An author, for example, can no longer talk lightly of jet propulsion and rocket craft but must describe them in the light of present knowledge and development. More than that, their descriptions of fantastic wonders must have a plausible basis.

One subject with which the writers have a perpetual field day is the matter of time. One of their most frequently advanced concepts of time is that it is the fourth dimension; and that being so, they readily project their characters into this realm.

With their amazing theories of time, they have their characters step into the fourth dimension and take a look at what they did ten years ago—or what they'll be doing ten years hence. They bring Julius Caesar and William Shakespeare into the 20th century and let them have a fling at Congress. They get involved in time plots such as the one in which a judge sentenced a man to die—only to learn 25 years later, that the man he condemned was his own son who had himself born 25 years too soon.

Still another time story wrinkle is the suspended animation story. This sometimes involves the use of a quick freeze process which keeps the characters on ice for a few thousand years and thaws them out for action in future centuries when the world is devoid of humans who have exterminated themselves with their wars.

Molecular action is also fair territory for the science fiction writer. One pre-war story revolved around a German scientist who stopped the war by "freezing" everyone in the eastern hemisphere. He had invented a machine which, through electric waves, had slowed up molecular action to the point of creating a quick freeze and a state of suspended ani-



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mation. His invention backfired when he found that he had frozen his own daughter and had doubled the oxygen content of the atmosphere in the western hemisphere. The supercharged air speeded up the lives of the people and made a cigarette burn like a blow torch. Of course the author had to find a way to get things back to normal and stop the war.

If you think truth serums are something new, take a look at how the science fiction authors have covered that field.

The noble idea of having everyone tell the truth so fascinated one author that he had his hero spray a "truth cloud" over an entire city. He timed his truth-compelling campaign at election time and the results turned out according to the Frankenstein monster formula. First of all the hero found himself telling his fiancee a few personal facts about the hats she wore. "Old friends" started telling each other how they really felt and bedlam broke loose until the effects of the cloud wore off and things got back to their "dishonest normal."

Good Guys and Bad Guys

Naturally, robot and monster stories are a staple part of the diet offered science fiction readers each month, and the Frankenstein monster formula gets a good going over. But, interestingly enough, not all of the Frankenstein monsters are fierce lumbering giants. Nor, for that matter, are all the robots necessarily bad.

Take the case of Adam Link, robot extraordinary.

Adam wasn't exactly handsome, but he was a good guy. But one day, while rescuing a child from the path of a truck, he accidently broke the child's wrist. Adam was arrested, charged with being a menace to society, and brought to trial.

The defense argued that Adam was as good as any human but that his superhuman abilities caused jealous resentment on the part of his "flesh and blood brothers." The state argued that Adam would always be a potential menace and that humanity would never know at what moment robots might turn against their makers and wipe humans off the face of the earth. The state won its case and Adam Link was destroyed by removing his "iradium brain."

The Readers Had Their Way

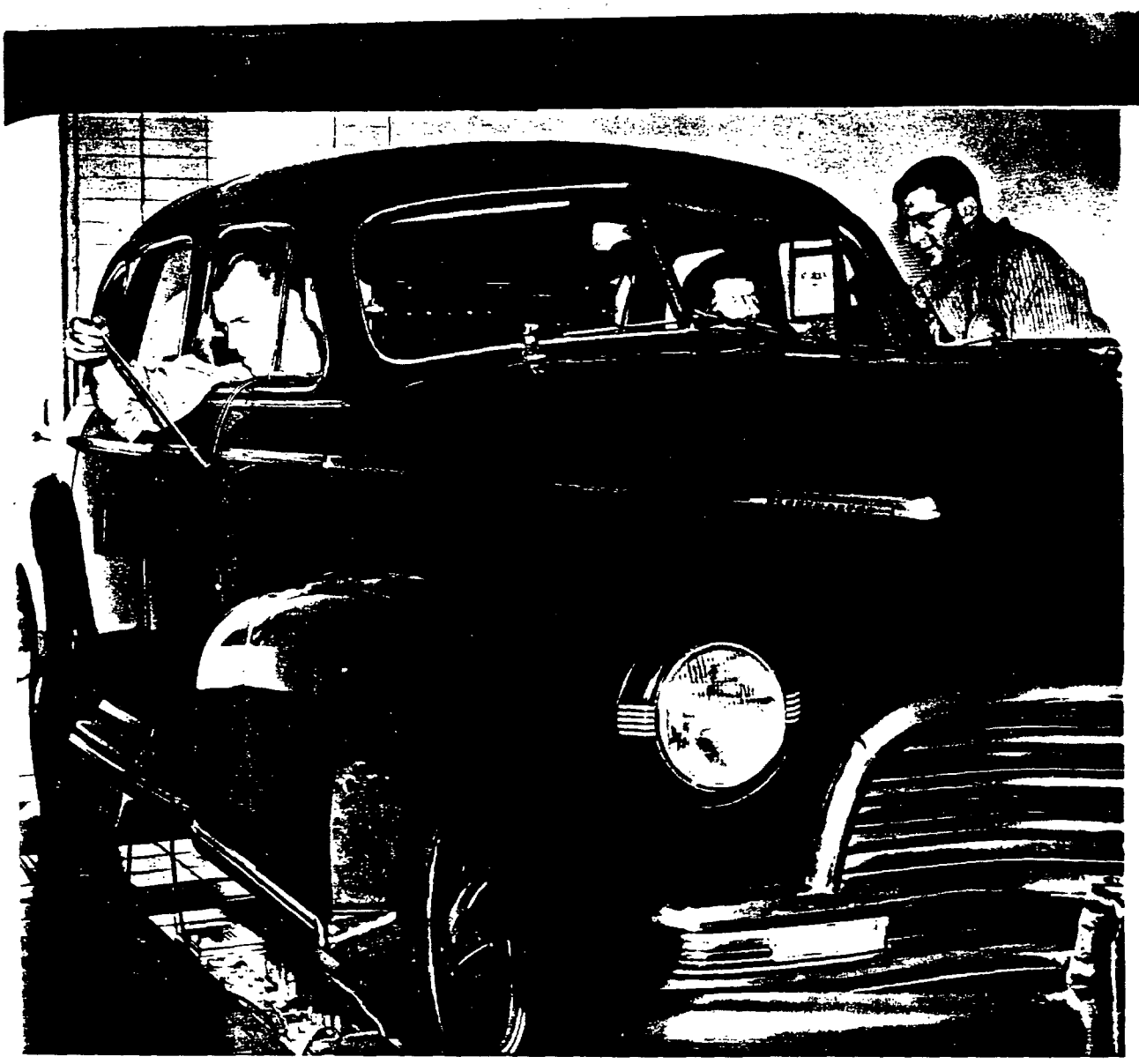
The readers, however, wouldn't stand for such unfair treatment. A few weeks after the magazine hit the newsstands letters, phone calls, cables, and personal delegations started demanding that the editor bring Adam Link back to life in a sequel. And, as you might guess, the readers had their way and Adam Link lived on the pages of the magazine for many years thereafter.

Even though the atomic bomb was not entirely new to science fiction readers, many of them were surprised when they realized how quickly real-life science was catching up with their world of fantasy. The fans, who for years have been holding meetings, collecting magazines, discussing stories, and generally taking a deep interest in this type of literature, began talking in a more serious vein. They realized, says Ray Palmer, editor of *Amazing Stories*, that both they and the writers of science fiction tales were the "imagination boys in the world of science," and that today's inventions of fiction might be very real accomplishments tomorrow. Even Mr. Palmer regards quite soberly some of the things being discussed in science fiction. "Think of what the world would be like," he says, "if human actions were controlled by brain waves. It may sound impossible, but so did a lot of other things that have appeared in science fiction."

Today, amid a general quickening interest in factual as well as fictional science, the authors are facing what they regard as their greatest test. They find they must explain to their readers how we can hope to live in peace and harmony in the future world of science which knocks so ominously at our front door. Science fiction is no longer merely a trend in story telling, but a definite part of the thinking of our times by a great many people.

OUR COVER . . . Limned against a fleecy Louisiana sky are two of the many storage tanks in use at Ethyl's manufacturing plant in Baton Rouge. These tanks, among others, are used to store ethyl chloride prior to that chemical's use in the final reaction to produce tetraethyl lead, the active antiknock ingredient of "Ethyl" antiknock compound. Each of the two tanks shown has a capacity of close to 50,000 gallons of ethyl chloride, while larger tanks in use at the plant have double that capacity. The color photograph was taken by Scott d'Arazien.

OUR PICTURES . . . Pages 3 and 4 (bottom), Press Association; Pages 4 (top) and 5-7, courtesy Indianapolis Speedway; Pages 8-11, courtesy Arthur D. Little, Inc.; Pages 9-11, cartoons by Ruth C. Jennings; Pages 12-14, courtesy Plymouth Oil Co.; Pages 19-21, illustrations courtesy Standard Magazine, Inc.



WEATHER MADE-TO-ORDER

Operating a vehicle at 150 degrees above zero on a dark winter day or at 10 degrees below zero in the dead of summer is no trick for engineers at the Ethyl Corporation Research Laboratories in Detroit.

This 160 degree range in air temperature is available in the Laboratories' hot and cold rooms, each of which contains a specially-developed chassis dynamometer for indoor tests in support of Ethyl's year-round road research programs at Detroit and San Bernardino, Calif. The chassis dynamometer equipment plays an important role in many fuel development projects at the Ethyl Laboratories since it may be used for "road" knock testing at any time without interference from traffic, inclement weather, or any of a number of other complications which often delay such work on the open highway.

Together, the unique hot and cold rooms serve to bring the highway into the laboratory. Any day — every day — the chassis dynamometers can be made to simulate substantially any desired weather and road gradient. Thus, fuel antiknock quality is determined under virtually the same conditions as those encountered in actual driving — and with more consistent results.

Briefly, this is one of the ways a vehicle goes through its paces on the chassis dynamometer. A number of accelerations through a speed range such as 5 to 60 mph are made on the dynamometer rolls with the engine operating on several reference fuels of different known octane numbers. For each reference fuel, a measurement of the spark advance is recorded to give what is called "trace," or very slight knock, at the speed at which knocking tendency is greatest. From these measurements a curve is plotted of "trace" knock spark advance versus fuel octane number for the vehicle involved.

Then a similar acceleration run is made on the commercial or experimental fuel to be knock rated. The road octane number is determined from the curve by noting the spark advance setting which the vehicle required for "trace" knock on this fuel.

Rating fuels under acceleration conditions is essential in order to duplicate as closely as possible the transient conditions experienced by a vehicle in actual operation. For example, the temperatures of the engine during acceleration are different than under constant speed. Thus, different data are obtained for a vehicle traveling, say, 40 mph at constant speed and one traveling 40 mph during acceleration.

Circumventing outside weather and driving obstacles through use of the hot and cold room chassis dynamometers is another example of how Ethyl research, now in its third decade, is helping to achieve further progress by aiding refiners in the economical production of improved fuels.

ETC 23486

The distinguishing feature of all **HUMMINGBIRDS** *is their high-speed wings, which enable them to fly backwards.*

This saucy blue fellow is not a bluebird. The crest on his head and his raucous cry proclaim him to be a **BLUE JAY.**

When you see these birds

THE "TRADE-MARKS" OF NATURE*

identify them for you

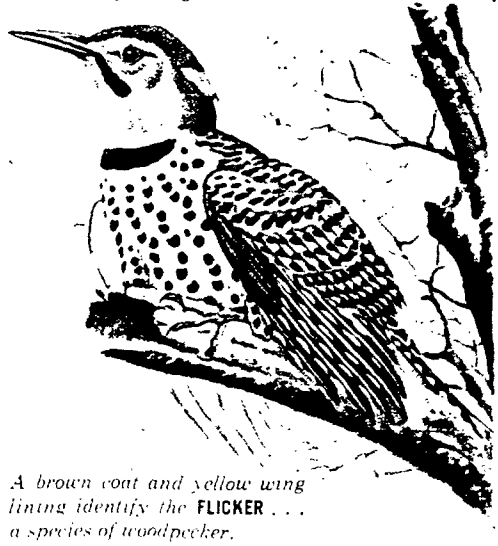
A pair of red epaulettes distinguish the **RED-WINGED BLACKBIRD** *from other black birds you might see.*

When you buy gasoline

THE TRADE-MARK "ETHYL"

ETHYL CORPORATION

identifies gasoline stepped up with "Ethyl" antiknock fluid



A brown coat and yellow wing lining identify the **FLICKER** . . . *a species of woodpecker.*

* Trade-marks on Don Eckelberry, illustrator of the "Audubon Bird Guide"

To get the best performance from your car, use high quality gasoline improved with "Ethyl" antiknock fluid — the famous ingredient that steps up power and performance. To show you that their best gasoline contains "Ethyl" fluid, gasoline companies display "Ethyl" trade-marks on their pumps. "Ethyl" antiknock compound is made by *Ethyl Corporation, Chrysler Building, New York 17, N. Y.*

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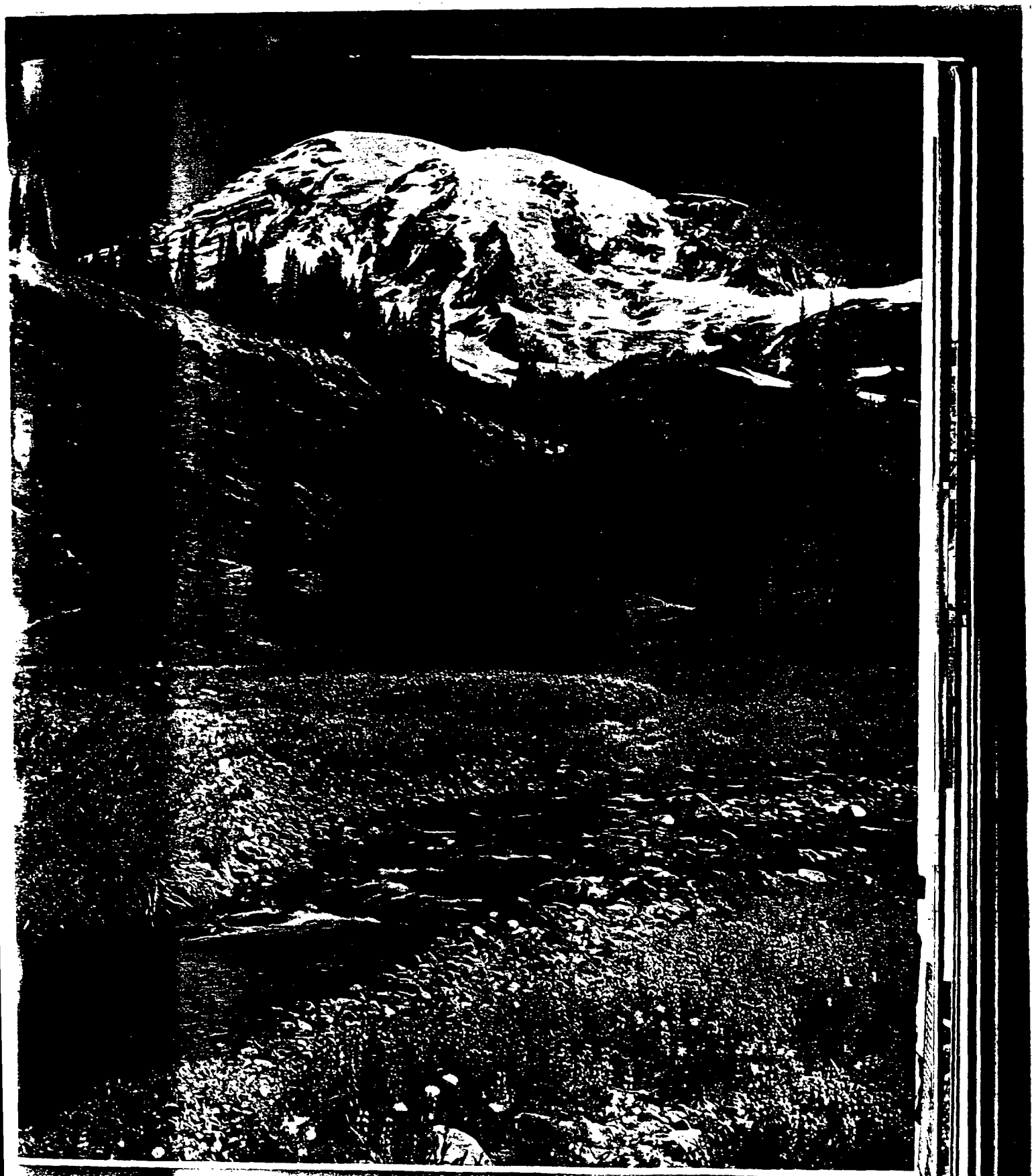


ETHYL NEWS

UNE ★ 1948

ETC 23488

Dan M. Guy, head of the Agricultural Section of the Technical Service Division at the Ethyl Corporation Research Laboratories in Detroit, has been elected chairman of the Michigan Area Section of the American Society of Agricultural Engineers. The fact that the Michigan Area Section will act as host to the national ASAE convention next year promises to make his chairmanship an especially full one.

Recognized as one of the leading authorities on the proper utilization of fuels in tractors and other gasoline powered farm equipment, Mr. Guy has been head of the Agricultural Section at the Ethyl Laboratories since April, 1942. This Section maintains close liaison with the farm equipment industry in order to keep manufacturers informed of trends in fuel quality and characteristics. This liaison, in turn, enables the Agricultural Section to keep abreast of the industry's engineering and marketing plans which may have a definite influence on the future fuel requirements of farm machinery.

Prior to his transfer to Detroit six years ago, Mr. Guy served for 11 years as an Ethyl Corporation agricultural engineer in Louisiana and Texas. As such, he aided in the revolution in power farming brought about by the high compression tractor.

Mr. Guy was born in Columbus, Ohio, and is a graduate of Georgia School of Technology. In addition to the American Society of Agricultural Engineers, he is a member of the Society of Automotive Engineers and the Detroit Agricultural Club.

IN THE

ETHYL NEWS

JUNE 1948

CONVENTION CITY 3

Whoever he may be, the next President of the United States will be nominated at Philadelphia — the site of three big national conventions. What's more, at least a million Americans outside the Convention Hall will be able to see what's happening — thanks to the growth of television.

THE FARMER IS A BUSINESS MAN 7

There are farmers and farmers. A true understanding of their economic status lies in knowing more about those farmers who produce the major share of our crops — and who manage their farms along scientific business lines.

"DEAR UNCLE SAM" 11

Some of the most impossible letters — relating to everything from national defense to new and fantastic inventions — are sent to Government officials. While many of them are of the crackpot variety, all must be investigated and duly acknowledged.

WHAT CANADIAN MOTORISTS WANT 14

An Ethyl survey of Canadian drivers' buying habits and preferences reveals some interesting facts about their choice of gasoline and motor oil, and their selection of service stations.

GREAT SHAKES 16

To keep track of the some 85 earthquakes that happen every day, scientists use an ingenious instrument, the seismograph. The same instrument is also used in exploring for oil.

A CAMERA IN EVERY CAR 20

An ordinary camera — kept handy on the front seat or in the glove compartment of a car — can find important everyday usefulness.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Julian C. Gonzalez, secretary

ETC 23489

CONVENTION CITY

By North Clarey

Philadelphia is the scene of much hustle and bustle these days, as it prepares for not two — but three political conventions

THIS YEAR, for the first time in 116 years of national conventions, more people than ever before will have a chance to watch our next President and Vice-President being nominated — from a front row seat in Convention Hall, Philadelphia.

All the circus-like pageantry of delegations, signs, parades, banners, celebrities and speeches will appear on the screens of television receivers in 13 populous states. On a network of 14 key stations in Washington, Baltimore, Philadelphia, New York, Boston, and Schenectady, television audiences will actually be able to see their candidates in the making.

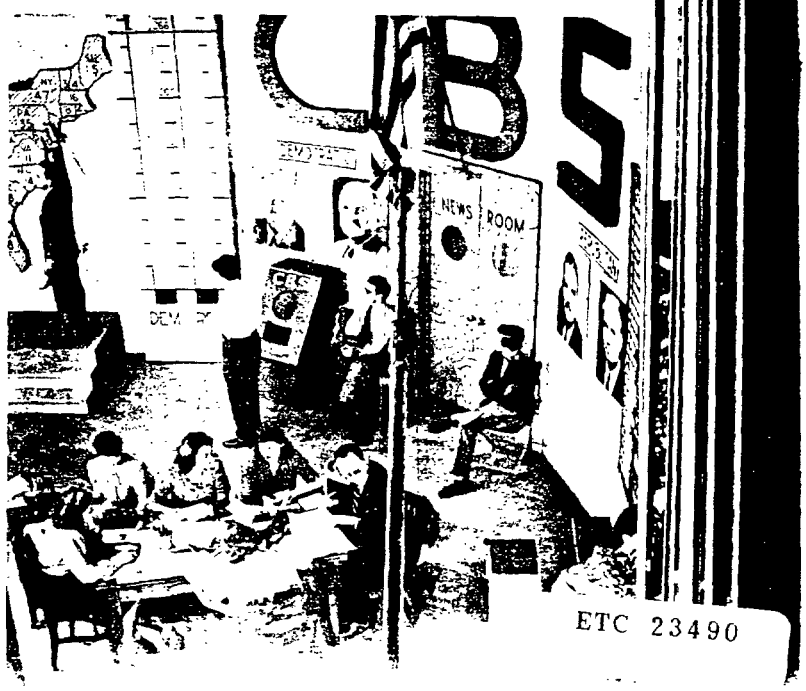
For this is the year that television steps out of its swaddling clothes. It becomes, overnight, one of the important publicity agencies that carry big events to the people.

Maybe that was the deciding factor in bringing not one, not two, but three parties to the musty old City of Brotherly Love this summer. For, neither Chicago, the preference of Republicans, nor San Francisco, choice of the Democrats, could claim to be the center of the only video network in the country.

Another cogent argument was supplied by the All-Philadelphia Citizens Committee. This, a non-partisan group of civic leaders, raised a kitty of $200,000 among local citizens and industries to underwrite some expenses of the Republican meeting. The same group then dug up another $200,000 to give the Democrats. Then, when someone asked about rest and recreation for the delegates and their wives, the Citizens Committee rang more doorbells till they had another $50,000 for each group — to be spent on entertainment alone.

Add to this voluntary half-million, of goodwill offering, a matching $500,000 which the city authorities have appropriated to freshen things up around town — mainly the municipally-owned Convention Hall itself — and you get quite a sizable stake that Philadelphia pushed onto the table to capture the two major conventions.

Not a dollar of this can be used by either party for campaign pur-



The CBS television studio in New York reporting the 1944 election returns. This year, about half of the video public will be able to "attend" the conventions

poses. The money must be spent in Philadelphia for legitimate expenses of the two gatherings. And don't think for a minute that a million dollars matches the cost of getting a couple of candidates nominated.

There is a matter of railroad, bus, airplane, or other forms of transportation charge for some 20,000 people, for each convention. There is the item of hotel bills; there are telephone, telegraph, cable and wireless facilities to be paid for; there is laundry, food, and a present for the kids. This is not only the biggest convention year in history by any previous standards, but its cost is just about doubled by inflation – a phenomenon which the Republicans ascribe to the Democrats, and which the Democrats lay at the door of the Republicans.

What do Philadelphia and the Pennsylvania communities which joined in the invitation get back for their million dollars plus?

Plus and Minus

Dollar wise, it looks like a losing proposition. One promoter estimates that the total "take" will not exceed $10 million with the margin of net profit out of that pretty small. A convention does not enrich the host city.

Hotels, by agreement, are to get a 50% increase in room rates, with no advance in their prices of food or drinks. The double room and bath that has been bringing $8 a day will cost $12 – a pretty minor increase in all to offset the losses incurred by the innkeepers in shooing away regular patrons for two weeks. All of the hotels have surrendered their reservation desks to the convention managers and evicted all but a few permanent guests, providing a pool of 6,000 hotel rooms.

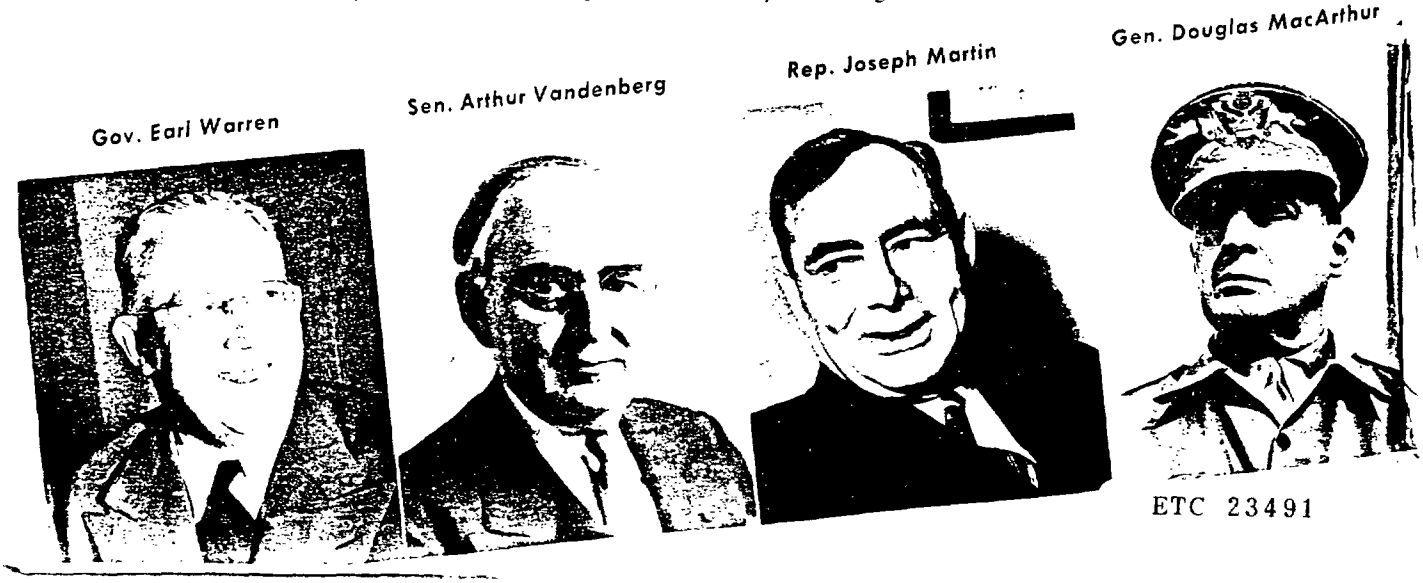
President Harry S. Truman is almost sure to be nominated at the Democratic Convention

The overflow will be handled partly in Atlantic City, with special trains morning and night, and partly in private homes in the city and suburbs. Whole estates along the Main Line or in Chestnut Hill are being taken over by Washington hostesses and bigwigs of the two parties. A party delegate craving quiet can get a completely furnished and staffed house not too far from the hall for $1,000 a week. Or he can get himself a small room which the housing committee calls "satisfactory but not preferred" for $1.50 a night.

The Republicans will begin arriving in force on Friday, June 18. Their meetings start on Monday, the 21st, and are expected to wind up in five days. The Democrats take their five days beginning July 12. The third party originally thought it could nominate the Henry Wallace-Glen Taylor team and complete its work in two days, July 24-25, but it has now asked for the use of the hall on July 23 as well. So far, no one in Philadelphia has gone out to raise $200,000 for the Wallace party's expenses. This group wanted to sell admission tickets, but was told No. No rent will be charged for the use of Convention Hall – by any of the parties.

Will Inherit Improvements

Incidentally, the Wallace convention will get a break through inheriting, at no extra cost, all of the temporary improvements installed for the Republicans and Democrats. This is no small matter. For one thing, the older parties are splitting



Three leading candidates in the race for pledged delegates at the Republican Convention: Gov. Thomas E. Dewey, Harold E. Stassen, and Sen. Robert A. Taft

50-50 some sizable construction bills, among them an item of $55,000 for press, radio and television facilities. Tables are being installed for 850 working members of the press on either side of the giant stage, and provision is being made for 250 radio and television men.

Any ordinary citizen wanting to see the speakers in action would do well to avoid Convention Hall and get in touch with a friend who has a television set.

The hall seats 1,000 VIP's on the stage, and 13,200 on the main floor and in the balcony. Seats must be assigned to roughly 1,100 delegates and their wives, a like number of alternates with their wives, several hundred members of Congress, approximately 3,000 press, radio and special representatives, many non-official party brass hats, and several thousand Philadelphia burghers who contributed money to attract the conventions. That being the case, the supply of tickets is a little short of demand — perhaps twenty to thirty thousand short. As a harassed member of the Republican committee on arrangements said (while tactfully promising someone on the telephone to 'do the best he could,') if the convention were to be in the middle of King Ranch some of the onlookers would nevertheless find themselves outside of Texas.

Gen. Dwight Eisenhower

Chicago Had Same Problem

Chicago, which has entertained twelve Republican conventions, has a hall seating 20,000, and still had ticket trouble in years when public interest could not approach that engendered by this year's free-for-all fight for the G.O.P. nomination. At the two party headquarters in Philadelphia's Bellevue-Stratford, it looks as though everybody is trying to get into the act.

Cheering loud enough to be heard in a crowd of fourteen thousand is hard on the throat, but lubricating the vocal chords will be a serious problem at Philadelphia. The hall is two miles from the hotel center, out by the University of Pennsylvania grounds, where liquor dispensaries are scarce. The city prohibits the sale of anything stronger than pop in any part of the huge auditorium. Downstairs, a thousand white-coated workers will

Another contender who is almost sure of nomination is Henry A. Wallace, who has created a party of his own

The men at the left have all been mentioned as Presidential possibilities. One of them may conceivably emerge as the nominee of 1948

ETC 23492

sell all kinds of food from a hot dog to a roast duck, but no whiskey, beer or wines, however light.

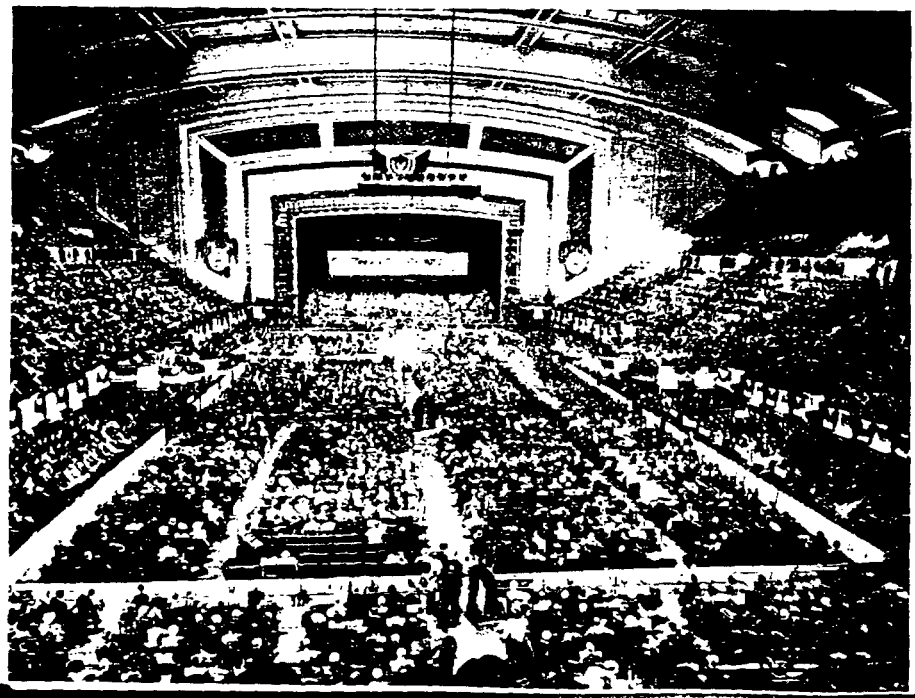
For the fourth estate, two cocktail-dinner parties, on the Saturday nights preceding the meetings, have been planned on a scale that should set some kind of a record. Seats have been provided for 1,600 writers, commentators and camera men.

Yes, the press should have a good time in Philadelphia this June and July — and Philadelphia intends to make the most of its day in the spotlight. For several weeks every front page in the country will be full of stories datelined "Philadelphia . . ." The staffs of all Washington news bureaus will converge on the new national news center, as will some 500 featured by-line columnists, commentators, and typewriter chatter artists. Lake Success, even Washington, will move to Page 2 for awhile.

This is the reward Philadelphia seeks — to be at the center of things, to be on everyone's lips, for awhile. It's good for business — good for growth.

Only once before have the Democrats held a convention in Philadelphia — in 1936, to put up F.D.R. for his second term.

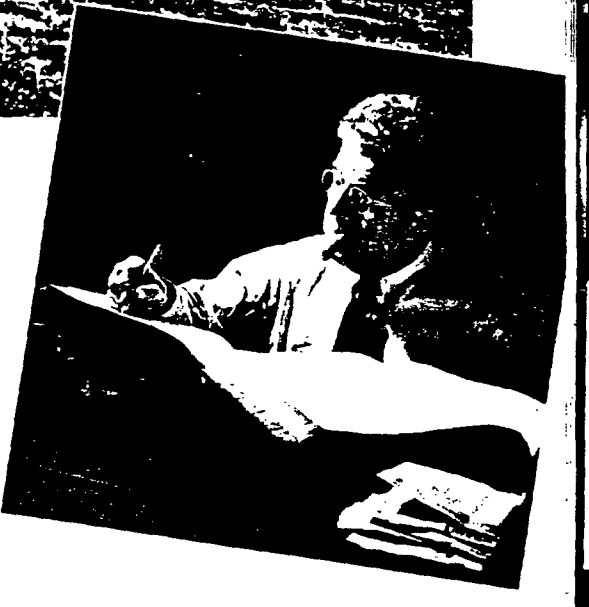
The site of all three presidential conventions is the Philadelphia Convention Hall, which is some two miles from the center of the city. The interior of the hall has no posts or pillars, seats 13,200 in the arena and 1,000 on the stage



Fifth Visit for G.O.P.

Republicans, on the other hand, are paying their fifth visit this year. It was in the Quaker City they actually got their start, when in 1856, less than two years old, the party convened to nominate General John C. Fremont and adopt a platform opposing the extension of slavery, advocating the improvement of rivers and harbors, and building, with federal aid, a transcontinental railroad.

Convention Hall, the modern $5,352,000 cavern of steel, marble and limestone, stands on the same site as the little frame building where the General was nominated 92 years ago. It is one of the most completely equipped auditoriums in the world — and without a single post or column to block the view. There are 60 exits. More to the point, from a convention standpoint, there are 24 private meeting rooms tucked around here and there. Presumably there will be no cameras to record the many meetings that will take place in these little rooms, some of which may have more influence than actual maneuvers on the main floor.



THE FARMER IS A *Business Man*

By Ladd Haystead

The modern farmer operates his farm with essentially the same technique as a business executive — and has a sound and prosperous business to show for it

IN MY PROFESSIONAL capacity as an agricultural counselor to business concerns, I am continually surprised at how many acute and knowledgeable executives have a thirty-years-out-of-date conception of the farmer.

Not many think the farmer is still buying Brooklyn Bridge. Even fewer think he is the radio caricature that sings hill-billy songs. But, unfortunately, many still see the farmer as a pastoral fellow, a little slow on the uptake, rustic, not too literate, and forever crying to Washington for a hand-out.

Part of this misconception comes from the testimony before various House and Senate committees by farm "leaders," bureaucrats, and members with rural constituencies on the hunt for pork barrel. Newspaper readers are bombarded with stories of rural slums, bad housing, horrible health conditions, and all-round poverty on the soil. And such testimony is in fact true — but true for only a minority of the soil men. There is rural poverty as well as urban poverty. But there is also rural competence, intelligence and shrewd business management.

It is indeed strange that anyone

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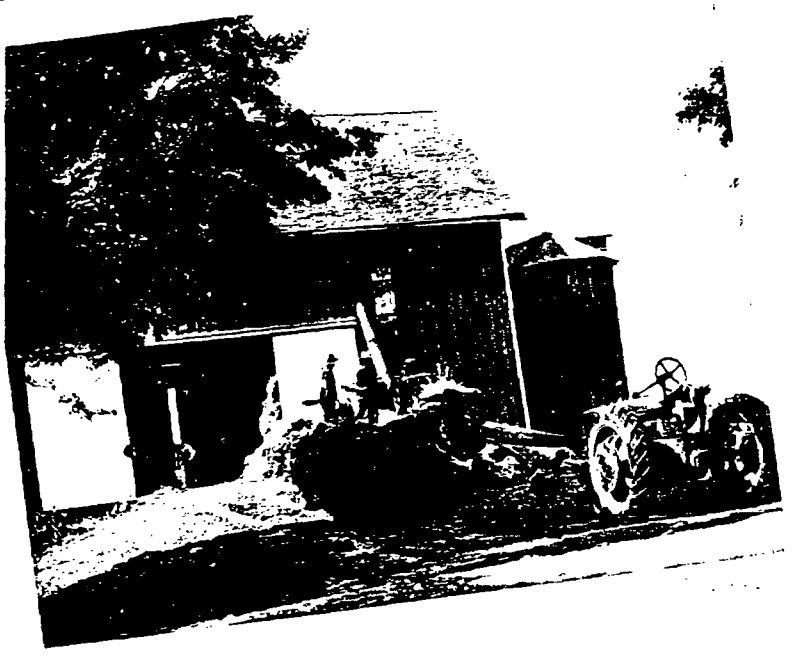
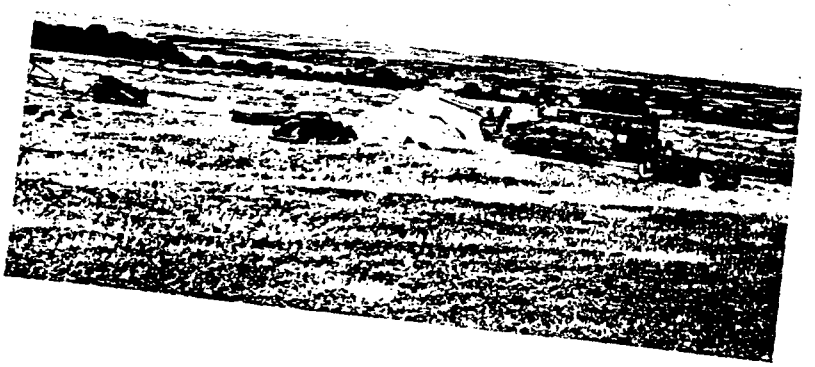


Not only do farmers know the importance of modern power machinery, but they also know how to apply its benefits most widely

should think a fellow (the American Farmer) who owns $111 billion in total assets, makes $34 billion of income (in 1947), has better than $20 billion of liquid assets, and owes less than $6 billion mortgage debt on his plant is naive and just lucky. The management of such an industry can no more be on a haphazard or "luck" basis than the management of the automotive or oil business. And, in fact, it is not.

How then can we reconcile the seeming ambivalence of one set of leaders crying about the farmers' sorry situation, and here and there, almost silently, a few people saying that the farmer is as alert as any other business man? The answer probably comes from income breakdown.

About one-third of the farmers gets 80% of the total farm income, one-third gets most of the remainder, and the final third averages anywhere from a few hundreds of dollars income annually to actually going in the red. The latter group is the one pointed to when appropriation bills come up. Their lot is indeed a sorry one.



Below: Two hours after leaving the field, these lima beans are packed and frozen. Right: Farmers' prosperity has also meant new kitchens

Spraying fields with an insecticide by plane is only one of many modern methods that farmers regularly use

But the people who want to "do something for the farmer" fail to point out that farm income in this lowest group is not the *only* income. In point of fact, many of these low-income farmers are not primarily farmers at all. Instead they are lumbermen, miners, fishermen, factory employes, seasonal workers, handcraftsmen, semi-retired folk. Nearly three-quarters of a million of them live on what the census calls "farms," but in truth get their major income from the city.

On the other hand, it's the top third (1,900,000 people) who feed and clothe the 118 million urbanites. And that segment is about as management-conscious as any group of executives you would meet. They have to plan and execute on the basis of more variables than practically any other business man. Yet they don't depend on luck – for year after year, in good times and bad, they manage to stay on top of the farm heap.

First, they must be alert to world conditions– more so than any other business man not directly in the export trade. What happens to Argentine and Australian wheat is of trenchant concern, as we have seen in recent months in the commodity markets. Whether or not the Orient gets cotton, Britain gets meat, or the Philippines ship copra (a competitor of domestic tallow and oilseed plants) will have a bearing on the crop choice of the year.

Ladd Haystead, who is a well-known farm writer and formerly editor of The Farm Column of FORTUNE *magazine, is the co-author of a new book on farming. In cooperation with Dr. Herrell DeGraff, professor of agricultural economics at Cornell University, he has written "The Business of Farming," which is intended to serve as a practical manual of farm management. The new book, which is published by the University of Oklahoma Press, is addressed to such fields as soil management, equipment management, labor management, and farm organization – in order to help farmers operate their farms most efficiently.*

Next comes the question of the availability or shortage of fertilizer and agricultural chemicals. If the demand exceeds the supply, such chemical helps as DDT, 2,4-D, IPC, BHC, et al., may be hard to find. They are needed to help fight pests, thereby raising or keeping up yields. If gasoline is short or in poor distribution, there will be lost tractor days for the power-farming owners – and they are the business men-farmers in the top third.

Seeds must be chosen well in advance. And the long winter nights are times when these management-farmers are busily studying the reports of the scientists in the state experiment stations and the seed houses on new strains that will be disease-resistant and have the least weather hazard. A seed that is fine for one soil type or climate may not even be a good gamble in another.

Then comes the weather jeopardy. Will fields be dry enough for seed-bed fitting? Will late frosts make replanting necessary? Can cultivating be done when needed, or must the chemical weeders be thrown into the deal? Or, in this modern scientific day, will it be necessary for the community to get together, make up a pot, and hire an airplane to "create" rain? In Kansas, a firm called Snow, Inc., was recently formed to provide the needed winter cover that protects the wheat crop.

And all the time the anxiety about the crop is in mind, the smart farmer must decide whether or not to go into the pit and hedge his crop. If he is a livestock man, he must prophesy correctly what the markets will be 60, 90, or 180 days hence. In some cases, he must guess right for two years ahead. Therefore, he must study charts, statistics, and the reports on general business conditions. Business forecasting is the very es-

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Fleets of farm tractors are kept at peak efficiency by the best utilization of fuels and regular maintenance

sence of his prosperity. That's why it is not at all uncommon to find the *Wall Street Journal* or the *Journal of Commerce* on a farmer's desk. That's why many a farmer who has no interest in the radio soap operas keeps the radio going in the barn and on the tractor for market reports and economists' panel discussions. (Of course, it must be admitted that in the fall the radios will be tuned to the World Series.)

It is not to be wondered, then, that Iowa, almost totally a farm state, has the highest literacy rate of any political subdivision on earth. Average incomes of Iowa farmers, by the way, run from seven to ten thousand dollars. That means many an Iowan is making several tens of thousands of dollars to keep the average so high, for there are spots in even that favored state where rural poverty is known.

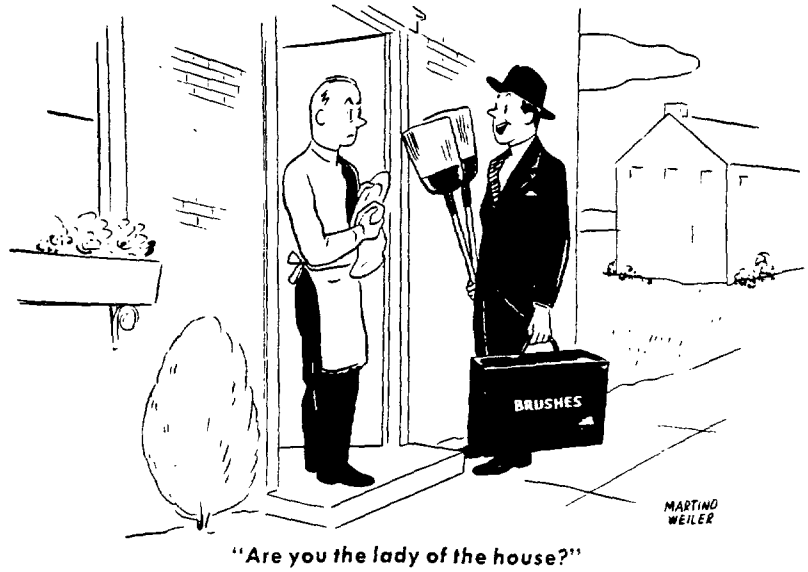
This business man-farmer will own an operation capitalized for something over $17,000 in Indiana, probably well over $25,000 in Iowa or the rich central belt of Illinois, and if he is a New York dairyman it will be upwards of $30,000. Of course, if he is one of the fabulous Californians, now the richest farm state, his business may be anywhere from $100,000 on up. Last year, choice citrus land sold for $6,000 an acre — and 40 acres is considered just a nice one-family job.

The management farmer's investment in machinery may run anywhere from a scant $3,000 on a small New Jersey vegetable operation through the $6,000 to $10,000 of Pennsylvania, Ohio and Kentucky, up to the $12,000 per worker on the big commercial farms of the Middle West.

As every operation on the farm becomes mechanized except the masticating of feedstuffs by livestock (and even they get vitamin pills), the $8,000 capitalization per worker that Industry has long boasted of seems relatively modest in comparison. Grain harvesters costing around $4,000 sold like hot cakes last year on the West Coast, were worked around the clock almost to exhaustion during the season, and then were shipped east to Texas and sold for $5,000. And the supply never caught up to the demand.

And did you note that the original vocational group to go to Europe to study the implications of the Marshall Plan at first hand was *not* composed of business men or financiers, but of twenty-odd Iowa farmers who paid over $1,500 travel money apiece out of their own pockets, to get grass-roots information? Also, it is true that as a vocation, farming boasts of more private airplanes than any other segment of business.

Reuben is not Reuben any more. He is Mister Farmer-Business man.



"Are you the lady of the house?"

"Dear Uncle Sam"

By Shirley H. Scheibla

Everybody with an idea, it seems, writes Uncle Sam about it. Handling these letters is a job that often puts Washington officials in a dither

UNCLE SAM, the nation's No. 1 correspondent, is getting more than his usual flood of peculiar mail these days.

"It is my duty to warn you," one citizen wrote Navy headquarters the other day, "that the Russians are tunneling down here from Alaska and soon will siphon off our oil reserves."

This is typical of epistles pouring in from all over the country. In government lingo they're classified as crackpot letters.

Some federal officials attribute the deluge to new cases of war jitters. Other communications make it clear, however, that the writers want to reap the advantages of peace before the ripening of another military emergency.

One deluded gentleman, for instance, didn't know that the Government already has disposed of the Big Inch and Little Inch pipelines. He sent the War Assets Administration one dollar with the explanation that 60 cents was for the Big Inch and 40 cents for the Little Inch.

Another intent letter-writer approached the Joint Chiefs of Staff with his problem. He had bought a pair of paratrooper boots from government surplus stocks. Now, he said, he wants the Joint Chiefs to see that he gets a paratrooper uniform to go with his handsome boots, of which he drew a picture. "I want that outfit, Sir. That's the way it is," he told them.

One federal functionary has a plausible explanation for the rash of letter writers. "The heat begins to get people this time of year," he says. Other officials think the new emphasis on national defense makes the citizens more government-minded. Many of them are serious in offering their help.

"Call me if I can be of assistance in affairs of state," a professional clairvoyant wrote Secretary of State Marshall. Declared another, "I can

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take a trumpet medium to the west coast and radio the voices of the departed and let the Lord advise us." Still another divulged that the spirit of George Washington wrote to him on 5x7 inch cards, giving him the grim warning that "this civilization has only 31 more years to run."

President Truman got a cryptic piece of advice. "If we can't get the Russians to do what we want them to, drop a bomb on them and let them have it, and they will come to their senses," one letter suggested.

Atom Bomb Spurs Proposals

Talk of new atomic weapons serves as a spur for the new spurt in strange letters. The prize of the Department of National Defense is a proposal for the defense of the atom bomb. Officers there insist it can't be fully appreciated unless quoted in its entirety with its original spelling. Here it is:

"I would like to suject to your dept. that there is as yet another Secret Wepon, more deadly and destructive than Germ Warfare of the Atom Bomb. This Wepon has not yet been invented, but research maybe gaining perfection in another country. This Wepon I call the (Artifical Gravity) Controled, or Gravitation power. This type of Wepon works very close in regar to the Atom Bomb, because of the basic physics applied in the manufacture of Atomic power.

"Here is how we do, 1st. We start research with a giant magnetic Bar. 2nd. We place a piece of Material whitch is radio active in the Middle of the Bar. 3th. We subject these 2 to the havey chargeing of the clyclone for a long period of time. Thus we have 3 types of Electronics working against each other, and it should produce something.

"I don't say this will produce artifical gravity, but it will do to start on, and from here we can go on, until we acchief our gold. Somewhere in the manufacture of atomic power, we have overlooked the missing lenk whitch causes the atoms to be atoms. Somewhere along this line is the answer to artifical gravity. And when we find that missing lenk, we will have the defince of the atom bomb."

Though they hate to part with it, the National Defense authorities say regulations require them to turn this document over to the Inventors' Council of the Commerce Department. There's always the chance that some letter may contain the germ of a brilliant idea which may look like crackpot material to the non-scientific officials reading their mail.

The Council itself has a secret file of 15 ideas for sabotage which its members say would be very useful in the event of war. A number of these originated in "crackpot letters" sent to the Council.

An idea for preventing plane wrecks now is on its way to the inventors' group. A writer said the thing to do was to eliminate the take-off because most accidents occur at that time. He would, therefore, build a huge airfield at an ele-

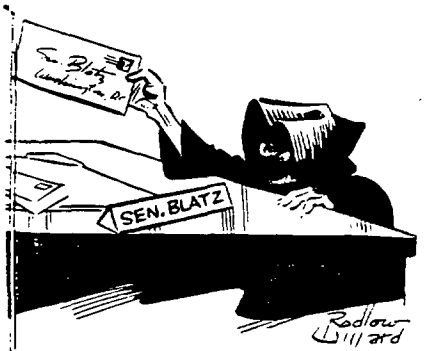
vation of 300 feet with an abrupt drop at the end. After the plane negotiated the runway, a gigantic parachute would permit the plane to float off into space at the end of the field.

Some of the industrious inventors aren't so anxious to give the details of their discoveries, however. One individual would only disclose that his secret weapon was a means of preventing war – but that it was not a gun, bomb, plane or military weapon. He offered to tell the secret to President Truman if the govern-

ment would pay his expenses for coming to Washington. Instead army intelligence agents checked up on him just to see if he had a source of undisclosed scientific secrets. They still don't know what he was talking about.

Some letters find their way to the FBI, too. One writer asked National Defense officials. "Is gold bank at Fort Knox intact?" They say they think they ought to turn the query over to J. Edgar Hoover just in case the curious man is contemplating something rash.

No matter what the crackpots say, however, they always get an individual answer. "Form letters infuriate them," one federal official explains. He points out, too, that it's often difficult to discriminate between a crackpot and an illiterate person trying to explain a serious problem. Then too, the truth is often so strange that it may sound like a hallucination when it's put down on paper.



During the war an army enlisted man told the War Department the details of the scandal on General Bennett Meyers which a Congressional investigating committee later turned up. The letter was ignored. Since that incident, however, the Government agencies have been meticulously careful in handling their mail.

Navy Public Relations

But one navy lieutenant apparently did too well in his reply to an elderly widow. He got an answer on pink stationery with two pictures of flowers pasted in the upper left corner. "I am keeping your letter for a keepsake, as it has the tone of friendships of a person I can get along with, as I am an affectionate sensible person," the widow informed him. She confessed to being "middle-aged," having been born in 1898. The lady said she would marry a gentleman who would settle down to home-making. Here is how she described herself:

"I am French, German, Swiss, Irish. I was a musician, pianist, violinist, singer, actress and dancer until my partner went to California. I also composed song poems and educated myself at college. I was a visual precision inspector nights and cooked for three a day."

A postcript warned the lieutenant to write again only if he was single.

Most of the men aren't so easily pleased with the answers to their requests. A mid-westerner asked WAA to send him some information on a steel plant because he was interested in purchasing it.

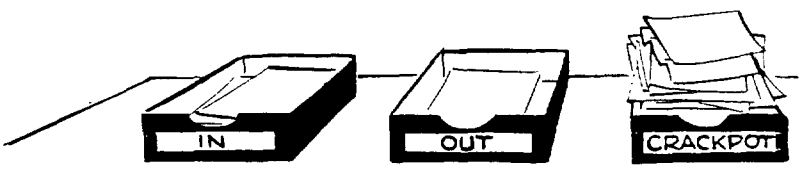
When he received a WAA pamphlet on the plant, he returned it with a pencilled notation that the information was inadequate. The agency then sent him a complete brochure. He scribbled a note on that, too, and sent it back. What in the world did he have to do, he wanted to know, to get some information on the steel plant?

Though these epistles plague Washington officialdom, the agencies worry too when they don't get them. Before the Labor Department received its recent budget cut, the crackpot mail fell off. "That was a bad sign and we had a hunch we were in for a tough time," one department authority explains. "We knew it meant that public interest in us was declining," he adds.

The National Labor Relations Board, on the other hand, is buoyed by the fact that the peculiar mail is beginning to come in. Officials take it as an indication of the board's public appeal. Workers write strange letters about everything from their plant problems to the size of their pay checks.

National Defense Secretary James Forrestal, however, is beginning to get perplexed by the whole matter. Anxious to please, he joined a pipe smokers club. This resulted in a deluge of messages remonstrating with him for smoking. Now his rule is that he won't join any club or society in which he can't take an active part.

Of one thing the Government agencies are sure. This kind of letter-writing could only take place in America. Only in a government of the people would the citizens write to "Dear Harry" at the White House and correspond with Uncle Sam on every subject from matrimony to atom bombs.



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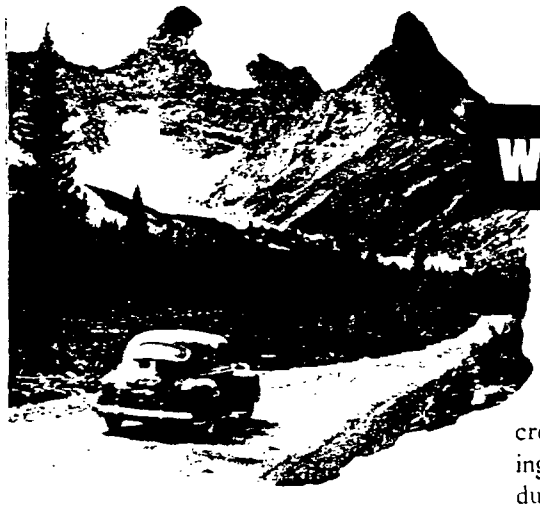


WHAT CANADIAN MOTORISTS WANT

The majority of Canadians, an Ethyl survey shows, prefer premium gasoline, and patronize one service station regularly

CANADIAN MOTORISTS, for whom their automobiles are a daily necessity, know the importance of operating their cars at peak efficiency. They show the same decided preference for quality in gasolines and motor oils as do American drivers. More, the majority of them patronize one service station, usually near their home, are predominantly loyal to that station because of the service given, but when on the road will select a service station primarily because of the brand of gasoline sold.

These are some of the highlights of an interesting survey recently concluded by Ethyl Corporation. Entitled "The Canadian Motorist — A Study of His Gasoline and Oil Buying Habits and Preferences," the survey was undertaken primarily as a service to the Canadian oil industry. But it reveals, in addition, many things of general interest about Canadian motorists.

To learn the buying habits and preferences of Canadian motorists, Canadian Facts, Ltd., of Toronto, which conducted the survey on behalf of Ethyl, held personal interviews with 1,798 drivers. These interviews, which took place most often in, or just outside, the motorists' homes, were conducted in 96 different areas of the Dominion, and encompassed the Maritime Provinces, Quebec, Ontario, the Prairie Provinces, and British Columbia.

In order to reach a representative cross-section of the Canadian motoring public, the survey was conducted according to the latest data covering Canadian motorists and their distribution by regions and classes. One out of every four Canadian motorists interviewed is a farmer; nearly one out of five is a skilled laborer; one in six is a business executive, and one out of ten is engaged in selling. Slightly more than half of all Canadian motorists are in the upper income brackets; nearly half of them are between 30 and 44 years of age, and more than 69% own their own homes. The average Canadian car in use, according to the survey, is 7½ years old.

Service Station Choice

One of the four fields of inquiry which the survey explored related to the service station preferences of motorists. And here, it was learned, more than three out of every five Canadian motorists are regular customers of the same service station. Preferences for one particular station ranged from 51% of the drivers interviewed in the Maritime Provinces to 66% of the drivers interviewed in Ontario. Moreover, this preference held true for 65% of all urban drivers and 55% of rural motorists.

Besides being regular customers of one service station, slightly more than half of all motorists said they patronized the service station near their homes, while another 22% used the station near their place of business, and 17% used a station where they do their shopping. Drivers preferring service stations near their homes ranged from 32% of all drivers in the Prairie Provinces to 60% of all drivers in Ontario.

The service given is the outstanding reason why Canadian motorists patronize the same station. This was the opinion advanced by 73% of the motorists. Next to service, the majority of motorists cited the convenient location of the station, the personality of the attendant, and the brand of gasoline sold as other important reasons for patronizing the station.

While the brand of gasoline sold ranked fourth among the reasons for patronizing one service station regularly, it is the major factor influencing motorists' choice of a service station when they are on the road.

Sixty-four percent of all motorists interviewed cited the brand of gasoline as the predominant reason for selecting a given station on the road, followed by such others as the ease of driving in and out of a station, the cleanliness of rest rooms, and the general appearance of a station.

Turning to the subject of motor oils, half of all the drivers reported that they buy one brand of oil exclusively — and nearly half declared they bought premium oil for their cars. The reasons? Good performance is the leading reason, in Canadian motorists' opinion, followed by the quality and economy they found in the brand.

Many interesting disclosures came to light as to the gasoline buying

habits and preferences of motorists.

Eight out of ten motorists buy the same brand of gasoline exclusively or quite regularly. Forty-two percent say they buy one brand exclusively while another forty-one percent buy one brand quite regularly. Only 17% declare that they buy the same brand only occasionally.

Questioned further as to their gasoline preferences, nearly one out of every three motorists, or 31%, declared that good performance prompted them to buy one brand of gasoline exclusively. The second reason cited was the quality of the gasoline, followed by such factors as the availability of the gasoline, and a preference for a dealer and the service he provided.

Premium grade gasoline is the choice of two out of every three Canadian motorists. For Canada as a whole, 67% of all drivers said they had bought premium grade gasoline the last time they filled their tanks. This preference for premium gasoline ranged from 63% of all drivers in the Prairies up to 76% of all drivers in Quebec and British Columbia.

Not only is premium gasoline the choice of most Canadian motorists, but it is also bought most consistently by them.

Nearly three out of four motorists declared they buy premium grade motor fuel exclusively against only 40% buying regular grade. And the preference for premium gasoline ranged pretty closely throughout the Dominion, ranging from 71% of all motorists in Ontario and the Prairies to 58% of all drivers in British Columbia. This preference for premium gasoline, moreover, held true for 58% of urban drivers as against 67% of rural motorists.

Premium grade gasoline won the endorsement of most motorists for two important reasons: good performance and quality of the grade. Fifty-eight percent of all drivers said they buy premium gasoline exclusively because of its good performance, while another 27% said the quality of the gasoline accounted for their choice.

"Ethyl" Trade-Mark Influence

One especially interesting phase of the survey related to the influence of the "Ethyl" trade-mark on the gasoline preferences of Canadian motorists.

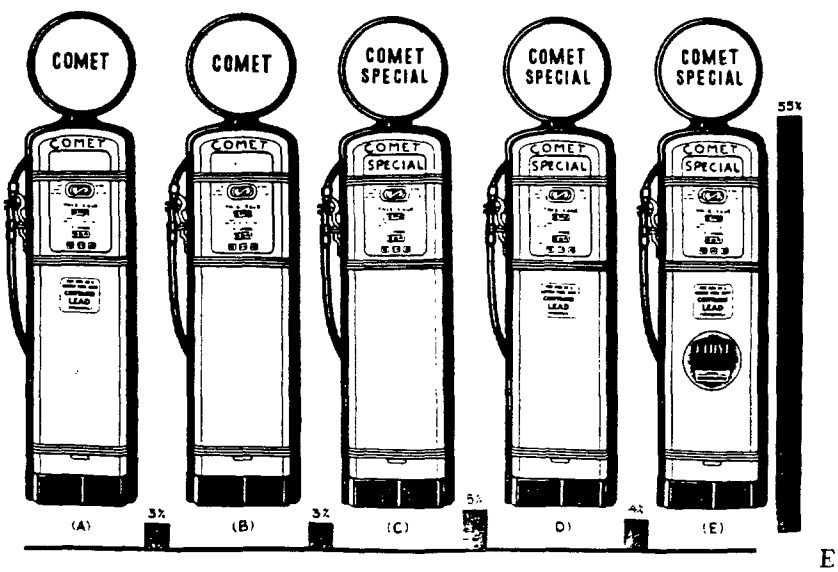
Each of the 1,798 motorists interviewed was handed a card (see illustration) showing five different gasoline pumps of a hypothetical brand. Each of these pumps, as can be seen, was differently labelled. The motorists were then asked, "Suppose you were to drive up to a service station that sold brands of gasoline with which you were not familiar. If these were the pumps, from which would you buy?"

Without hesitation, 55% of all drivers pointed to the pump with the "Ethyl" trade-mark as their choice. Asked why they selected the pump with the "Ethyl" emblem, 62% of these motorists said because they knew the gasoline contained "Ethyl" antiknock compound, while another 25% cited the quality of the gasoline as the reason.

It was one thing to determine the influence of the "Ethyl" emblem upon the motoring public when buying an unknown brand of gasoline. But, in order to obtain a complete picture, each motorist was next handed a card showing four familiar brands of gasoline. Each of these brands was represented by two pumps – one displaying the "Ethyl" trade-mark and the other without it.

Once again, Canadian motorists, expressed a decided preference for the "Ethyl" pump. In answer to the question, "From which of these two pumps would you expect to get higher quality . . . ?" 65% of all motorists pointed to the pump with the "Ethyl" emblem. Asked why they make that selection, 62% said because of the "Ethyl" fluid content of the gasoline, while 18% cited the factor of quality, and another 14% pointed to performance.

Ethyl's survey confirms a long-held belief: Canadian motorists want the same things that American drivers do. Not only do Canadians show a decided preference for premium gasoline – and even in a greater degree – but they share with American motorists the same high regard for the "Ethyl" trade-mark.



55% of Canadian motorists, if unfamiliar with a gasoline brand, would buy from the pump displaying the "Ethyl" emblem. Only 15%, all told, would buy from the other four pumps, while 30% expressed no preference

ETC 23502

GREAT SHAKES

The seismograph is a double threat instrument. It helps man search for oil and keeps track of a trembling earth

A [illegible] ago a French [illegible] decided that the best [illegible] composition [illegible] take a look at it. [illegible] started collecting [illegible] out of digging an [illegible] to be about a half-[illegible] miles deep. [illegible] did not go much be-[illegible] practicalities. [illegible] concerning the [illegible] miles under-[illegible] thought it [illegible] bubbling molten mass, [illegible] gases and intense [illegible]

[illegible] has yet had a [illegible] 25 miles, we [illegible] fairly fair idea of its [illegible] composition. Accord-[illegible] Father Joseph Lynch, of [illegible] Fordham University, [illegible] something like a golf [illegible] gooey center. An [illegible] of causes give the [illegible] of the shakes. [illegible] recording the [illegible] DTs is called [illegible] Thus, a seismograph [illegible] recorder and a seis-[illegible] scientist who studies [illegible]

[illegible] is one of the top [illegible] the United States — and probably the world. The seismograph vault which he runs at Fordham University is the largest underground observatory in the world and Father Lynch often refers to it as "Palomar in reverse."

Father Lynch has been studying earthquakes for 28 of his 53 years and he believes that we would have a bursting planet if we didn't have quakes once in a while as an outlet for the earth's nervous energy. He consoles those who are quake conscious by pointing out that most earthquakes occur at the bottom of the sea and other unpopulated places.

One of the last life-taking Great Shakes occurred on April 1, 1946, at exactly 7:40 a.m. (EST). The upheaval shook itself loose two miles down in the bed of the Pacific ocean. The real damage didn't come from the quake but from the tremendous waves of water heaved up by the erupting ocean floor. Huge waves thundered against the Hawaiian and Alaskan Islands and points along the Pacific coast, taking 113 lives.

Father Lynch still feels that some of this loss of life might have been avoided if the information given out in time by the U. S. Coast and Geodetic Survey had been heeded. The Coast Survey is the clearing house for earthquake data from Fordham, California Tech at Pasadena, Calif., and other colleges. This information enables the Coast Survey scientists to definitely locate almost any earthquake. In the case of the 1946 Quake the center was a point 50 miles south of the Alaskan mainland.

The eruption generated a tidal wave about 30 feet high and a mile from crest to crest. The wave rolled along at 300 miles an hour and took around six hours to reach the city of Hilo, on the island of Hawaii. (Similar waves have killed as many as 30,000 Japanese in one swamping). The six hour elapsed time, Father Lynch feels, is enough to warn those who might be in danger.

Experienced seismologists will tell you that the earth shakes itself about 85 times a day. Most of the shakes are little ones, but not too small to be picked up by a sensitive seismograph. The fact is that the earth is constantly shaking under your feet, but most big quakes and tremors are usually found in the area around the Pacific ocean. Japan has five or six local quakes a day and California has one or two. Although the United States is not noted for earthquakes, some of its territories such as the Aleutians, Hawaii, the

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Philippines and Puerto Rico are pretty constantly in a shaky state. The most earthquake ridden country in the world is probably Chile, which averages around 5,000 shakes a year.

It is standard practice among seismologists to rate earthquakes according to a scale which ranges from zero to 10. A zero situation represents a completely placid earth and a class 10 shake would be a catastrophic upheaval. The shakiest quake on record is one rated at 8¾. The 1946 Alaskan quake hit 7½, and more recently a 1947 quake in New Guinea hit 8¼. In the last 45 years there have been about 60 earthquakes in Class 8. Despite the horror and destruction of the atomic bomb, the explosions at Hiroshima and Nagasaki didn't even rate a Class 1 reading on the earthquake scale. So far as Father Lynch knows, the explosions were not earth-shaking enough to be recorded on most earthquake seismographs. The underwater Bikini blast, however, was feebly recorded at Pasadena.

Each day Father Lynch and his assistants spend about an hour inspecting 1,650 feet of zig-zag lines on rolls of photographic paper. These lines are an electro-cardiograph of the earth's pulse-beat. They show the normal trembling of the earth which is attributed to the pounding of the ocean surf. The surf vibration is felt over the entire continent and beats normally under New York City at a rate of 33 throbs (microseisms) per minute. Dr. L. Don Leet of Harvard has made a careful study of the ocean's microseisms and has developed a handy 65-pound seismograph which can spot an ocean-going hurricane 1,000 miles away. Dr. Leet has suggested that our coastal weather stations be equipped with seismographs as a means of spotting storms.

According to Father Lynch, New York City's pulse rate jumps to 200 beats every day when the morning milk train zips by on the New York Central tracks which border Fordham University. When the children of the Bronx public schools hold their annual Maypole dance on the Fordham campus, the earth beats out the rhythm of their dancing and the seismograph records it at 120 throbs a minute.

Some of Father Lynch's seismographs are sensitive enough to record the difference between the stomp of a heavy foot and the tread of a light foot. During spring parades in which Xavier High School Cadets march with grade school children, the seismograph beats out a deep wavy line for the heavy-footed cadets and a shallow line for the parading children. These man-made disturbances along with others such as city traffic and explosions must be weeded out of the record in order to get a true picture of genuine earth-made nervousness.

Rev. J. J. Lynch, Fordham University seismologist, points to traces made by a seismograph

The deep underground vault where Father Lynch keeps his seismographs is especially designed to keep out all outside disturbances. It is chiseled out of deep bedrock and sealed behind layers of brick, sand and concrete.

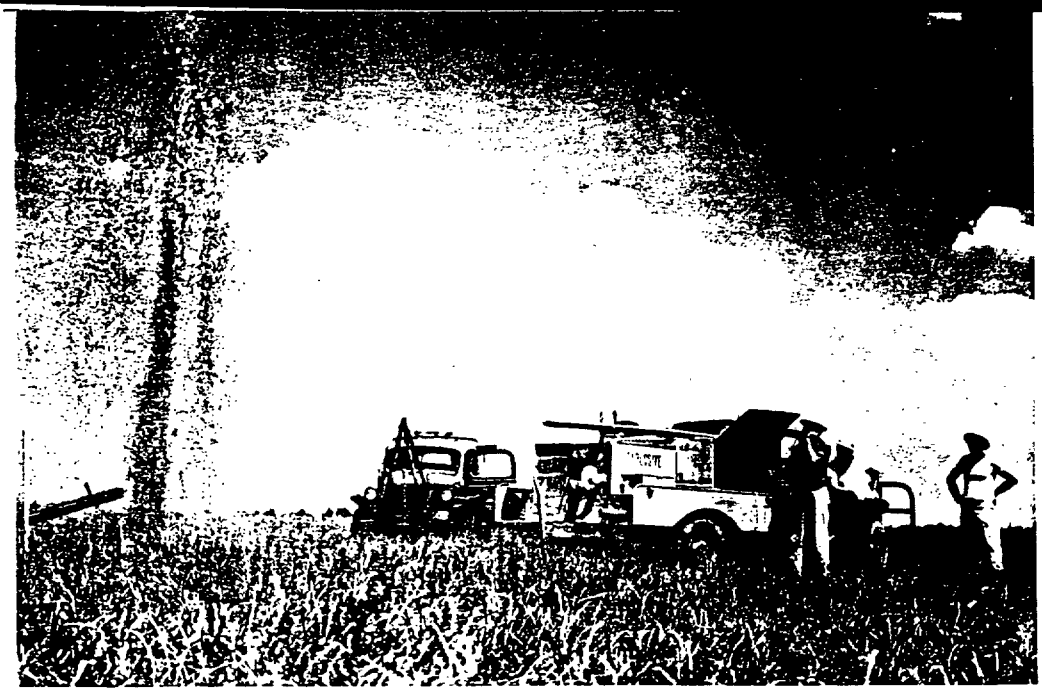
The seismograph is essentially a pendulum which remains stationary while the earth shakes. A moving strip of photographic paper slides under the pendulum from which a tiny electric bulb transmits a needle-thin beam of light. The beam traces the earth's shakes onto light sensitive paper which is marked off in minutes for 24 hours. Of Fordham's nine seismographs, the largest and most delicate weighs 1,500 pounds and is named after its inventor, Professor Benioff, of the California Institute of Technology. Its electronic hook-up magnifies the earth's pulsations up to 100,000 times.

The Fordham seismograph room is sealed light-tight with only a faint red bulb near the door. Father Lynch discourages visitors because the moisture from their bodies plays hob with the delicate electrical equipment. But although the heavy door is open only a few seconds every day, spiders are constantly slipping in. They seem to enjoy the tomb-like atmosphere and apparently they have great fun romping among the instruments and creating earthquake records all of their own. Father Lynch has found the best method of spider elimination is a process whereby he gets on his hands and knees and hunts for them.

Every earthquake, according to Father Lynch, sets up two waves — a *push* wave which travels through the earth at five miles a second and a *shear* wave which travels at about three miles a second. The whole effect is similar to what happens to a golf ball when it is whacked.

The ball is first squashed or compressed and then bounds back to its original volume. It then starts vibrat-

ETC 23504



Man-made earthquakes map the substrata and aid in the search for oil. A small explosive charge sets off a shock wave. It produces a seismographic record of the earth's crust as it travels underground

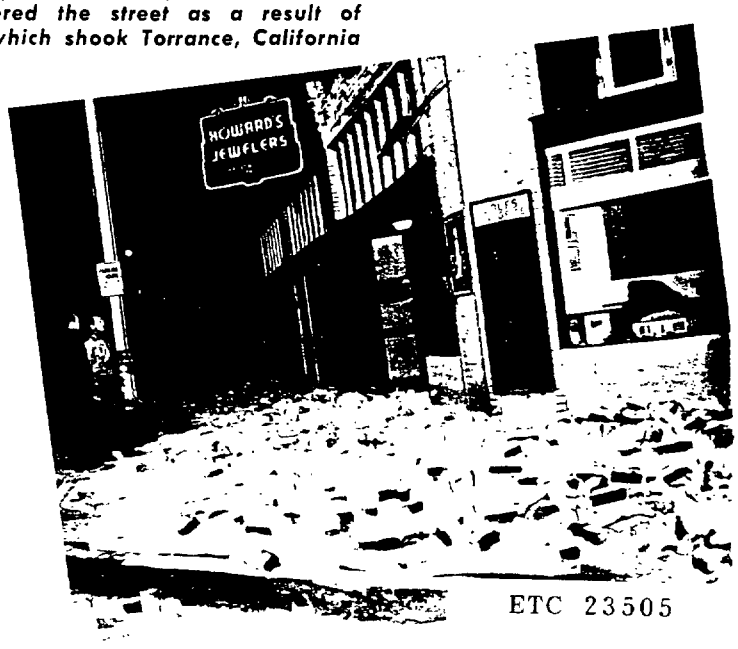
ing in and out until the energy which created the initial squash is used up. Unlike a golf ball, however, the earth does not come back to its original shape. Instead its shape is displaced like the rapid shimmying of a dish of Jello. Here the whole chunk of Jello is shaking at one vibration rate while the outer surface is wrinkling and unwrinkling at another rate. In other words, the Jello is heading for a rupture and is emitting waves similar to earthquake waves. With this knowledge of the earth's vibrations it is possible for seismologists to compute how far away an earthquake is.

Interestingly enough, the seismograph has an important industrial application: exploration for oil. But instead of sitting around and waiting for earthquakes to happen, these portable units are used to record the action of man-made earthquakes.

Although the only sure way of determining the presence of oil is still to drill for it, around 1930 geophysicists took a hint from earthquake seismologists and started using the seismograph to take some of the guesswork out of drilling. From experience geologists have learned that oil often lurks under rocky domes in the substrata. By setting off charges of dynamite ranging in size from 1 ounce to 100 pounds, seismologists are able to record the path of the explosion's vibrations as they travel downward, hit rock formations, and travel back up to the earth's surface. By charting the vibrations it is possible to produce an underground map of the earth.

Although simple in operation surveying the underground is a job which requires considerable experience and skill. Once oil company geologists have picked an area which they believe will be oil-bearing the seismograph crew moves in. Their equipment is transported by truck, boat, or swamp buggy. First the land is carefully surveyed and then geophones—recording microphones—are planted according to a definite pattern. The geophones, or "jugs" as they are sometimes called, are wired to a recording truck where even the "tramp of chicken feet" will be put on a graph. A dynamite charge is planted and set off, send-

Business came to an abrupt standstill when bricks littered the street as a result of a quake which shook Torrance, California



ETC 23505

ing vibrations into the earth and back up into the geophones.

More recently techniques have been developed which make it possible to chart bay and off-shore areas covered with shallow water. A seismograph fleet usually consists of four boats about 35 feet in length. One is used for surveying, one for drilling (to plant the dynamite charge), one for shooting, and the other for recording. A couple of row boats are also used to plant and retrieve the lines and geophones.

Once on location the procedure is identical to that used on land, and on a calm day a marine crew can cover as large an area as a land crew. In the early days of marine seismological surveys it was not uncommon for a crew to be threatened by shrimp fishermen, who thought the dynamiting would kill marine life. The oil companies lost no time in conducting tests which proved that seismographing rarely harms marine life. Once the results of the tests were explained to the fishermen they ignored the blasts which occasionally shook their fishing grounds.

Seismologists know that the earth weighs 6,000,000,000,000,000,000,000 tons and that it measures 4,000 miles to its center. Furthermore, they know a lot about how earthquakes behave, but they still don't know what makes an earthquake. They used to believe that millions of years ago the earth was a seething molten mass which gradually cooled on the outside until it was habitable. The inside, however, remained hot and in cooling caused surface eruptions.

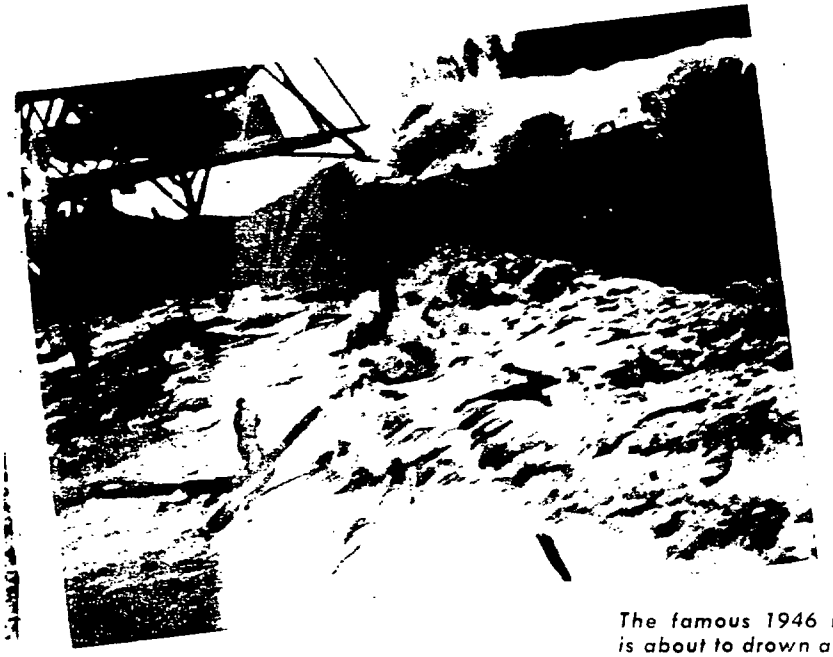
Few seismologists today care to say whether the earth is getting hotter or colder. They simply don't know. Nor do they know what activity causes an earthquake. They know only that if you bend a ruler too much it will snap, and the earth's crust snaps at times because forces bend it too much. What these forces are no one knows.

Although California is the spot in the United States most likely to experience a healthy earthquake, there is no location anywhere which is completely immune. For example, the earthly calmness of Chicago is shattered three or four times a year by small shakes caused by what Father Lynch describes as "creaking stair" earthquakes. These Father Lynch calls the "retreating footsteps of the ice age."

"When a heavy man goes upstairs in an old house the stairs creak for a long time after he is gone," explains the Jesuit Father. "They are trying to readjust the displacement caused by his weight. When the great glaciers covered parts of North America and Europe they put an enormous weight on the earth's crust. After they melted thousands of years ago, the crust began to lift and creak. It is still creaking and that sometimes causes a small fracture or two."

About 100 out of the world's 400 seismologists are Jesuit trained like Father Lynch. This Jesuit interest in seismology came about when in the 16th Century the Jesuits attempted to convert the Orient to Christianity. Naturally China's leaders were concerned about earthquakes and welcomed authorities on the subject with open arms. The Jesuits thus gained an entree with their knowledge of seismology and have been studying the subject ever since. They were the first to introduce it on a large scale in the United States, and there are now 14 Jesuit observatories operating from coast to coast.

Father Lynch feels that the science of seismology is still in its infancy and that quite a few persons still think it is a black art. He regularly gets letters from people who demand that he "stop making earthquakes," or "avoid getting too curious or you'll blow us all up." Father Lynch blithely ignores this segment of his public and points out that perhaps years hence we will be tapping entirely new sources of power lying deep under the ground we daily walk on.



The famous 1946 tidal wave is shown as it is about to drown a stranded Hawaiian at Hilo

ETC 23506

A CAMERA IN EVERY CAR

A camera can be a highly useful automotive accessory — on a business trip, a tour, or even in day-to-day driving

By Joseph C. Keeley

NOT LONG AGO I was talking with a friend who is an ardent amateur photographer. You know the type – the kind of fellow who feels undressed unless he is carrying a Leica or Graphic, and whose home bears a strong resemblance to the processing departments of Paramount or M-G-M. He told me he had just placed an order for a car.

"How come?" I asked, surprised, since up to this time his only interest had been photography.

"Well," he replied, "I've come to the conclusion that an automobile is a very important camera accessory."

The remark was made in fun, but on second thought, there's a certain amount of sense in it.

Besides your everyday use of your car, a good deal of the mileage you roll up on your speedometer represents a quest for interesting new things to be seen. It might be vacation travel or Sunday driving, but its purpose is to get you away from the humdrum and familiar. Why not, then, make it a point to record the exciting and beautiful things that your car sets before you?

How many times have you returned from a trip lamenting that you didn't have your camera along? Well, you're not alone. I used to sing the forgotten-camera blues so often that I finally did something about it. Now, whenever I step into my car, my camera goes with me. When I return, instead of trying to put into words some of the interesting things I've seen, I merely pass the pictures to my friends. I'm sure they enjoy the photographs far more than the word pictures I used to convey.

However, there are pictures and pictures. If you're going to carry a camera in your car you might just as well use it in the most effective way possible. Have you ever noticed the way the big picture magazines such as *Life* and *Look* use pictures? They publish a lot of photographs in every issue, but they also employ a device which you can use to make your pictures a lot more interesting.

Their method is to use a series of photographs to tell a story – in sequence – much as a motion picture film does. Certainly there is nothing difficult about it. Let's say, for instance, that you plan to drive to a favorite resort. Instead of waiting till you get there to unlimber your camera, start using it before you get under way. Get a picture of yourself and your wife studying a road map. Get another at the service station, when you have the tank filled up. Next snap the kids piling into the car, and your wife lugging the lunch. Then, along the road, photograph some of the interesting landmarks, not forgetting a highway marker directing you to the resort. And, at the place itself, you'll want to photograph all the members of your family enjoying themselves. For the finale, get a shot of your weary brood, happy to get home after the day's outing.

Paste these in sequence in your album, and you'll find yourself turning to them time and again. Furthermore, when you show them to your friends you'll find they are really interested, not just polite.

In all likelihood, though, most of the pictures you take won't be of this sequence type, but occasional scenic shots. They may be of old houses or barns, kids bathing, deer along the road or interesting characters. But whatever they are, use enough care in photographing them so they will turn up in your album as pictures you can be proud of. In

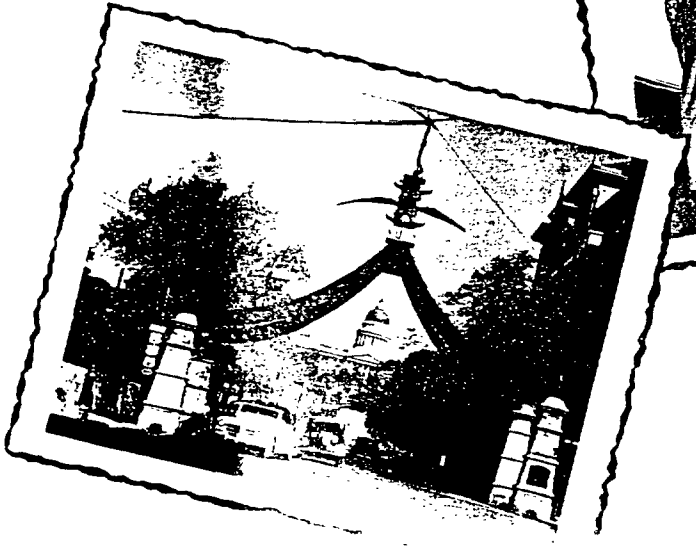
other words, take enough time so you won't get prints that are out of focus, blurred from camera movement, or lacking in important detail.

Be prepared for picture opportunities by keeping your camera close at hand. Many people who carry cameras in their cars keep them in some inaccessible spot – in the luggage compartment, for instance. If you're going to carry a camera at all, have it loaded and ready for use within arm's reach. Unless you're driving in very hot weather the glove compartment is the logical place to keep it. If it's hot and the glove compartment is likely to be a miniature oven which can damage the camera or film, keep it alongside you on the front seat.

The reason? Well, there are some pictures which won't wait to be taken.

Once, for example, I was driving through desert country when I saw a large snake on the road ahead of me. As I approached, a big bird, possibly a hawk, swooped down and gave battle to it. Finally the bird won out, beating his way into the air with the still squirming reptile. It was a thrilling bit of natural history, one I wish I could have photographed. Oh, yes, I had a camera in the car. The only trouble was, it was locked up in some luggage in the rear deck.

There's another reason for keep-



Good trip pictures speak louder than words. Each shot by itself is a story and the whole series will give you a permanent record

ing your camera close at hand, a psychological one. Many motorists don't like to interrupt a trip for any longer than is absolutely necessary. But it's one thing to pause for a moment to make sure your camera is up front, and it's something else again if it's necessary to pull off the road, unlock the luggage compartment and dig through everything else piled inside in order to find it. When that's the case, many car owners are inclined to pass up the opportunity to take a picture worth having.

Having a camera along is helpful too, whenever you go on a business trip. You'll find occasion quite often to take pictures *en route* – of new facilities your company may have built, of possible sites for new locations, and of new plants and facilities of interest to your company or industry. A simple snapshot helps people to visualize a far-away project better than the most detailed report.

Thus far this has been mostly a discussion of taking pictures incidental to the motoring you do. Have you ever thought of going on a trip *primarily* to take photographs? That such trips can be interesting seems evident from the fact that certain railroads make a practice of running special photographic excursion trains.

Good Pictures by Amateurs

It goes without saying that the fellow with a car is much better off in this respect than the one who has to depend on a train. Able to get into the byways, he can find all kinds of photographic possibilities. Try it sometime. A man I know did it on a grand scale last summer by making an extensive trip through Canada. He had just bought an inexpensive 35mm. camera which he of course took with him. He returned with a large selection of good pictures, both black-and-white and in color.

Driving in the midwest a few years ago I stopped for gas and oil and struck up a conversation with the attendant. I asked if there were any spots of interest to be seen in that vicinity. He invited me inside and brought out an album of photographs. Carefully mounted in the album were scores of excellent photographs showing places of interest for hundreds of miles around. Opposite each page was pasted a section of road map showing just where each place was located. Photography, he explained, was his hobby.

"Do you find it worthwhile?" I asked.

"Sure do," he grinned. "That album sells a lot of gas and accessories for me. You'd be surprised at how many people come in here to get ideas about where to travel. The book helps them make up their minds and I sell them what they need to get there."

That attendant, incidentally, had made all his pictures with an inexpensive little camera which had probably cost him less than twenty dollars. However, he was using two very important accessories – his car and his head. Try them in combination sometime. If they don't produce some excellent pictures then there just aren't any pictures to be taken.

"This one doesn't use film — There's a postcard collection inside."

OUR COVER: Color photograph of Mt. Rainer National Park, Washington, by David W. Corson through A. Devaney, Inc. **OUR PICTURES:** Pages 3-6, all Acme Newspictures, Inc., except as follows: Page 3 (bottom), courtesy CBS; Page 4 (second left bottom), 5 (top left and right and bottom right), Press Association; Page 6 (top), Wide World; Pages 7, 8, and 10, courtesy Standard Oil Co. (N.J.); Page 9, courtesy Westinghouse Electric & Manufacturing Co.; Page 10, cartoon by Martino Weiler; Pages 11-13, illustrations by Rodlow Willard; Page 14 and third cover, Philip Gendreau; Pages 16, 17, 18 (bottom) and 19, Press Association; Page 18 (top) courtesy Shell Oil Co.; Page 20, Camera Associates; Page 21, Look Magazine, cartoon by Laughs, Unlimited.

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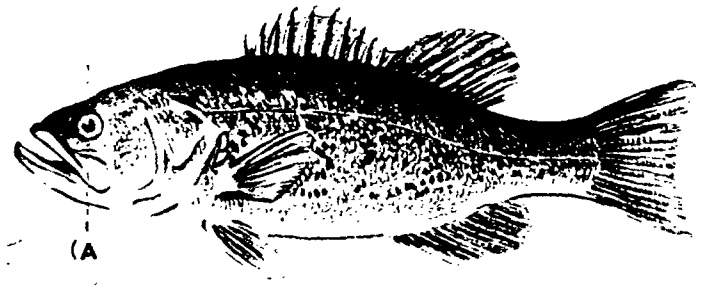
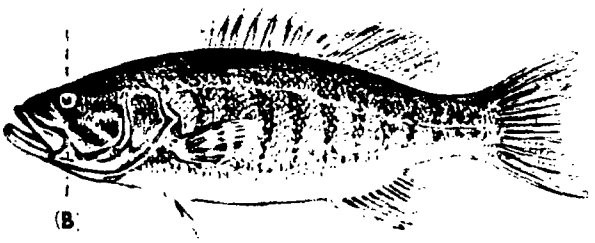


You can distinguish between Large-Mouth Black Bass and Small-Mouth Bass if you look for their special characteristics:

(A) The **Large-Mouth Black Bass** has jaw which extends back of his eye. Also the dorsal (top) fin is deeply notched.

(B) The **Small-Mouth Black Bass** has a jaw which does not extend back of the eye. Moreover, his dorsal fin is not so deeply notched.



When you go fishing

THE TRADE-MARKS" OF NATURE*

identify these fighters

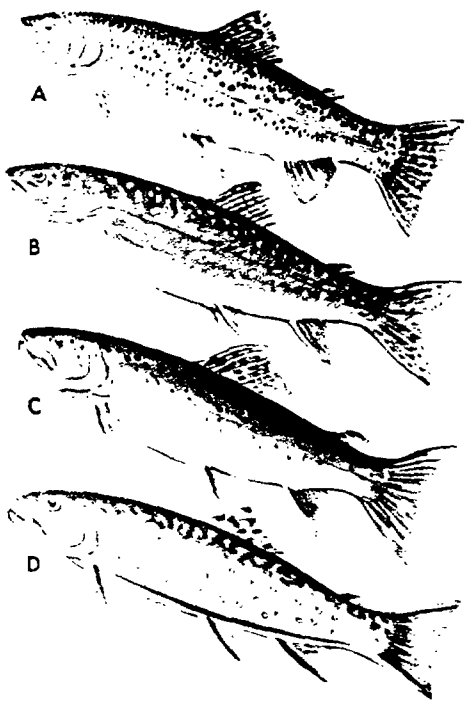
Trout are marked by a group of distinguishing characteristics. For example:

A **Rainbow** (Steelhead). Many strong teeth in zig-zag rows on roof of mouth. Tail fin usually spotted.

B **Lake Trout.** Teeth on roof of mouth on an elevated crest. Has teeth on base of tongue. Red or pale spots on body. Forked tail.

C **Brown Trout.** Brownish, rather large scales. Red spots on sides surrounded by light rings.

D **Brook Trout.** No teeth on base of tongue. Red or pink spots on sides. Lower fins with light-colored edges. Tail square or only slightly forked.



When you buy gasoline

THE TRADE-MARK "ETHYL"

identifies gasoline stepped up with "Ethyl" antiknock fluid

To get the best performance from your car, use high quality gasoline improved with "Ethyl" antiknock fluid—the famous ingredient that steps up power and performance. To show you that their best gasoline contains "Ethyl" fluid, gasoline companies display "Ethyl" trade-marks on their pumps. "Ethyl" antiknock compound is made by *Ethyl Corporation, Chrysler Building, New York 17, New York.*

Prepared in cooperation with the Specialists of American Museum of Natural History, N. Y.

ETC 23511

ETHYL NEWS

JULY ★ AUGUST ★ 1948

ETC 23512

IN THE

ETHYL NEWS

JULY-AUGUST 1948

Benjamin Brewster, whose service with Ethyl Corporation dates back to 1927, has been appointed to the new position of Manager of Technical Service Operations of the Ethyl Research Laboratories in Detroit.

The Technical Service Division is the liaison group between the Ethyl Laboratories and the technical departments of oil companies and automotive and farm equipment manufacturers.

As Operations Manager, Mr. Brewster will supervise the execution of activities planned by the Director of Technical Service, Richard K. Scales, and his staff. He also will continue as a member of the Technical Representative group, one of the five sections which make up the Technical Service Division. This group maintains contact between the Ethyl Laboratories and the research and development laboratories of oil companies throughout the country.

Mr. Brewster is one of nine men now with Ethyl Corporation who helped establish the Ethyl Laboratories in Detroit slightly more than 20 years ago upon their transfer from Yonkers, N. Y. He joined the company in 1927, immediately upon his graduation from Harvard Engineering School with an S.B. degree. He left Ethyl's employ the next year to accept a sales engineer position with an electric company in Boston, and remained in Massachusetts until 1936, when he rejoined the Ethyl Laboratories.

Mr. Brewster is a member of the Society of Automotive Engineers and the Harvard Engineering Society.

MEMORIES ON WHEELS 3

The oldtime automobiles which literally put America on wheels are not entirely gone from the scene. Many can still be seen in action, every so often, thanks to the efforts of a group of hobbyists.

THE OLD TRAVELER 9

Meet the man who has probably seen more of the United States than anyone else — and learn his way of discovering the real beauties of our country.

100 YEARS OF SERVING FARMERS 12

The Oliver Corporation has come a long way since it was founded in Battle Creek, Mich. in 1848. Today a leading member of the farm equipment industry, it inaugurates its second century of service by introducing a complete new line of modern gasoline-powered tractors.

ALASKA — OIL OUTPOST 15

The U. S. territory is famous for its wealth of minerals, metals, fish, fur and lumber — and it may also contain noteworthy reserves of petroleum. To determine for sure, a unique exploration is now going on inside the Arctic Circle.

FAIR DAYS AHEAD 19

Country fairs are easily as old as the Bible, but they give millions of people an opportunity to see at first hand many of the latest industrial developments and products.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

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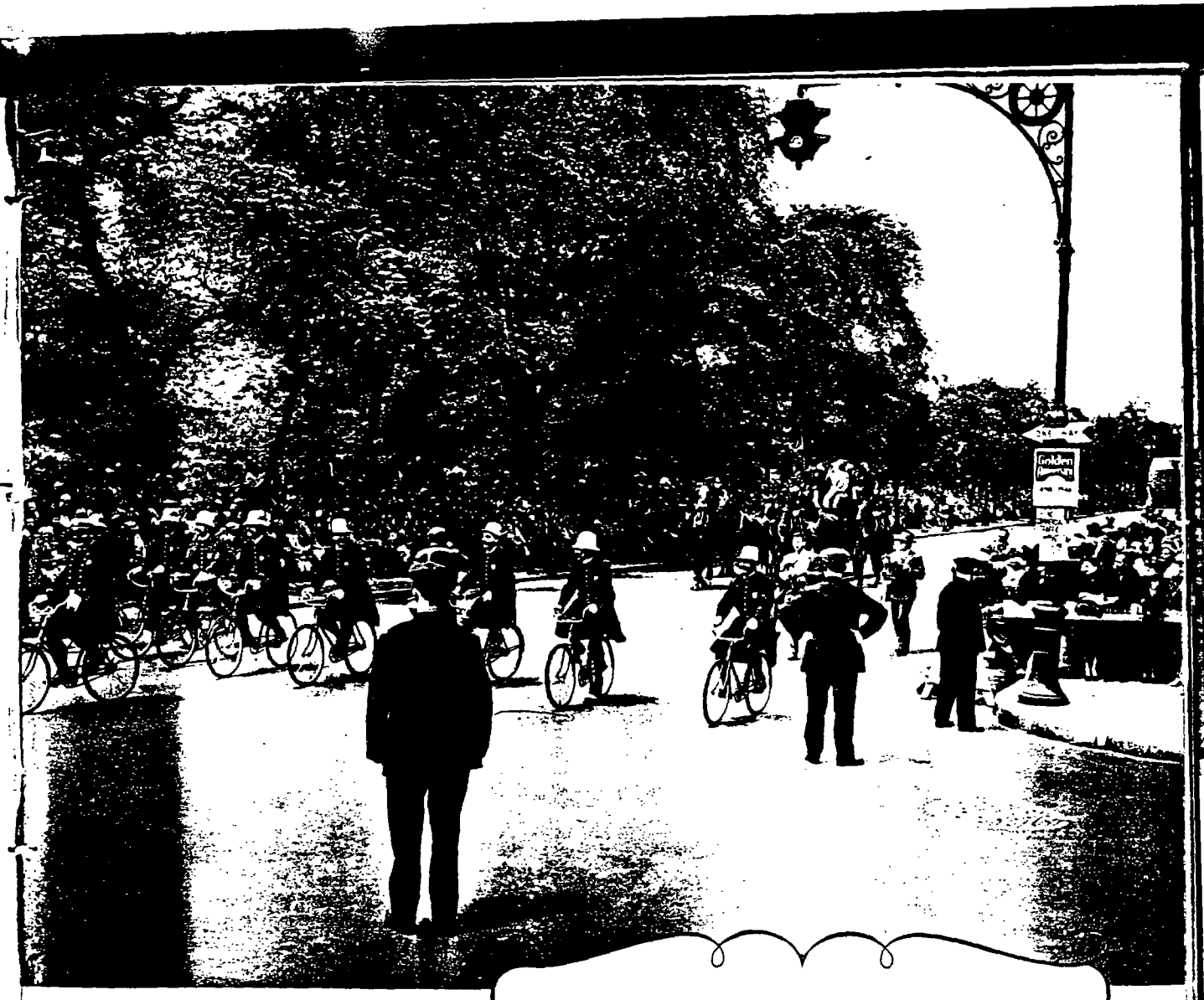
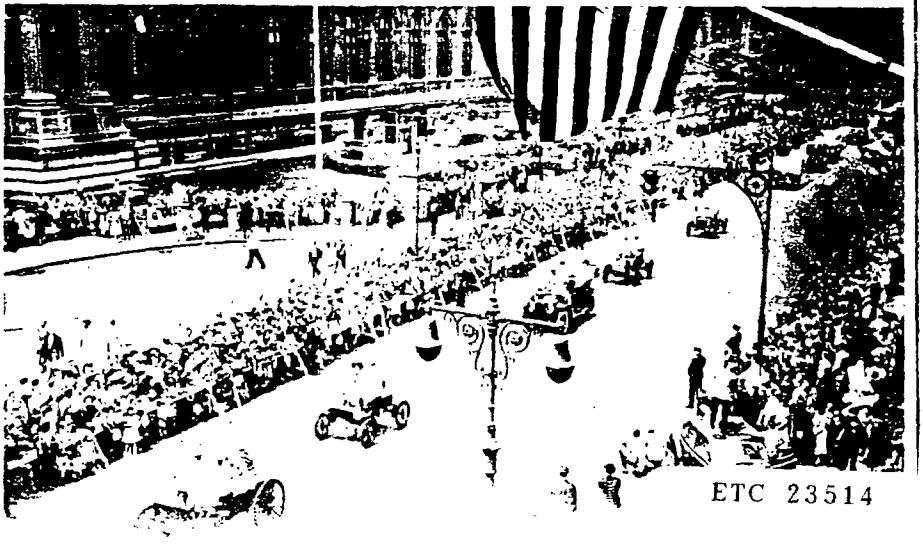


MEMORIES ON WHEELS

Nostalgic reminders of the America of yesteryear are the antique autos carefully preserved by collectors

TO CELEBRATE the golden anniversary of the consolidation of its five constituent boroughs, New York City recently staged a wonderful five-hour parade. The city dropped its sophisticated attitude for a day as it recalled the lighter side of its past 50 years — and like any town, it was real proud. A million people lined the sidewalks of Fifth Avenue as some 50,000 marchers, many in colorful costume, passed in review. And as the pageantry unfolded, the spectators could see many nostalgic reminders of how people used to work and live.

New York's beaming Mayor



A part of the cavalcade of antique automobiles, as it motored down Fifth Avenue

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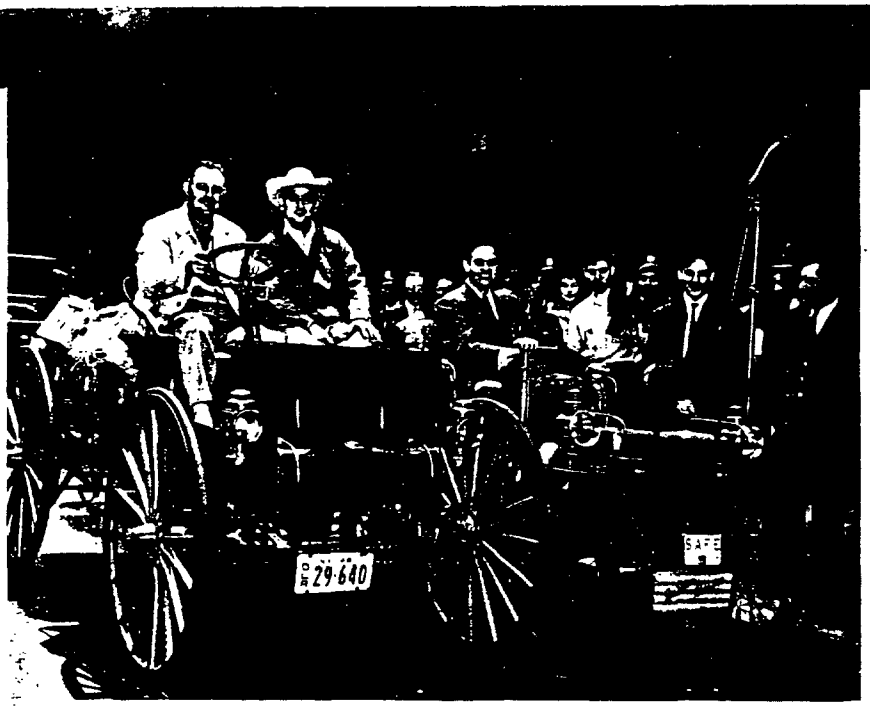


Two of the cars in the New York parade — a 1907 International Auto Wagon and a 1900 one cylinder De-Dion Bouton Motorette. Both are owned by James Melton, the noted singer, who is seated on the DeDion

O'Dwyer led the parade in an 1898 Tally-ho drawn by four spirited horses. There was a detachment of bicycle cops, such as patrolled the streets back in the Gay 90's, replete in their impossible helmets and handlebar mustaches. There was a horse-drawn street car and a band of cyclists aboard single seaters and a tandem. And there was a group of autos that formed a very real part of the America of yesterday.

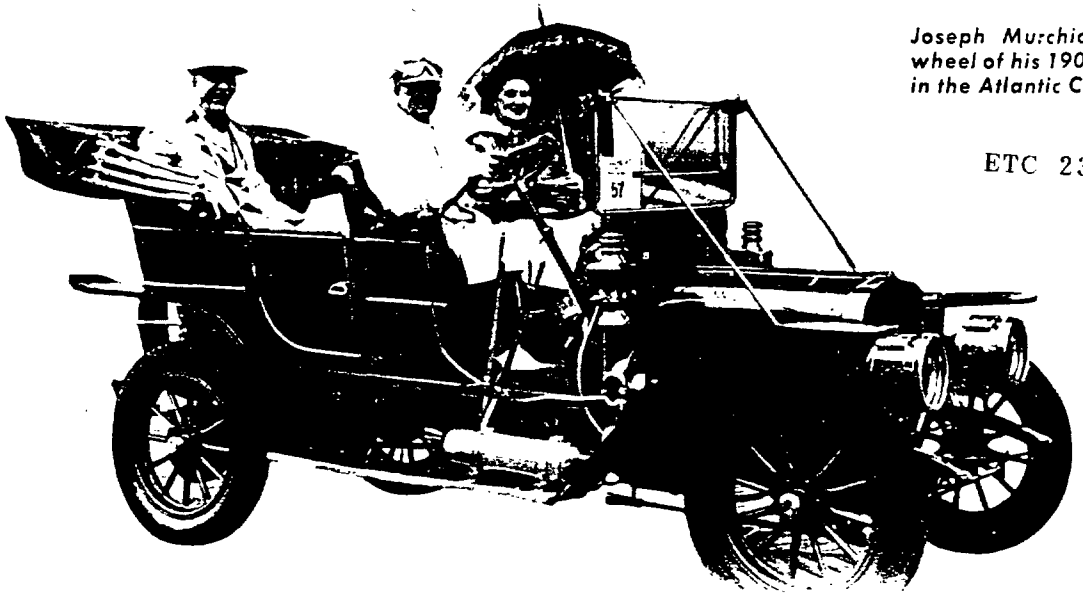
Of all the souvenirs of a bygone day, none held more meaning than these ancient cars, bravely chugging along in the procession under their own power. There were antique Packards with their characteristic hoods and radiators, rugged and reliable Model T Fords, Oldsmobiles, Buicks, Hudsons and Cadillacs, and some almost forgotten names like the Simplex, Stanley and Mercer.

A number of postwar automobiles were in the parade, frequently alongside an early model of the same make. But if their presence dramatized the progress in automotive transportation in the last half century, it also heightened the respect for their antiquated namesakes. For it was these ancient vehicles, crude and cumbersome though they seem, that in a real sense gave birth to today's modern cars.

To the children watching the panorama, the antique cars were a strange sight indeed in this modern, streamlined age. Many kids probably marvelled that their grandparents ever got up enough nerve to take a trip in one of them, and they shrieked with delight at the sounds of their pipsqueak bulb horns. But for their parents and grandparents, the cars brought back a flood of memories of years ago.

They recalled days of muddy roads and high adventure, when people wore dusters and goggles and gauntlets, and took along wicker lunch baskets for a day's outing. Those, too, were the days when motorists knew practically every nut and bolt on their car, because many's the time they had to "get out and get under" on the highway.

After completing the course of the New York parade, the ancient cars assembled at the Hudson river for a trip to Atlantic City, N. J., where a second parade was to be held the following day. And in a manner reminiscent of the famous Glidden Tours, the cars bravely set forth on the 123 miles to the New Jersey resort.



Joseph Murchio at the wheel of his 1908 Corbin in the Atlantic City event

ETC 23515

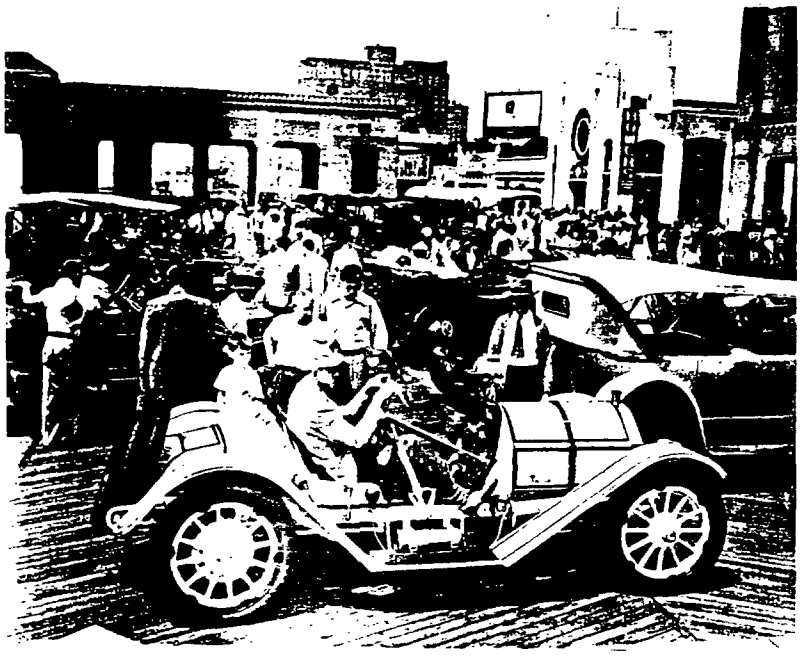
Almost all the cars made the trip on their own; only the oldest of them had to be taken along by trailer. And as the cars chugged along, interspersed throughout the stream of highway traffic, they were the object of great curiosity and even outright astonishment. Drivers of other cars, passing by, stared at them with disbelieving eyes. They couldn't realize, for the moment, that the oldtimers were part of a caravan; they thought they were still being used in day-to-day driving. Said a typical driver, as he saw a 1905 model rattle along: "Can the car shortage still be that bad?"

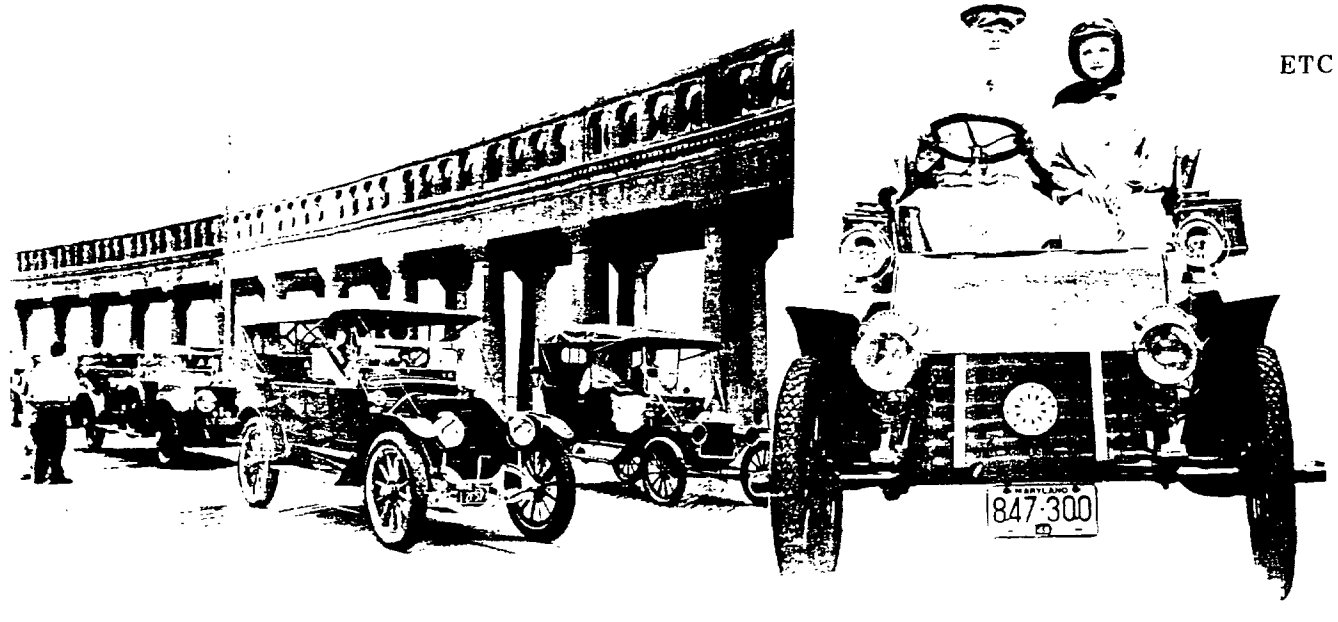
In Atlantic City, the oldtime cars were met by another contingent of antique vehicles that had motored over from Philadelphia. Joining forces, the two groups staged a parade down the resort's famous boardwalk, to the plaudits of the thousands of vacationists there. And to cap the proceedings, the cars were then driven out to the Atlantic City Country Club where during a luncheon awards were made for various classes of cars.

Only on such occasions as the New York and Atlantic City parades does the American public at large get a chance to see these oldtime cars in action. Only then can present-day motorists appreciate fully what motoring must have been like back in the early days of the automobile. At other times, these cars are, for the most part, stored in museums or garages or barns, where they are carefully housed to preserve them against the ravages of old age.

Thanks to the efforts of a fraternity of collectors, the United States still has today many fine examples of early motor cars. These collectors make a hobby of acquiring and restoring old cars, and they are banded together into such clubs as the Veteran Motor Car Club of America, the Antique Automobile Club of America, and the Horseless

Some of the cars participating in the Atlantic City parade are shown below. Bottom right, Mr. C. R. Levis and his daughter, Carol, riding in their 1903 Cadillac





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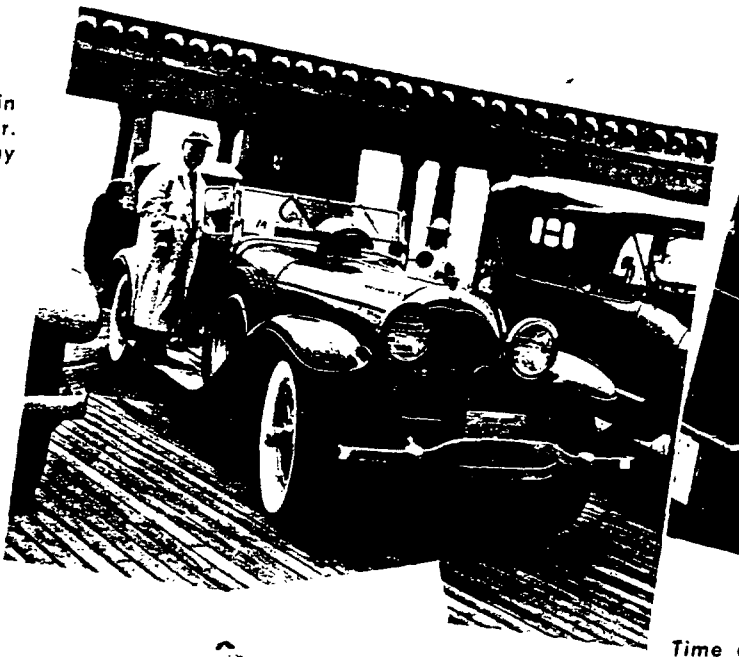
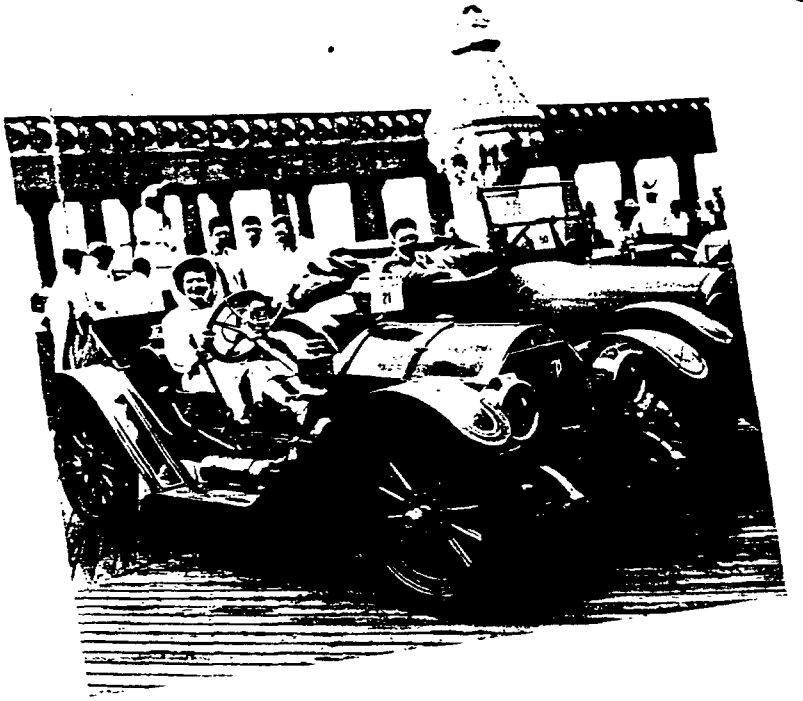


Mr. and Mrs. George Wood in their 1915 Crane Simplex. Mr. Wood still drives it every day

Below, Mrs. Samuel Bailey in her Mercer. Bottom, the scene in front of Convention Hall, Atlantic City, as the parade of old cars came to a halt

Time out for a slight repair on this 37-year-old Twombly



Carriage Club. The effort to preserve for posterity a record of the early days in motoring has also been spurred by such organizations as the Automobile Old Timers, Inc., which is composed of America's motor car pioneers, and such others as the Sports Car Club of America.

The collectors all acquire antique cars as a hobby. Their collections may range anywhere from one or two models on up to several hundred. Notable among the large private collections are those of D. Cameron Peck, George H. Waterman, Jr., and James Melton, the Metropolitan Opera star.

Eager collectors regularly tour

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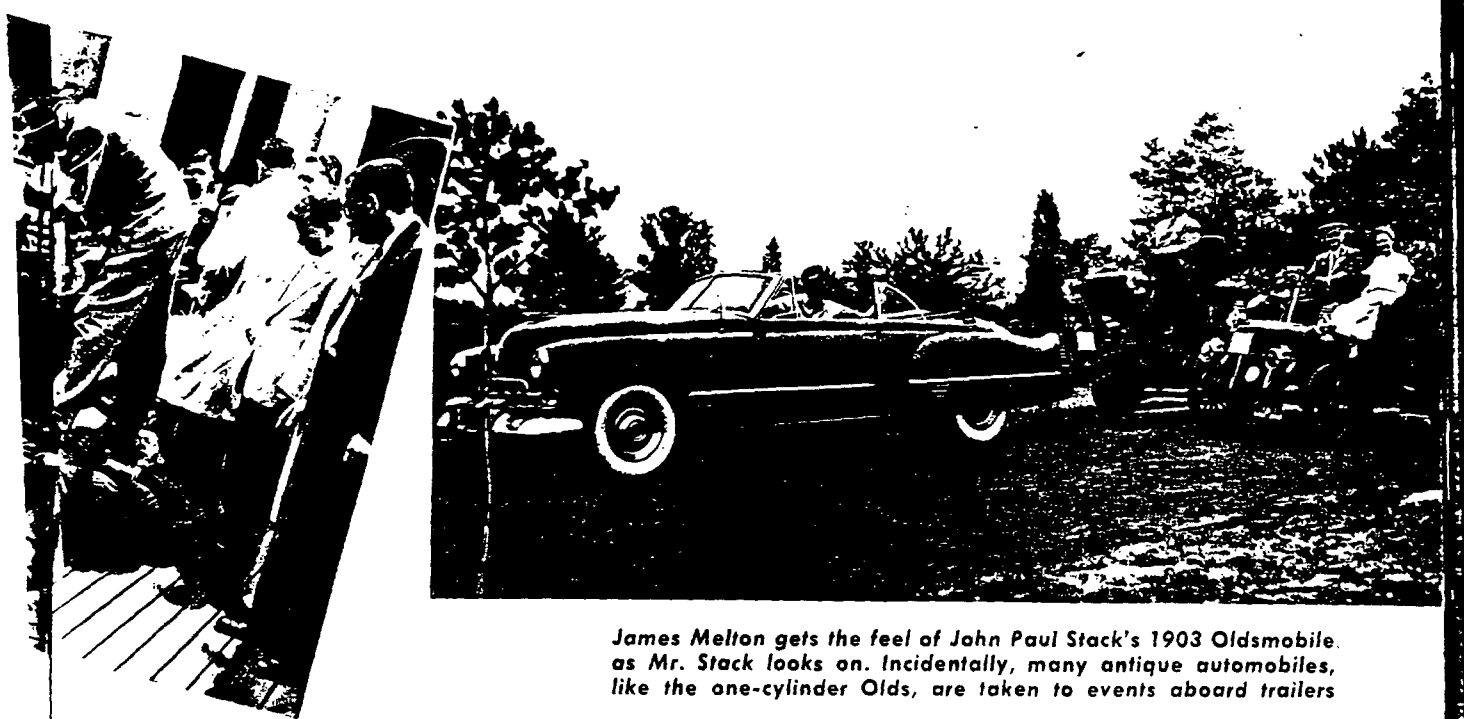


James Melton gets the feel of John Paul Stack's 1903 Oldsmobile, as Mr. Stack looks on. Incidentally, many antique automobiles, like the one-cylinder Olds, are taken to events aboard trailers

the countryside on the lookout for representative old models. And when they come upon a rare find, they frequently spend much time and effort in cleaning it up and trying to restore it to its former condition.

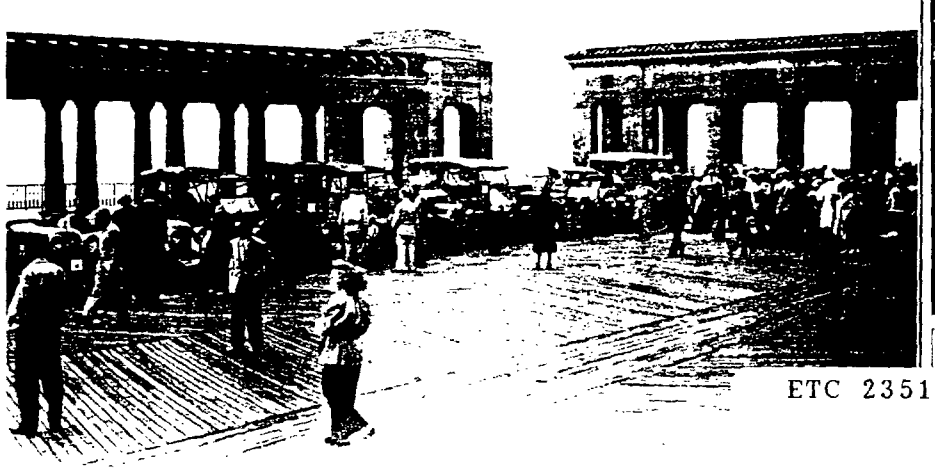
The average collector is also a tinkerer. He may have three cars and a half dozen engines for them. In his spare time he polishes every part on his cars and puts it in first class shape. Sometimes he may spend months looking for a replacement part, but he knows that is part of the game.

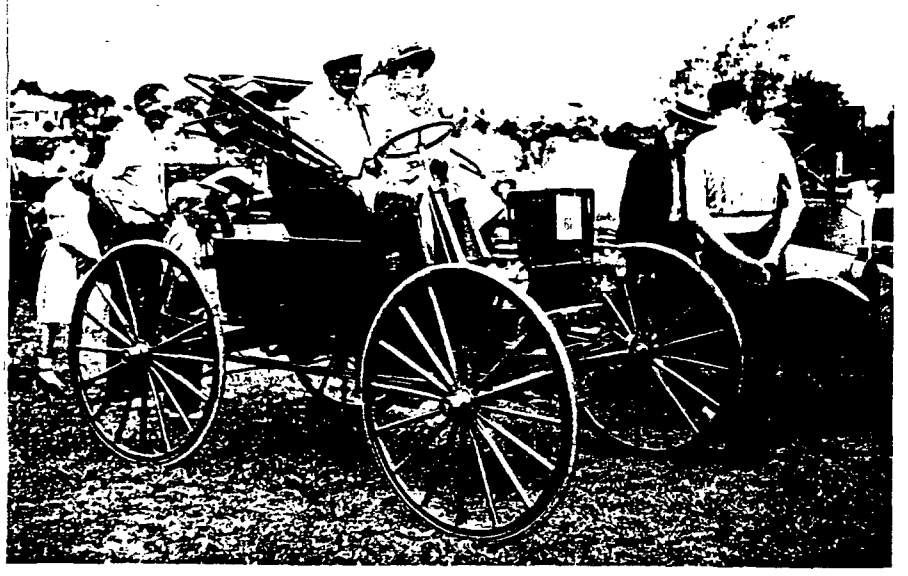
Throughout the year, these antique car collectors hold regular meetings to which they take their cars and enter them in various events. The cars compete by various classes, and are awarded prizes on the basis of such factors as their age and general appearance, their completeness and authenticity, and their general interest. In addition, they also compete in action contests of various kinds.

While antique auto collectors value a car on a number of counts, one of the most important is how well it runs for its age. A consistent blue ribbon winner at antique auto meets is Mrs. John Paul Stack's 1903 one-cylinder Oldsmobile. Its restoration has been so thorough that a veteran Olds mechanic once said it looked as if it had just come from the factory.

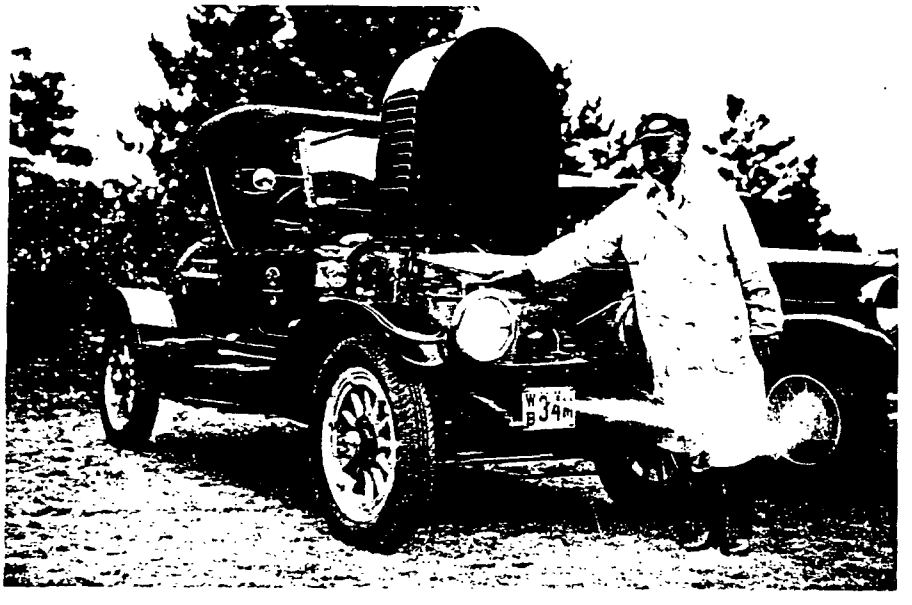
Besides the antique cars which are seen only in parades or at exhibitions, there are others in constant use. One of these is a 1915 Crane Simplex, owned by George Wood, of Brooklyn, N. Y. This is Mr. Wood's only car, and when he decides to enter it in a parade or meet he merely shines it up a little, and he and Mrs. Wood get out their dusters, and off they go.

In addition to such public mu-





A 1903 Black and a 1914 Stanley Steamer at the Atlantic City Country Club, where the Antique Auto Collectors Association and the Veteran Motor Car Club held a luncheon



seums as the Smithsonian Institution, Chicago's Museum of Science and Industry, and the Dearborn Museum, many private museums housing antique cars are to be found in at least eight cities throughout the country. Only recently, James Melton announced the opening of the new Melton Museum, in Norwalk, Conn. where he will publicly display his famous collection of cars.

Many antique car collectors are not only authorities on the cars they own; they are also historians of a romantic and yet important period in American life. Some of them, like Charles B. King of Larchmont, N. Y., can speak out of personal history. Mr. King drove the first horseless carriage on the streets of Detroit in 1896.

For countless thousands of American families, these early cars have been more than a physical possession; they have been a very real and substantial part of their lives, contributing in no small measure to the tremendous development that put America on wheels. Thus, in acquiring and restoring these old cars, the collectors are making an important contribution. They are preserving for posterity the central character in one of the most delightful episodes in the American drama.

A few of the old-time cars as they were lined up on the lawn of the Atlantic City Country Club

ETC 23519

THE OLD TRAVELER

If you seek beauty and adventure in your travels, take the advice of a veteran sight-seer and turn to the side roads

WHENEVER JIM WELSH is introduced at a meeting of one sort or another as "the man who probably has seen more of the United States than any other person" – and that's on an average of nearly six times a week – his opening acknowledgment almost invariably is:

"That's just a polite way of saying that I am just a bewhiskered old goat who spends his days prowling."

Actually, he does sport a graying goatee, and he is a prowler of a sort. As far as being old – well, he's 58. During his lifetime he has set foot in just about every nook and corner, every metropolis and crossroads hamlet, and every historical spot and scenic area that this country has to offer. Jim Welsh calls these hundreds of visits of his "prowling expeditions" because he delights in veering off the main highway to roam about in the backwoods, along the narrow country roads, or even in somebody's backyard in search of a touch of unusual America.

If the name James Parker Welsh fails to strike a responsive chord, chances are you'll recall him instantly as "The Old AAA Traveler" of Automobile Club of Michigan.

That cognomen grew on him while he was doing a series of radio travel talks in Cleveland several years ago, and is so associated with him today that the name is very carefully protected by the American Automobile Association. Even he himself sometimes finds it difficult to keep the two personalities straight, and on more than one occasion has found himself signing a bank check "The Old Traveler" instead of with his own name.

Seeks the Unusual

There isn't much that the portly, genial Jim Welsh hasn't seen or done in his ramblings around the country.

He has sailed with the fishing fleet out of Gloucester, he has explored the wastes of the Yukon, he has walked the foot trails to mountain shacks in Tennessee, and he has roamed up and down Death Valley. Through it all, he has emerged as a personality perhaps more colorful and exciting than his many experiences themselves.

The Old Traveler is not a nomad or a victim of wanderlust, as such. His extensive travels spring from sheer love of country. Three hundred and more times a year he appears before meetings, ranging from small town women's groups of a dozen members to national conventions with thousands of delegates, to urge his listeners to appreciate the beauty and richness of their native land more than they already do.

"Get off the beaten path," he urges. "Instead of driving from Detroit to Miami in three days, take five days and spend the extra time visiting the glory spots that polka dot this nation of ours."

To illustrate what he is wont to call an "unforgettable," The Old Traveler tells of a hill that stands not far from Atlanta, Ga. Millions of motorists pass it on U. S. route 41 each year, but few know the role this twin-peaked mountain played in naming a famous American.

During the Civil War, this hill was among the last defenses before Atlanta, and so was the scene of a North and South Armageddon.

Seeing these moss-covered cypress trees growing on Lake Veret, La., is well worth a few minutes of extra travel

At the height of the battle, a courier delivered a message to a Confederate medical officer. The note was from his wife, telling that a son had just been born to them and asking that he name the baby. Somewhere on the bloody battlefield the Southern officer managed to find a fairly protected spot in which to reply to his wife's letter. He asked that the son be named for the field of battle.

And that, The Old Traveler tells you, is how Kenesaw Mountain Landis, the late high commissioner of baseball, got his name. The little two-peaked hill just outside Atlanta is Kenesaw Mountain!

Jim Welsh has hundreds of vignettes like that up his sleeve. You name the city, region, or state, and he can relate fascinating stories not to be found in the guidebooks. He digs up virtually all his "unforgettables" personally, although his weekly mail sometimes contains a score or more of historical and folklore tidbits sent in by fans all over the country.

Prowling the United States is a profession for him, it is true, but few men have done so much to encourage John Q. Public and his family to get to know and treasure their country more. The Old Traveler is a goodwill service of the Automobile Club of Michigan, whose 270,000 members make it the largest motoring organization in the world. His trips are sponsored by that club as a means of stimulating tourists and vacationists to "see America—the little-known America—first."

Sometime this summer he will reach the 2,000,000-mile mark in his roamings. No special celebration will observe this significant milestone for the simple reason that the bewhiskered wanderer has no idea just when the milestone will sneak up on him or exactly where he will be at the time. Whenever and wherever it occurs, however, he undoubtedly will be busy uncovering another morsel of Americana to feed his avid club, radio, newspaper, and magazine audiences.

During his travel career, polytopian Jim Welsh has driven and "outgrown" more than 20 automobiles. His first vehicle, back in 1908, was a Mitchell phaeton. Since then he has guided such old timers as the Brush, Chalmers-Detroit, Paige Daytona Special, and Diana, as well as almost every present make, up and down and across the North American continent. He was among the first to buy "Ethyl" gasoline when it went on the market 25 years ago, and has used it regularly ever since.

His accident record is perfect. In 40 years and nearly 2,000,000 miles of traveling, he has never so much as dented a fender. Once, however, the right front wheel of a Stevens he was driving came off and rolled down the highway embankment. Mr. Welsh didn't realize what had happened for several moments, since the vehicle had continued on its merry way almost as well on three wheels as it had on four.

"Best balanced car I ever drove," is his sage recollection.

One of Jim Welsh's fondest recollections of his boyhood is "borrowing" some of his father's tobacco to give to Geronimo, the famed rebel Indian leader, while the latter was being held captive in a jail in the little Alabama community of Vine-

This Tennessee mountain cabin is a good example of the scenic wonders you can find on the nation's back roads

gar Bend. The Indian fighting in the Southwest was over, but Geronimo was locked up in a distant state so he could not inspire a renewal of the warfare. Jim had been sent to his grandparent's home in Alabama at the age of nine to go to school.

As a sequel to that incident, The Old Traveler relates how, even in death, Geronimo could not escape the flag of the United States, which he hated above everything else. For, today, as the sun sets behind Fort Sill, Okla., it ironically throws the shadow of that post's flag across the grave of the Indian warrior who held such bitter hatred for the Stars and Stripes.

At none of the 5,000 personal appearances The Old Traveler has made during the past 11 years has someone in the audience failed to ask what places he considered the most beautiful and most interesting. Mindful that he might be incurring the wrath of more than one Chamber of Commerce, he nevertheless answers unhesitatingly: Most beautiful – Natchez, Miss., most interesting – Tombstone, Ariz.

History relates that General U. S. Grant must have thought Natchez a center of scenic beauty and culture, too. During the siege of Natchez, the Union commander ordered that the town high on the bluffs of the Mississippi River be spared shellfire in order that its beauty not be destroyed.

In selecting Tombstone as America's most single interesting "glory spot," The Old Traveler refers to is as "the town too tough to die." He notes that the local newspaper was (and still is) called *The Epitaph*, and he takes you on a verbal inspection of Boot Hill, the cemetery so named because in it sleep only those who "died with their boots on." More than any other reminder, the wooden headboards tell of the Tombstone that was. "Murdered," says one. "Killed in the Crystal Palace," says another. "Hanged" and "Legally Hanged," read others. Often the epitaph was burned into the headboard with a branding iron.

Tombstone, once the leading silver-producing city of the West but now almost a ghost town, still boasts its wooden sidewalks, many of them pock-marked with bullets. And as you walk down old Allen or Toughnut Streets, you still can dig .45 slugs from the walls of the buildings.

"Here is truly the most unusual town in America," sighs The Old Traveler, "and yet so many of us pass right by or through it without a second thought."

Jim Welsh personally is no reformer or crusader, but his travels about the United States have convinced him that American history books should be revised to report the various events in a more interesting and complete fashion.

As an example, he says that 800 pirates from the bayou country of Louisiana, loaned by Jean Lafitte, the pirate chief, enabled Andrew Jackson's pitifully small army to crush the superior British forces in the Battle of New Orleans. "But you'll never hear about those pirates in any history book," Welsh claims.

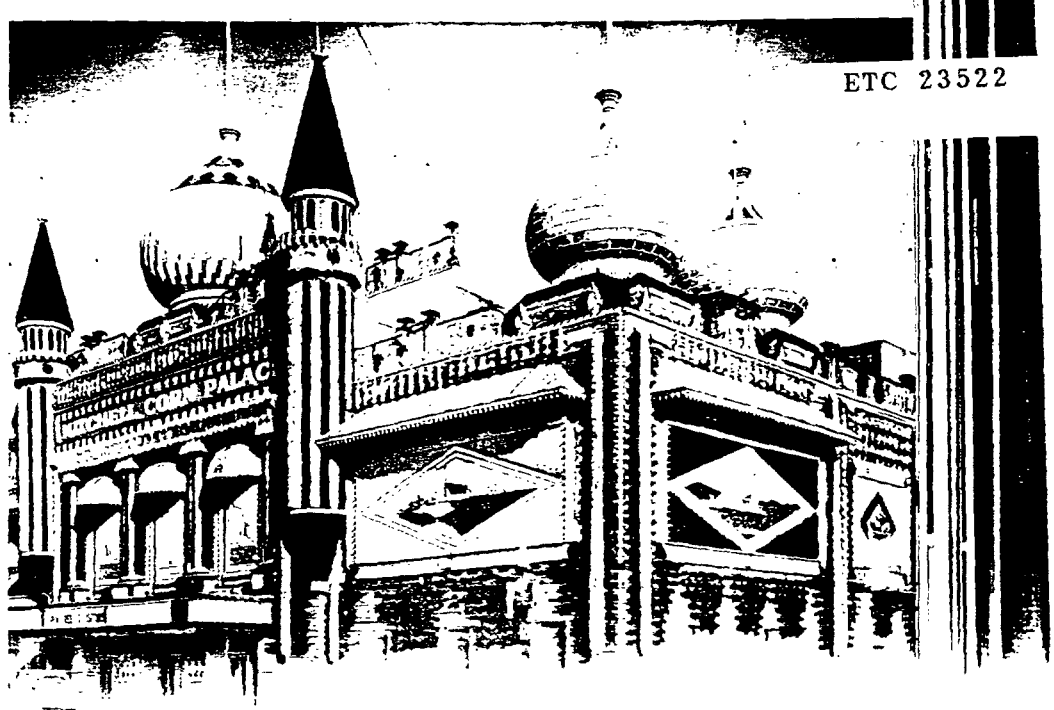
"Give our students just one interesting fact, and they'll remember the whole story. For instance, no one will ever forget the details of the Battle of Gettysburg if you tell them that the Union forces were about to suffer a major defeat until one little factor changed the tide of battle. The fifth day of fighting was the Fourth of July, and the patriotic urge experienced by the Northerners gave them a new will to go on and win."

"People don't forget things like that," he believes.

Jim Welsh is a man of many talents. He is a story-teller *par excellance*, a soldier, a veteran newspaperman, a magazine writer, a radio commentator, an expert photographer, a public speaker, and a leading authority on outdoor cooking.

But, above all else, he says, he is "a goateed old man who likes to prowl these United States."

The rushing tourist sometimes passes up obvious spectacles such as this ornate Corn Palace in Mitchell, South Dakota



100 YEARS OF SERVING FARMERS

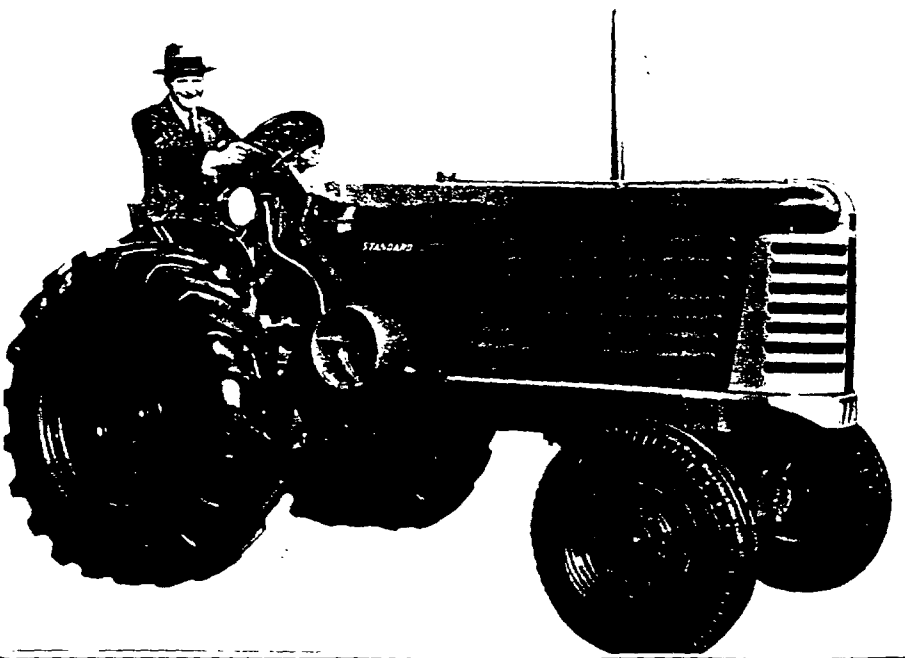
The Oliver Corporation, which has made many important contributions to better farming, this year observes a milestone in its career

ONE HUNDRED YEARS AGO a young Michigan iron worker struck out on foot along the primitive forest paths leading inland from Detroit. John Nichols wasn't exactly sure of his destination, but he settled eventually for Battle Creek. The farmers surrounding that busy little community needed farm implements and needed someone to do their iron work. Nichols recognized this as his opportunity and opened a farm implement shop and a foundry. Then and there, for all practical purposes, was founded The Oliver Corporation of today.

The Nichols enterprise grew and acquired a partner. It became the firm of Nichols & Shepard, interested in threshing machinery. One of the most important contributions in the design of harvesting equipment came out of this partnership, for the Nichols & Shepard vibrator type thresher produced in that early day rendered all others virtually obsolete.

As the Nichols & Shepard Company came to the booming 1920's, behind it was a long record of successful business operation and service to American agriculture.

The late '20's are often referred to as the years of mergers. The needs of agriculture were becoming too great. Efficiency in production, as well as reduction of prices, called for large companies. Everywhere competing and non-competing companies engaged in farm equipment manufacture were getting together to the eventual benefit of the American farmer.



Joseph D. Oliver, Jr., a director of the Corporation, driving a Standard 77 model—one in the new line of tractors Oliver has introduced as it begins its second century

ETC 23523

So it was that Nichols & Shepard, with their power harvesting equipment, joined with the Hart-Parr Company, first to manufacture gasoline-driven tractors. Too, the American Seeding Machine Company, pioneer in the manufacture of drills and planting equipment, and the Oliver Chilled Plow Works, which had pioneered in the design of plows and tillage tools, were brought together under the Oliver banner to form an important segment in the farm equipment industry. In 1943, Oliver acquired the Ann Arbor Machine Company, which for many years had manufactured hay balers. Finally, in 1944, the Cleveland Tractor Company was acquired, bringing to the Oliver line of tractors a fleet of crawler type tractors.

The man who gave the company its name was James Oliver, an Indiana land owner who "improved the plow more than it had been improved in all the time since man first turned the earth with a sharpened stick." His son, Joseph, effected the merger that has kept the Oliver name among the foremost in the farm equipment field.

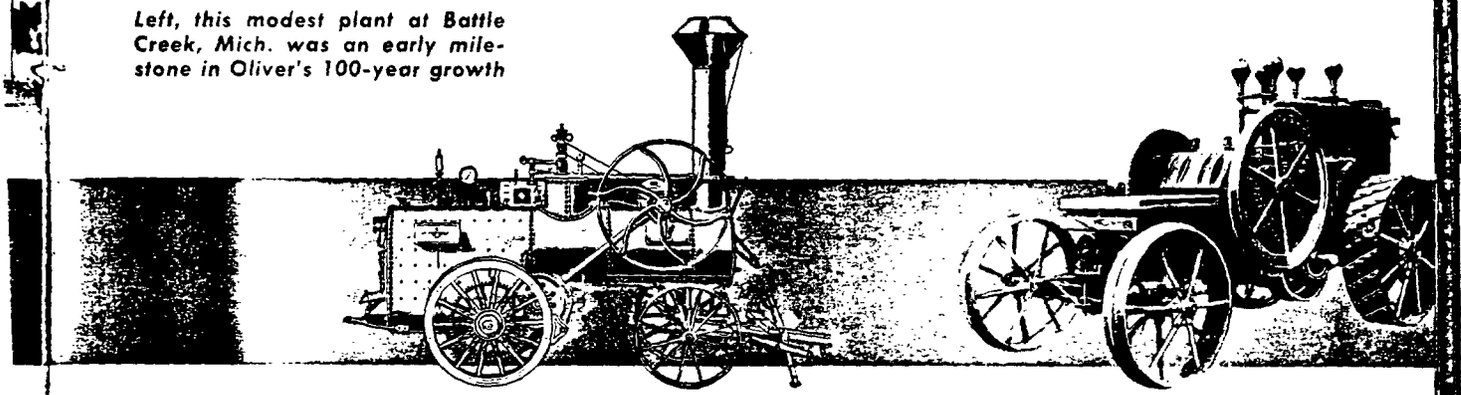
To observe its centennial, the Oliver firm paused briefly a few weeks ago in its task of all-out production of tractors and other farm equipment. But to those in the company the June 30th ceremony at Battle Creek did not mark a 100th anniversary alone. Rather, it was "the beginning of the second century." As its own birthday gift to the farmers it serves, Oliver unveiled a new line of tractors – the "66," "77," and "88" – to replace its popular "80," "70," and "60" models.

As is true of all long-established farm equipment manufacturing companies, the history of Oliver is the history of American agriculture. Through its manufacture of time- and labor-saving devices, it has helped the farmer increase productivity to the point where today he feeds not only his fellow countrymen but millions of starving people in all corners of the earth as well.

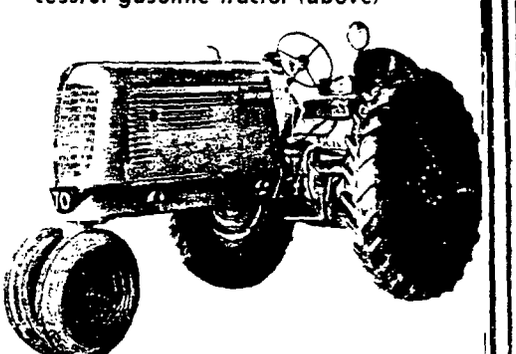
Several "firsts" highlight Oliver's achievements in mechanized farming. Chief among these are the manufacture of the first successful gasoline traction engine, and the fact that Oliver was one of the first companies to market a commercial high compression tractor engine designed to use gasoline exclusively.

Some even say that Oliver coined the word "tractor," but this is not true. Company officials will tell you that "tractor" was used in a patent received by a Midwest farmer back in the late Eighties, some 17 years before the word appeared in an advertisement of 1906. As the story had it, the sales manager of what is now the Hart-Parr Division of the

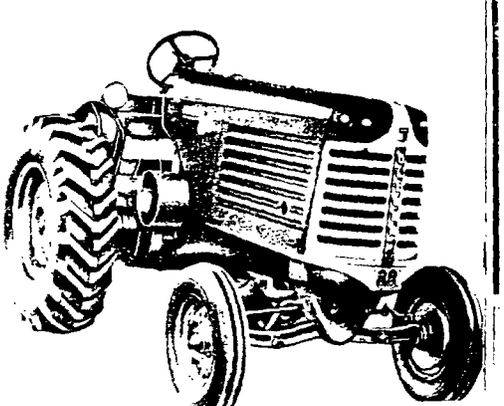
Left, this modest plant at Battle Creek, Mich. was an early milestone in Oliver's 100-year growth



A great deal of progress separated the early steam-powered machine (left) and the first successful gasoline tractor (above)



The famous Oliver 70, one of the first modern high compression tractors, was designed to operate on 70 octane gasoline



Oliver's new gasoline tractors, of which the Standard 88 model is shown here, all have high compression engines

ETC 23524

Oliver Corporation found the phrase "gasoline traction engine" too cumbersome. Somehow, he arrived at "tractor" in his mental search for a catchy advertising word, and it went into the ad he was writing at the time. Since Oliver officials themselves only recently learned of the ancient patent, it is possible that the sales manager also invented the word. At any rate, his was the first use of it in any advertisement.

Paralleled Auto Progress

The first gasoline traction engine built by the partnership of Charles W. Hart and Charles H. Parr at their gasoline engine manufacturing plant in Charles City, Iowa, was as much unlike the present streamlined tractor as are the Stanley Steamer and a 1948 model automobile. It was big and clumsy and bore a strong resemblance to one of the war machines created five centuries ago by Leonardo da Vinci. America's first tractor was powered by a two-cylinder oil cooled horizontal engine. Compared to the modern six-cylinder Oliver "70," the first unit was truly big and clumsy. But what was important was that it worked and that it was a vast improvement over steam-powered "tractors."

The very first Hart-Parr tractor was built in the winter of 1900-01. It was sold to an Iowa farmer whose name has been lost in the annals of time. The owner and destiny of the second tractor also are unknown. But old No. 3 is on view daily for the thousands of visitors to the Museum of Science and Industry in Chicago. It was originally purchased in 1903, the year of its manufacture, by George Mitchell, a Floyd County, Iowa, farmer, for $1,550. He used it until 1922, when Hart-Parr bought it back for showing at state fairs and farm expositions. It was placed in the Chicago museum ten years ago amid much ceremony.

The life of the gasoline traction engine, as such, was a short one.

In the early 1900's the petroleum industry was still in short pants and had not yet realized the enormous growth in demand that was to come for gasoline and other refined products. The result was that gasoline, then a byproduct of the industry, was not generally available on farms. Because of this, Hart-Parr turned to the manufacture of a tractor that could burn kerosene and the lower grades of oil which were more readily available. In 1905, Hart-Parr perfected the first satisfactory system for using fuels other than gasoline in tractors. For 30 years thereafter, few indeed were the tractors that were built for gasoline. Farmers obtained satisfactory results from tractors designed to operate on kerosene and distillates, but they were not enjoying the *fullest* performance of which their tractors were capable.

One of the first men to realize this was George Krieger, of Ethyl Corporation. With Dan Guy and other Ethyl Corporation tractor engineers, he began campaigning in the early 1930's for higher compression tractor engines designed for gasoline. This group concentrated its efforts on farmers themselves as well as the manufacturers of tractors. Their cause was aided by the decision of Ethyl Corporation, in 1933, to market an antiknock compound which oil companies might add to their regular grade motor fuel.

The success of their efforts to bring about greater tractor performance and economy is too well known to be elaborated on here. Working in close cooperation with design and production engineers of the farm equipment industry, the Ethyl Corporation engineers aided in marketing the first high compression *gasoline* tractors. That was in 1935. One of the first to appear was the Oliver "70." It had a six cylinder engine and derived its name from the fact that it was designed to operate on 70 octane gasoline.

High compression jobs required relatively little time to reach the top of the tractor best seller list. In fact, the first Oliver "70" was purchased before it even had a name. One day in January 1935, farmer Elmer Niebel, of the northwestern Ohio town of Napoleon, stopped in at his farm equipment dealers' store. Salesmen of the Von Deylen-Wiemken firm, Oliver dealers in Napoleon, showed him a set of blueprints and a typewritten sheet of specifications of the new tractor Oliver planned to produce later that year. The tractor already had been tested and proved both in the laboratory and the field. Mr. Niebel was convinced, and immediately ordered an unnamed tractor that was delivered to him as the Oliver "70."

Farmers Prefer Gasoline

Since that day 13½ years ago there have been many Elmer Niebels. Today, approximately 60% of all tractors on U. S. farms are high compression. Eight of every ten farmers use gasoline as their tractor fuel, and this preference is growing almost daily because of gasoline's greater power and quicker starting, cleaner burning advantages.

Power farming, of which the tractor is the backbone, has come a long way in the past three generations. Equally as much progress lies ahead. It is in that spirit that the Oliver Corporation, during its present centennial, looks back not on 100 years of outstanding contributions to mechanized farming but rather looks ahead to a second century of service to the farmer as a leading member of an important industry.

ETC 23525

ALASKA— Oil Outpost

by Martin Sheridan

The Arctic Circle is the locale for one of the most unusual explorations now going on throughout the world

ONE OF THE remote and undeveloped areas of the world which offers great promise as a potential oil producing region is the United States Navy's Petroleum Reserve No. 4.

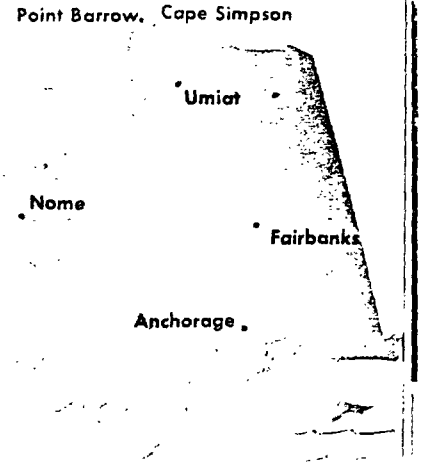
Located in northern Alaska, the "Pet 4" project covers a bleak, desolate wasteland equal to about half the area of Oklahoma. Oil seeps and oozes had been reported there by Eskimos and other natives for many years. Now the Navy is directing a thorough search of the Arctic area, using all the tools and methods commonly employed by the oil industry in explorations elsewhere throughout the world.

The structural makeup of the terrain and other geological features strongly indicate that oil may be present beneath the polar wastes. Though the location and the amount of oil that may be hidden there still remain a mystery, the Navy hopes to locate these reserves, learn more about them, and fully determine their potentialities. In the closing days of the last session of Congress, the Navy was granted $14.6 million to continue its search for oil inside the Arctic Circle.

The Alaskan territory was first set aside as a Naval petroleum reserve by President Harding in 1923, but no serious effort was made to

The test well at Cape Simpson, which was drilled to a depth of more than 7,000 feet

Shown below is the Navy's Petroleum Reserve No. 4 relative to all of Alaska



ETC 23526

Walter S. Hallanan, president of Plymouth Oil Co., is well known throughout the industry

corrigible optimist" he replies: "Of course. You have to be to survive in this game."

He is also something of a spartan in his personal habits. He goes to bed at nine each night, never drinks, doesn't smoke at all, and never comes closer to cussing than "By Jingo!"

But though Mike is tough, mentally and physically, he's not "rough" as the popular legends about successful oil men would have you believe. His manners are polished, almost debonair, and he is very dignified, a characteristic expressed in the military erectness with which he holds himself. Though history already knows him as "Mike," only a few old friends call him that to his face. Close associates refer to him as "M. L." The rest of the world still addresses him as "Mr. Benedum."

Many have called Mike Benedum one of the "great gamblers" of history. Mike resents that. He denies that he's a gambler in the ordinary sense of the word. He's apt to lecture his own employes on the evils of gambling. "If *you* win," he's apt to argue with a would-be gambler, "you win somebody else's money. If *I* win, everybody wins; nobody loses."

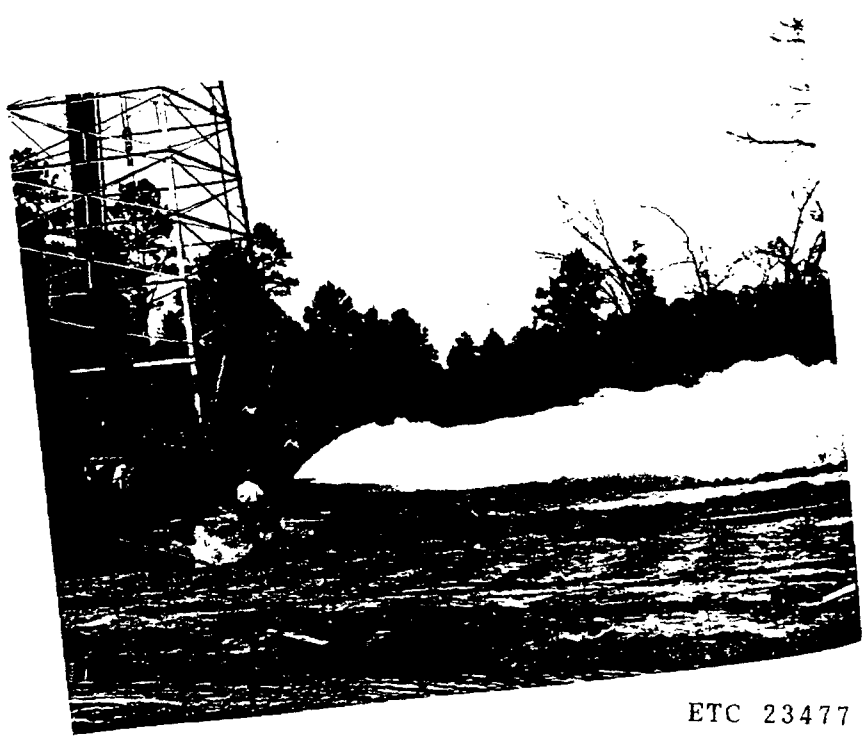
When Mike says "everybody wins" you can almost take him literally. More than a few of the secretaries and humble staff members working in the Benedum-Trees Building have won a great many thousands of dollars through buying shares in leases Mike has offered them. A number of Benedum employes are said to hold royalty worth $2500 an acre near the Alford which Mike bought for them several years ago for $10 an acre.

To men who grew up thinking oil was the sweetest smelling thing in the world, no oil has ever smelled any sweeter than the oil the Alford brought in. As a saga of victory over doubt and successive setbacks, the Alford is a fine symbol of the determination and courage that goes into the nation's treasure hunt for oil — and of the possible rewards for this herculean effort.

Plymouth Oil Co., run by one of Mike's top lieutenants, Walter Hallanan, started drilling the Alford in May, 1941, near the middle of a block of 12,000 acres. Benedum and Hallanan felt the well was a very good gamble, because several years before oil had been found only nine miles away in a limestone formation called the "Ellenburger." They were trusting that this "Ellenburger" continued north to their lease. The only trouble was the Ellenburger was 9000 feet deep where oil had been struck. This meant they might be in for drilling problems.

They were. They drilled 10,000 feet in five months without hitting the Ellenburger. It took them seven months to make the next 384 feet. One day the hole would cave in, the next they would wear out a bit trying to bite through the toughest of all underground formations, chert, the next they would lose their drill in the hole and have to spend weeks fishing it out. Once they wore out two bits in 24 hours drilling six inches.

Finally they decided to let the hole "cool off" for awhile. This was in 1942, and during the war it was hard to get drilling supplies, so they didn't return until 1946. Then they faced new disappointment. They



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found that the "liner," the steel sheathing they had sunk in the hole to keep it from caving in, had caved in itself. They couldn't get the drill pipe through it. By this time they had already spent half a million dollars and it was costing them $800 a day just to keep a drilling rig on the site.

They found a partner in Fred Turner, a lifetime oil man from Midland, Texas, who agreed to complete the hole in return for a half interest in the 800 acres immediately surrounding it and a third of the remaining acreage in the 12,000 acre block. Turner, in turn, got a "free ride" when he made a deal with 31-year-old Tom Slick of the Slick-Urschel Oil Co. to take his place in the partnership with Plymouth and to complete the well in exchange for a one-eighth interest in whatever oil Slick-Urschel struck in the Alford or the rest of its acreage.

Drilled At an Angle

Slick-Urschel backed up the hole Plymouth had dug, cut a "window" in the liner at 8,400 feet and drilled back down at a - degree angle. Using improved drilling tools they were able to penetrate the chert, and they hit the Ellenburger and oil at 11,020 feet. They kept on happily through 1002 feet more of pay formation without getting to the bottom of the Ellenburger.

The drilling crews who made the Alford pay off operated under the kind of conditions that allows Texans to boast you have to be tough to live down there.

The West Texas area where the Alford is located is a barren, windswept waste which once looked so unpromising to the University of Texas that they called off a geological survey of it, claiming it wasn't worth it.

When the Alford finally came in last December it reminded some of Mike's old cronies of Stiles Number 4, his well which proved the Louisiana Caddo field 40 years before.

Looked Better and Better

Mike's brother-in-law John Lantz was running the drilling crew, so the story goes. When the well came in at a depth of 2,212 feet – as deep a well for those days as the Alford's 12,022 feet is for today – John flogged a horse to Vivian, the nearest town and called Mike and his friend and informal partner, Joe Trees, in Pittsburgh. "She's in, Mike, and doing 1000 barrels."

"Fine," Mike said. "We'll leave Saturday."

Three hours later Lantz was on the phone again. "I just wanted you to know," he said, "This well's a humdinger, doing better than 2,500 barrels."

"Fine," Mike replied, "We'll start tomorrow."

Once more that day Mike's telephone in Pittsburgh rang and there was Lantz breathless on the other end again. "Mike, she's doing 5,000 barrels and hasn't begun to settle down."

"John, don't you bother to call us any more," Mike is supposed to have replied. "Joe and I are coming right away."

Alford Number One also kept looking better and better. Neither Plymouth nor Slick-Urschel could quite credit its potentialities. They tried to keep it a secret until they were sure, and succeeded so well that word didn't leak out to the public until a month after it came in.

But after the news was out, people were quick to realize that the Alford was not simply a successful wildcat but that it indicated a field of major importance. Some placed its potentialities at greater than the Big Lake field, which Mr. Benedum developed and which since 1923 has produced almost 100 million barrels of oil. Others went even further in their praise. Said Ernest O. Thompson, chairman of the Texas Railroad Commission, in a message to Plymouth and Slick-Urschel, "You have brought in a tremendous new oil field at a time when oil is sorely needed. It is perhaps the greatest discovery in Texas since the East Texas field 17 years ago."

Touched Off a Boom

Completion of the Alford set off the fiercest oil fever in the recent history of Texas. Land near the Alford has been leasing for $1000 to $3,500 an acre. Plymouth and Slick-Urschel have a joint interest in the 800 acres immediately surrounding the Alford. Then, in a square surrounding this inner area, Plymouth owns 8000 acres and Slick-Urschel 4000 acres.

Royalty directly under the Alford has sold for as high as $6000 an acre. That's as much as the best citrus and avocado orchards were bringing at the peak of the wartime land boom in southern California.

The discovery of the Benedum field symbolizes many things. To Mr. Benedum, as it would to any wildcatter, it represents a personal satisfaction and reward for a half-million dollar gamble that lasted for nearly ten years. To the oil industry, it represents a new oil field of great promise, after a war-long period in which exploration efforts were severely hampered. But to the country at large, it demonstrates that a lot of oil still remains to be discovered beneath our soil – and will be brought in as long as men of vision are free to do it.

nedum gas well coming in. The of considerable size, is located e Shreveport section of Louisiana

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new workshop

Completion of a new building, and conversion of an existing structure, will provide enlarged facilities for Ethyl's staff

FOR CHEMICAL RESEARCH

ONE OF THE planned features of the modern Ethyl Corporation Research Laboratories in suburban Detroit is that they are designed and equipped to permit such expansion in physical size and scope of activity as may be necessary to help solve the many complex technical problems of the engine-fuel-lubricant relationship.

For the past six years, since their completion early in 1942, the present Laboratories' accommodations have proved adequate. Now, however, it has become necessary to enlarge the facilities available for chemical research activities.

This is the new 7,500 square foot Chemical Workshop building in Detroit immediately after its completion

To supply the extra working area needed, a new Chemical Workshop building has been constructed on the 26 acres of Laboratories property. This structure provides Ethyl's research staff with approximately 7,500 square feet of additional space in which to carry on studies and experiments. The building is of one-story height and 50 feet wide and 150 feet long, and its architectural style is in keeping with that of the four other principal research buildings.

As a further part of the program to enlarge the chemical research facilities, an existing building, heretofore used for chemical workshop operations, is being converted into additional laboratory space for general research on chemical products.

Contained in the newly-built Chemical Workshop are a general processing room; an alloy preparation room; a distillation room; a shop for the repair and maintenance of chemical engineering equipment; a room for air compressors, a supercentrifuge, and a Dowtherm heating system; three offices, a storage room, a wash room, a shower room, and a locker room.

Largest of the 12 individual rooms, occupying one-third of the structure's area, is the general processing laboratory. Here, among other equipment, is located a complete 1/100 scale tetraethyl lead manufacturing plant, which formerly was housed in the original Chemical Workshop building, now being remodeled.

This plant makes available an autoclave for the various tetraethyl lead manufacturing process studies conducted at the Ethyl Laboratories. A rocking autoclave capable of operation at pressures as high as 5,000 pounds per square inch also is provided for hydrogenation experiments. The autoclaves are tested at pressures substantially higher than their working pressure, and are equipped with frangible discs to relieve excessive pressure.

Also located in the general processing laboratory are a glass-lined kettle and a glass-lined condenser having drain valves also lined with glass. Typical of the new equipment being installed in the building, this apparatus is of the latest design and construction. The glass-lined equipment is used in studies or preparations involving corrosive reactions.

The apparatus for distillations in the Chemical Workshop building has capacities greater than the columns in the Ethyl general chemical research laboratories and is employed, of course, to produce batches of fuels and lubricants larger than laboratory samples. The largest still has a 50-gallon capacity, and can be heated to a temperature of 300 degrees C. This still is equipped

with one each of 3-inch and 5-inch packed columns, and has a special reflux control and light-ends condenser.

Part of the distillation room has been set aside for tests concerned with the storage of gasoline samples at constant temperature. A hot air bath, capable of closely controlled temperatures in the range of 90 to 150 degrees F., is available for such storage tests.

In the alloy preparation room, where small batches of alloy are made and where alloy manufacturing studies are conducted, temperatures up to 700 degrees F. are produced by an electrically heated crucible furnace. In addition to the normal apparatus, the alloy preparation room contains a new piece of experimental equipment called "flame study" apparatus. This is used for research on the process of combustion.

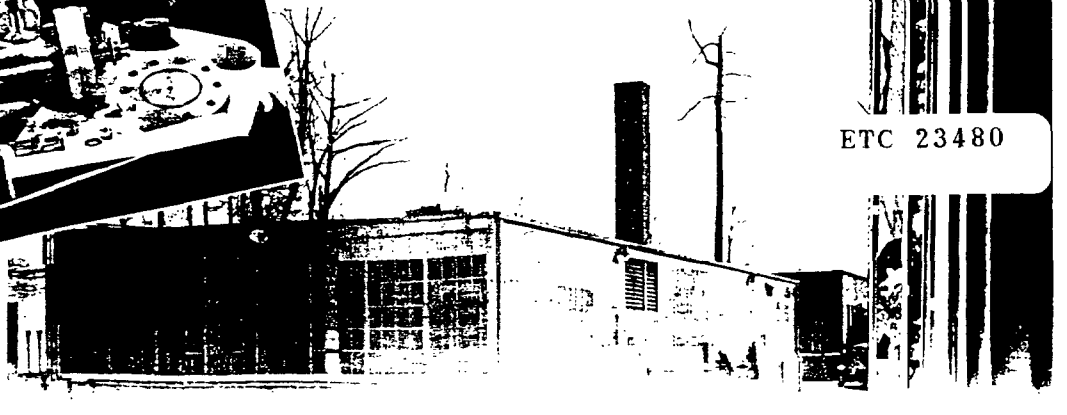
The Chemical Workshop building has a central system which can heat reaction vessels to temperatures as high as 300 degrees C. Also available is a three-ton portable refrigerating unit, which can be moved about the structure as needed for cooling purposes during certain research operations. The unit will produce any desired degree of coldness down to minus 15 or 20 degrees F.

All modern safety and utilitarian features have been combined into the new Chemical Workshop building. In those rooms where operations involving combustible vapors are conducted, electrical installations are of the explosion-proof type. Utility and service pipe mains are equipped with plugged T fittings at intervals of not more than 10 feet to permit the addition of future branch service lines without cutting into present lines.

One of the unique features of the new building is its ventilating system. This consists of a large blower connected to a duct with controlled louvred outlets to supply fresh air to four rooms and a separate air discharge blower in each of those four rooms. The large blower is capable

Left: Small scale quantitative studies are an important phase of the constant research effort to improve the process of manufacturing "Ethyl" fluid. Because of the complexity of the reactions involved, some of these studies are made, through the use of small bombs, in many chambers, and the results determined by statistical methods

Left: Studies of many chemical reactions call for special equipment, which in turn requires conferences between chemists and design engineers. Here, a group discusses a small-scale stirred autoclave used in research on the manufacture of tetraethyl lead. Below: This building, which formerly served as a chemical workshop, presently is being remodeled into general laboratories for research on chemical products



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of supplying 20,000 cubic feet of pre-heated fresh make-up air per minute, and the exhaust blowers vary in capacity from 2,000 to 4,000 cubic feet per minute. The four rooms which are ventilated by this system are the general processing room, the alloy preparation room, the distillation room, and the shop.

Turning on any of the exhaust blowers starts the fresh make-up air blower into operation and also opens the controlled louvred outlet which serves the room in which the operating exhaust blower is located. A Pressurestat in the fresh air duct modulates a damper on the inlet of the fresh air blower to keep pressure in the duct slightly above atmospheric pressure. Each blower can be controlled individually, or all can be operated at the same time.

The system for make-up and exhaust of air can be operated in three ways — to balance air exhausted, to build up a slight pressure, or to create a slight vacuum.

When the switch for the make-up air blower motor is set in the Automatic position, and an exhaust blower unit in an area is turned on, pre-heated fresh make-up air is automatically supplied to that area in volume equal to that being exhausted.

With the switch for the make-up blower motor set in the Manual position, fresh air is forced into all rooms. This procedure will be employed with the windows tightly closed when it is desired to use the rooms under a slight pressure. It also will be followed on Summer evenings in order to force stale warm air out of the rooms through slightly opened windows and to cool them for use the next day.

With the make-up air blower motor switch set in the Off position, no make-up air is supplied when the exhaust blowers are started. This makes it possible to maintain a slight vacuum in the rooms when desired.

The system was conceived by Karl Kuhn, staff architect of the Ethyl Laboratories, who prepared plans and specifications for both the new structure and the remodeling of the former Chemical Workshop.

In taking over the floor space of the former Chemical Workshop building, now being remodeled, the general chemical research laboratories will add nine experiment and study rooms and an office to their facilities. This building, incidentally, was the first constructed and put into use at the present location of the Ethyl Laboratories on West Eight Mile Road. That was in 1936. Three years later, the chemical research laboratory was moved to the present location from the original Detroit site on East Milwaukee Avenue. The engineering and aeronautical laboratories, together with the Technical Service Division and other personnel, completed occupation of the new facilities early in 1942.

In their entirety, the Ethyl Corporation Laboratories are devoted to research that will bring about ever better fuels and ever better engines. To achieve that goal, the Laboratories operate in close liaison with the industries which they serve. On the one hand, Ethyl research personnel cooperate with refinery technologists in developing petroleum products to meet the advancing requirements of engines. And on the other, they cooperate with engine manufacturers so that future power plants may best utilize advancements in fuels and lubricants.

It is to permit this research to expand both in application and scope that the Ethyl Laboratories are undergoing their first post-war enlargement. Like the current $28 million dollar construction program at the "Ethyl" antiknock compound manufacturing plant in Baton Rouge, the erection of the Chemical Workshop building in Detroit is another expression of Ethyl's conviction that great gains in engine and fuel progress are yet to be recorded.

SNAKE OIL ON THE HOOF

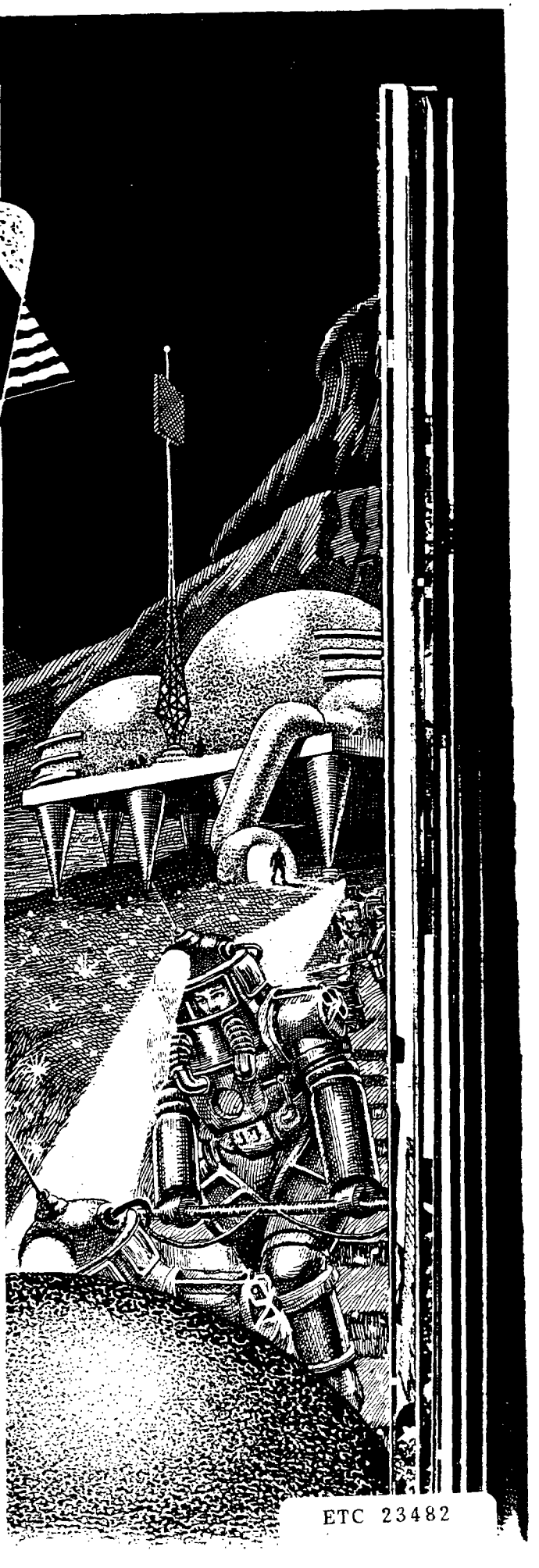
Most people think of a pitch as something a man does with a baseball or a horseshoe. But some 40,000 glib, fast-talking and alert Americans know better. A pitch, to them, is strictly a business matter. It is also a place of business, a show window, and a free show which pays off — for them.

A pitch man — or woman — is a sidewalk sales person. He sells anything light, cheap, and portable. It might be an inferior silverware polish — "flukum" in their sidewalk lingo — which is easily compounded in a bathroom at three cents a jar, and which they sell for 35 cents. Other stock in trade are what they call "blocks," which are watches costing $3 and selling at $12. "Inksticks," or fountain pens, are still another favorite item of merchandise, which the pitchman marks up from half a dollar or less to whatever the traffic will bear.

When the cops are not too "hoss-tile," a good pitch artist will make 50 "spiels," or talks, a day, sometimes in as many different locations. A middle-aged Chicago woman, who has been in the business since she was 15, averages $7,000 a year and travels with the seasons. Others earn as much as $15,000 a year. The total take is said to be more than $100 million annually.

Police records indicate that there are about 1,500 women in the profession. The tools of the trade are a trip or tripod, which forms part of a collapsible table, and a keister, or suitcase, to carry the merchandise. In a few big cities good for long stays, the pitch workers take out "readers," or city licenses. But most of them would rather take a chance on the small fine usually imposed when they are run in. As a rule they are just chased — and they like it.

SIMPLY FANTASTIC



Want to take a trip to the moon, learn about microbe men, see how things will be 100 years from now? You can — through the medium of a science fiction magazine

As Jimmy Crane looked into the magnatron microscope, the full impact of what humanity was facing struck home. Here was a world, a completely unknown world of microbe-sized men, whose scientific achievements dwarfed those of the big world. "This is mad," Jimmy said to Professor Garund. "Here is a world of microscopic proportions plotting to overthrow us. Lord knows how many midget worlds there might be, how many planets. Why these people even look like us and if it wasn't for your remarkable microscope we'd never know they existed."

Fantastic, you say? A piece of fiction? You're right on both counts. Not only is the foregoing excerpt a piece of fiction, but it is a special kind of literature—known as science fiction—which is hungrily devoured every month by thousands of avid readers.

In that wonderful realm of scientific fantasy, anything can happen and usually does.

Heroes fly rocket ships to the moon, engage in interplanetary wars, explore the remotest corner of the universe. Robot men, devised to be slaves, turn on their human masters. Races of microbe-sized people are discovered. Insects grow to gargantuan proportions and engage in titanic struggles with the people of the world. And, quite casually, time moves forward, backwards or stands still — whatever the author's whim.

Not only are these things taken for granted, but readers of science fiction years ago heard of the scientific marvels which today are shaking the world of real life. Jet propulsion, television, telepathy (including brain waves) and electronic calculators are all old stuff to the readers of science fiction, who take them as casually as you take turning on your radio.

There are about a half-dozen magazines devoted to science fiction. They are known to the public under such names as *Amazing Stories*, *Fantastic Adventures*, *Thrilling Wonder Stories*, *Startling Stories*, *Astounding Science Fiction*, and *Planet Stories*. Each magazine is read with great relish by about 150,000 persons, and the readership of the entire group probably totals close to a million individuals.

Most science fiction magazines are

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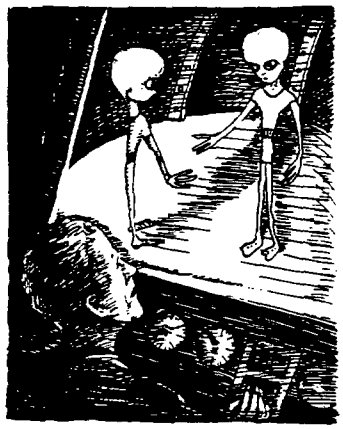


sold on newsstands and each copy is read by probably five or six individuals before it goes to the rag man or becomes a treasured part of a science fiction fan's collection. Testimonials of the long life of each science fiction magazine could come from almost any reader who has had his name in the letters-to-the-editor column of a given issue. In one case, a reader reported receiving correspondence 11 years after a magazine first published his letter requesting a "pen pal."

Today's science fiction magazine is known as a pulp magazine because it is printed on inexpensive pulp paper. Like other "pulps," it has its roots in the dime novel of a bygone day. All of the pulps have come a long way since their dime novel days when all the villains were ultra black and all the heroes super white.

Those were the days when the authors got their characters into unbelievable jams, but thought nothing of using super-human abilities to get them out. One typical case involved the writer of a serial who left his hero stranded in an "inescapable hole 30 feet deep, face to face with a deadly rattlesnake." In the next instalment, the author calmly wrote, "With one mighty spring Terris jumped out of the well. . . ." Today, Terris would have to be endowed with supernatural powers to pull one as fast as that—even in the pulps.

The pulp magazines, which are read by about 10 million readers, are classified as Westerns, detective, romance, adventure, or whatever other broad field they may cover. The science fiction pulps, however, are in a class by themselves, and are, in fact, considered the aristocracy of pulpdom.

Half of their readers are high school or college students, and the other half are adults. It has been estimated that more than 10% of all science fiction readers are professional people such as doctors, physicists, professors, and lawyers. The readers are a loyal, intelligent group, and once a science fiction magazine is well established, it pretty well manages to hold onto its circulation.

Offer Relaxation and Escape

How is it that a science fiction magazine can attract such highly intelligent readers? The biggest reason is that these fantastic stories offer them a means of relaxation and escape from the concentration of their daily tasks. More than one erudite college professor has been caught with a science fiction magazine under his arm, probably sandwiched between some technical reports he was taking home to study. Says an industrial chemist, an avid reader, "After working all day on experiments that just will not work, it's real relaxation to read about these science fiction scientists whose experiments always work."

Science fiction has enjoyed a sustained growth in popularity through the years. One reason it appeals to its audience, particularly its non-technical readers, is the high batting average of its authors in predicting future scientific developments. In books and in magazines these writers have at times been uncannily accurate in foretelling things to come.

The classic example is Jules Verne, who in his book "Twenty Thousand Leagues Under the Sea," predicted things years ahead of his time. So accurately did he describe a submarine periscope around 1865 that 20 years later, when Lewis Nixon, head of a submarine company, applied for a patent on the device, he was refused it on the basis that the invention "was not new." Another example is the late H. G. Wells who predicted world upheavals as well as scientific developments. Back in 1933 he predicted a naval war with Japan in 1937 and a war between Poland and Germany in 1940. For 1955 he forecast a "Raid of Germs" which will destroy half the world population, and 1968 calls for a "landslip" to destroy London. And long before the recent war, another science fiction writer described radar with reasonable detail, but he called it a "meteor locator."

And to show how close science fiction writers can sometimes come to actual developments, consider this excerpt from an article by Anson MacDonald, which appeared in a 1941 issue of the magazine *Astounding Science Fiction:*

Someone in the United States government had realized the terrific potentialities of uranium 235 and . . . had rounded up every research man in the country and had sworn

them to silence. Atomic power, if ever developed, was planned to be a government monopoly, at least until the war was over. It might turn out to be the most incredibly powerful explosive ever dreamed of, and it might be the source of incredible power. . . .

We were searching . . . for a way to use U-235 in a bomb that would be a whole air raid in itself, a single explosion that would flatten out an entire industrial center. . . .

We had all the genius in the field that the United States could pro-

duce, men from Chicago, Columbia, Cornell, M.I.T., Berkeley, every radiation laboratory in the country, as well as a couple of broad-A boys lent to us by the British . . . Canada supplied us with all the uranium we asked for — tons of the treacherous stuff — from the Great Bear Lake, up near the Yukon.

When government intelligence agents read MacDonald's story they dropped in on the editor of *Astounding* to find out "who was talking." The editor had a hard time convincing them that his writer really wasn't "in the know."

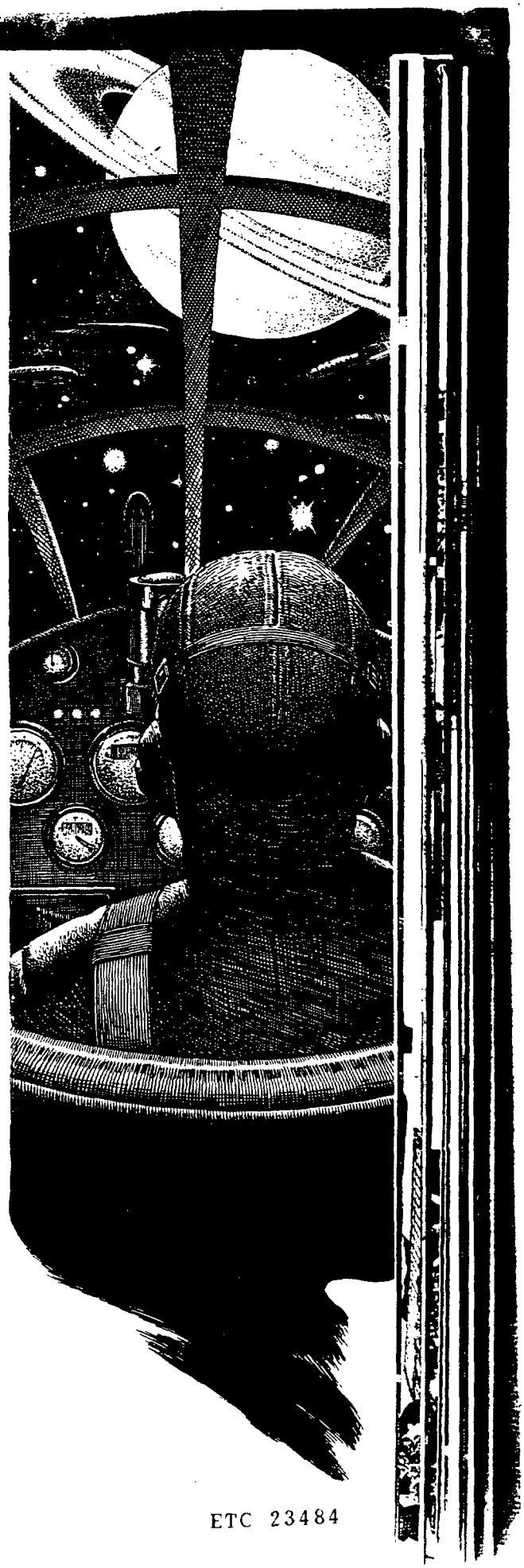
Science fiction writers can give free rein to their imagination in describing future scientific wonders. But they have to be careful to be technically accurate when actual scientific progress catches up with them. An author, for example, can no longer talk lightly of jet propulsion and rocket craft but must describe them in the light of present knowledge and development. More than that, their descriptions of fantastic wonders must have a plausible basis.

One subject with which the writers have a perpetual field day is the matter of time. One of their most frequently advanced concepts of time is that it is the fourth dimension; and that being so, they readily project their characters into this realm.

With their amazing theories of time, they have their characters step into the fourth dimension and take a look at what they did ten years ago—or what they'll be doing ten years hence. They bring Julius Caesar and William Shakespeare into the 20th century and let them have a fling at Congress. They get involved in time plots such as the one in which a judge sentenced a man to die—only to learn 25 years later, that the man he condemned was his own son who had himself born 25 years too soon.

Still another time story wrinkle is the suspended animation story. This sometimes involves the use of a quick freeze process which keeps the characters on ice for a few thousand years and thaws them out for action in future centuries when the world is devoid of humans who have exterminated themselves with their wars.

Molecular action is also fair territory for the science fiction writer. One pre-war story revolved around a German scientist who stopped the war by "freezing" everyone in the eastern hemisphere. He had invented a machine which, through electric waves, had slowed up molecular action to the point of creating a quick freeze and a state of suspended ani-



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mation. His invention backfired when he found that he had frozen his own daughter and had doubled the oxygen content of the atmosphere in the western hemisphere. The supercharged air speeded up the lives of the people and made a cigarette burn like a blow torch. Of course the author had to find a way to get things back to normal and stop the war.

If you think truth serums are something new, take a look at how the science fiction authors have covered that field.

The noble idea of having everyone tell the truth so fascinated one author that he had his hero spray a "truth cloud" over an entire city. He timed his truth-compelling campaign at election time and the results turned out according to the Frankenstein monster formula. First of all the hero found himself telling his fiancee a few personal facts about the hats she wore. "Old friends" started telling each other how they really felt and bedlam broke loose until the effects of the cloud wore off and things got back to their "dishonest normal."

Good Guys and Bad Guys

Naturally, robot and monster stories are a staple part of the diet offered science fiction readers each month, and the Frankenstein monster formula gets a good going over. But, interestingly enough, not all of the Frankenstein monsters are fierce lumbering giants. Nor, for that matter, are all the robots necessarily bad.

Take the case of Adam Link, robot extraordinary.

Adam wasn't exactly handsome, but he was a good guy. But one day, while rescuing a child from the path of a truck, he accidently broke the child's wrist. Adam was arrested, charged with being a menace to society, and brought to trial.

The defense argued that Adam was as good as any human but that his superhuman abilities caused jealous resentment on the part of his "flesh and blood brothers." The state argued that Adam would always be a potential menace and that humanity would never know at what moment robots might turn against their makers and wipe humans off the face of the earth. The state won its case and Adam Link was destroyed by removing his "iradium brain."

The Readers Had Their Way

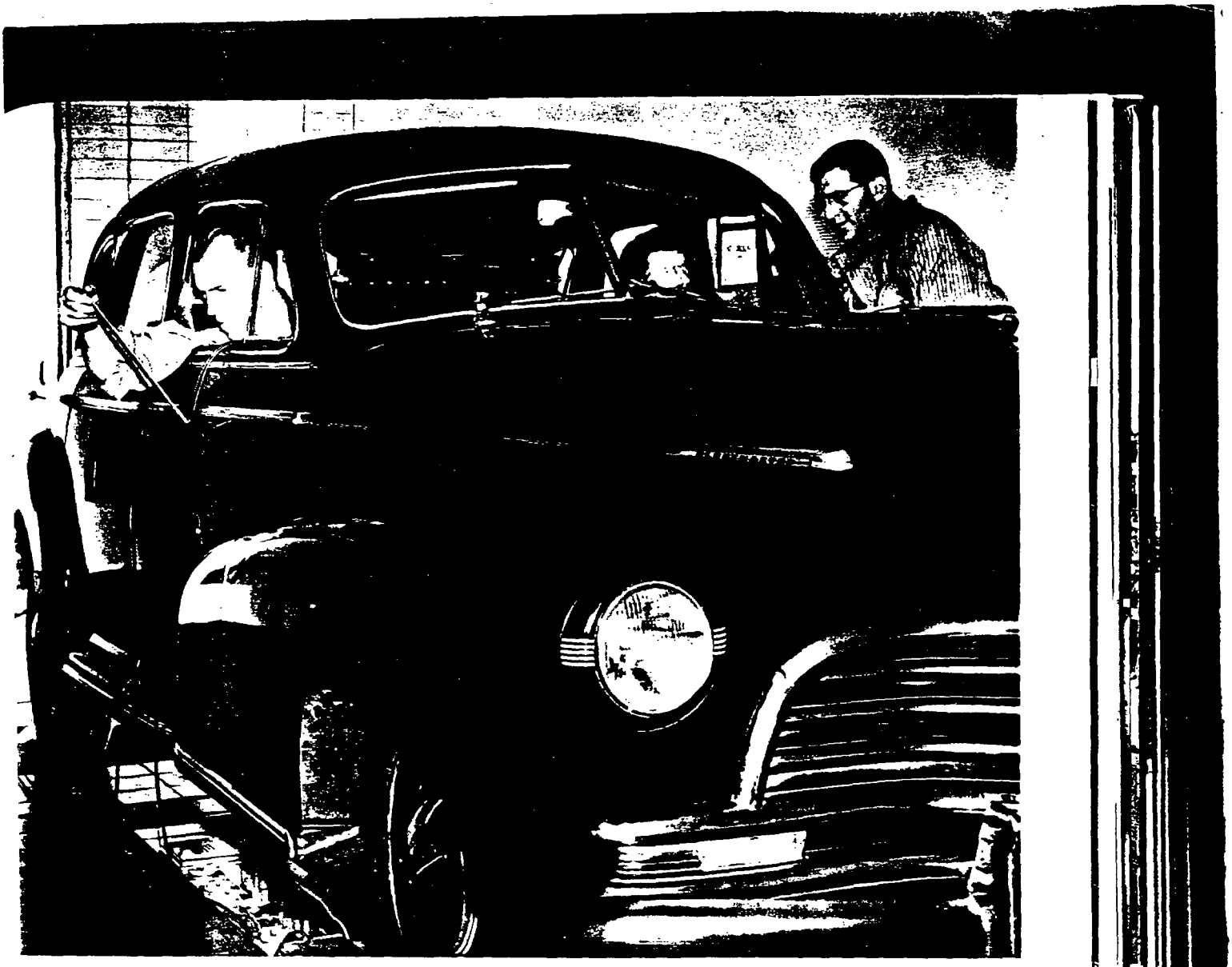
The readers, however, wouldn't stand for such unfair treatment. A few weeks after the magazine hit the newsstands letters, phone calls, cables, and personal delegations started demanding that the editor bring Adam Link back to life in a sequel. And, as you might guess, the readers had their way and Adam Link lived on the pages of the magazine for many years thereafter.

Even though the atomic bomb was not entirely new to science fiction readers, many of them were surprised when they realized how quickly real-life science was catching up with their world of fantasy. The fans, who for years have been holding meetings, collecting magazines, discussing stories, and generally taking a deep interest in this type of literature, began talking in a more serious vein. They realized, says Ray Palmer, editor of *Amazing Stories*, that both they and the writers of science fiction tales were the "imagination boys in the world of science," and that today's inventions of fiction might be very real accomplishments tomorrow. Even Mr. Palmer regards quite soberly some of the things being discussed in science fiction. "Think of what the world would be like," he says, "if human actions were controlled by brain waves. It may sound impossible, but so did a lot of other things that have appeared in science fiction."

Today, amid a general quickening interest in factual as well as fictional science, the authors are facing what they regard as their greatest test. They find they must explain to their readers how we can hope to live in peace and harmony in the future world of science which knocks so ominously at our front door. Science fiction is no longer merely a trend in story telling, but a definite part of the thinking of our times by a great many people.

OUR COVER . . . Limned against a fleecy Louisiana sky are two of the many storage tanks in use at Ethyl's manufacturing plant in Baton Rouge. These tanks, among others, are used to store ethyl chloride prior to that chemical's use in the final reaction to produce tetraethyl lead, the active antiknock ingredient of "Ethyl" antiknock compound. Each of the two tanks shown has a capacity of close to 50,000 gallons of ethyl chloride, while larger tanks in use at the plant have double that capacity. The color photograph was taken by Scott d'Arazien.

OUR PICTURES . . . Pages 3 and 4 (bottom), Press Association; Pages 4 (top) and 5-7, courtesy Indianapolis Speedway; Pages 8-11, courtesy Arthur D. Little, Inc.; Pages 9-11, cartoons by Ruth C. Jennings; Pages 12-14, courtesy Plymouth Oil Co.; Pages 19-21, illustrations courtesy Standard Magazine, Inc.



WEATHER MADE-TO-ORDER

Operating a vehicle at 150 degrees above zero on a dark winter day or at 10 degrees below zero in the dead of summer is no trick for engineers at the Ethyl Corporation Research Laboratories in Detroit.

This 160 degree range in air temperature is available in the Laboratories' hot and cold rooms, each of which contains a specially-developed chassis dynamometer for indoor tests in support of Ethyl's year-round road research programs at Detroit and San Bernardino, Calif. The chassis dynamometer equipment plays an important role in many fuel development projects at the Ethyl Laboratories since it may be used for "road" knock testing at any time without interference from traffic, inclement weather, or any of a number of other complications which often delay such work on the open highway.

Together, the unique hot and cold rooms serve to bring the highway into the laboratory. Any day — every day — the chassis dynamometers can be made to simulate substantially any desired weather and road gradient. Thus, fuel antiknock quality is determined under virtually the same conditions as those encountered in actual driving — and with more consistent results.

Briefly, this is one of the ways a vehicle goes through its paces on the chassis dynamometer. A number of accelerations through a speed range such as 8 to 60 mph are made on the dynamometer rolls with the engine operating on several reference fuels of different known octane numbers. For each reference fuel, a measurement of the spark advance is recorded to give what is called "trace," or very slight knock, at the speed at which knocking tendency is greatest. From these measurements a curve is plotted of "trace" knock spark advance versus fuel octane number for the vehicle involved.

Then a similar acceleration run is made on the commercial or experimental fuel to be knock rated. The road octane number is determined from the curve by noting the spark advance setting which the vehicle required for "trace" knock on this fuel.

Rating fuels under acceleration conditions is essential in order to duplicate as closely as possible the transient conditions experienced by a vehicle in actual operation. For example, the temperatures of the engine during acceleration are different than under constant speed. Thus, different data are obtained for a vehicle traveling, say, 40 mph at constant speed and one traveling 40 mph during acceleration.

Circumventing outside weather and driving obstacles through use of the hot and cold room chassis dynamometers is another example of how Ethyl research, now in its third decade, is helping to achieve further progress by aiding refiners in the economical production of improved fuels.

ETC 23486

The distinguishing feature of all **HUMMINGBIRDS** *is their high-speed wings, which enable them to fly backwards.*

This saucy blue fellow is not a bluebird. The crest on his head and his raucous cry proclaim him to be a **BLUE JAY.**

When you see these birds

THE "TRADE-MARKS" OF NATURE*

identify them for you

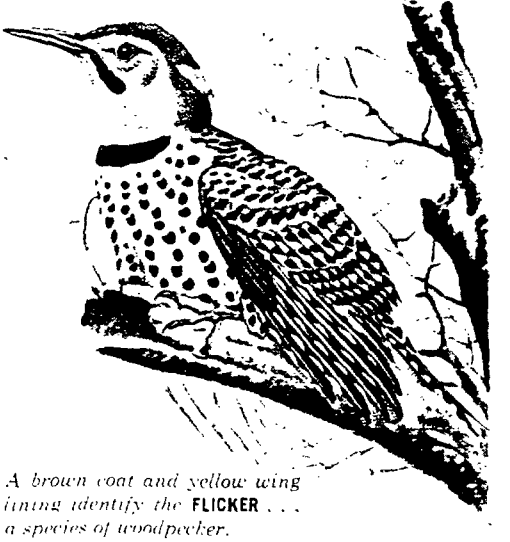
When you buy gasoline

THE TRADE-MARK "ETHYL"

identifies gasoline stepped up with "Ethyl" antiknock fluid

Bird drawings by Don Eckelberry, illustrator of the "Audubon Bird Guide"

A pair of red epaulettes distinguish the **RED-WINGED BLACKBIRD** *from other black birds you might see.*



A brown coat and yellow wing lining identify the **FLICKER** . . . *a species of woodpecker.*

To get the best performance from your car, use high quality gasoline improved with "Ethyl" antiknock fluid — the famous ingredient that steps up power and performance. To show you that their best gasoline contains "Ethyl" fluid, gasoline companies display "Ethyl" trade-marks on their pumps. "Ethyl" antiknock compound is made by *Ethyl Corporation, Chrysler Building, New York 17, N. Y.*

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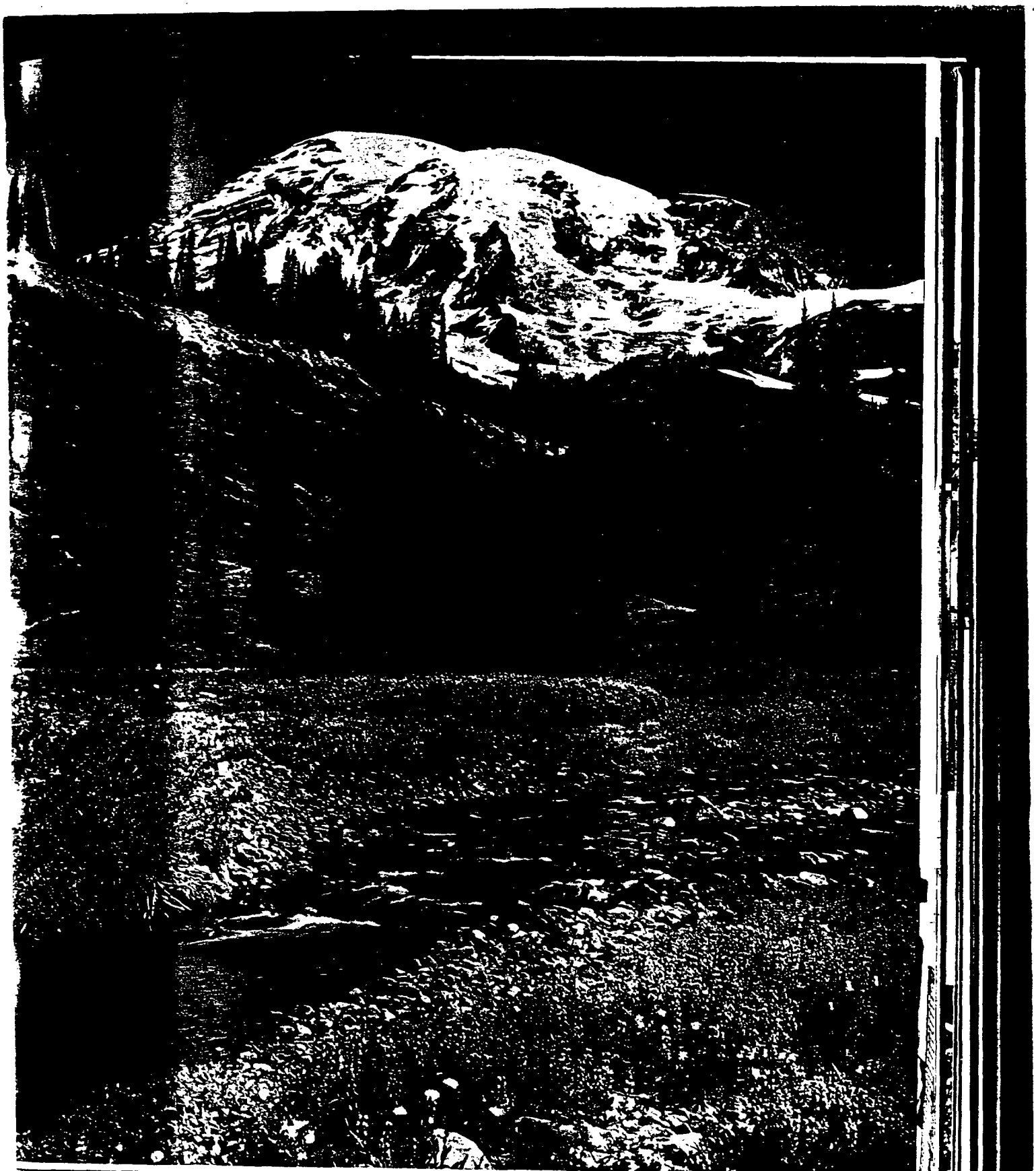


ETHYL NEWS

UNE ★ 1948

ETC 23488

IN THE

ETHYL NEWS

JUNE 1948

Dan M. Guy, head of the Agricultural Section of the Technical Service Division at the Ethyl Corporation Research Laboratories in Detroit, has been elected chairman of the Michigan Area Section of the American Society of Agricultural Engineers. The fact that the Michigan Area Section will act as host to the national ASAE convention next year promises to make his chairmanship an especially full one.

Recognized as one of the leading authorities on the proper utilization of fuels in tractors and other gasoline powered farm equipment, Mr. Guy has been head of the Agricultural Section at the Ethyl Laboratories since April, 1942. This Section maintains close liaison with the farm equipment industry in order to keep manufacturers informed of trends in fuel quality and characteristics. This liaison, in turn, enables the Agricultural Section to keep abreast of the industry's engineering and marketing plans which may have a definite influence on the future fuel requirements of farm machinery.

Prior to his transfer to Detroit six years ago, Mr. Guy served for 11 years as an Ethyl Corporation agricultural engineer in Louisiana and Texas. As such, he aided in the revolution in power farming brought about by the high compression tractor.

Mr. Guy was born in Columbus, Ohio, and is a graduate of Georgia School of Technology. In addition to the American Society of Agricultural Engineers, he is a member of the Society of Automotive Engineers and the Detroit Agricultural Club.

CONVENTION CITY 3

Whoever he may be, the next President of the United States will be nominated at Philadelphia — the site of three big national conventions. What's more, at least a million Americans outside the Convention Hall will be able to see what's happening — thanks to the growth of television.

THE FARMER IS A BUSINESS MAN 7

There are farmers and farmers. A true understanding of their economic status lies in knowing more about those farmers who produce the major share of our crops — and who manage their farms along scientific business lines.

"DEAR UNCLE SAM" 11

Some of the most impossible letters — relating to everything from national defense to new and fantastic inventions — are sent to Government officials. While many of them are of the crackpot variety, all must be investigated and duly acknowledged.

WHAT CANADIAN MOTORISTS WANT 14

An Ethyl survey of Canadian drivers' buying habits and preferences reveals some interesting facts about their choice of gasoline and motor oil, and their selection of service stations.

GREAT SHAKES 16

To keep track of the some 85 earthquakes that happen every day, scientists use an ingenious instrument, the seismograph. The same instrument is also used in exploring for oil.

A CAMERA IN EVERY CAR 20

An ordinary camera — kept handy on the front seat or in the glove compartment of a car — can find important everyday usefulness.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Julian C. Gonzalez, secretary

ETC 23489

CONVENTION CITY

By North Clarey

Philadelphia is the scene of much hustle and bustle these days, as it prepares for not two — but three political conventions

THIS YEAR, for the first time in 116 years of national conventions, more people than ever before will have a chance to watch our next President and Vice-President being nominated — from a front row seat in Convention Hall, Philadelphia.

All the circus-like pageantry of delegations, signs, parades, banners, celebrities and speeches will appear on the screens of television receivers in 13 populous states. On a network of 14 key stations in Washington, Baltimore, Philadelphia, New York, Boston, and Schenectady, television audiences will actually be able to see their candidates in the making.

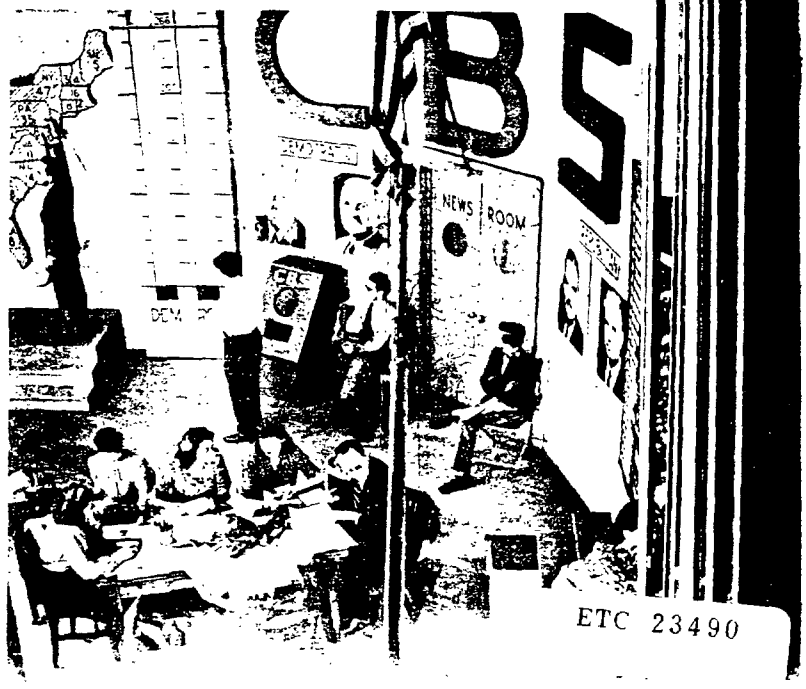
For this is the year that television steps out of its swaddling clothes. It becomes, overnight, one of the important publicity agencies that carry big events to the people.

Maybe that was the deciding factor in bringing not one, not two, but three parties to the musty old City of Brotherly Love this summer. For, neither Chicago, the preference of Republicans, nor San Francisco, choice of the Democrats, could claim to be the center of the only video network in the country.

Another cogent argument was supplied by the All-Philadelphia Citizens Committee. This, a non-partisan group of civic leaders, raised a kitty of $200,000 among local citizens and industries to underwrite some expenses of the Republican meeting. The same group then dug up another $200,000 to give the Democrats. Then, when someone asked about rest and recreation for the delegates and their wives, the Citizens Committee rang more doorbells till they had another $50,000 for each group — to be spent on entertainment alone.

Add to this voluntary half-million, of goodwill offering, a matching $500,000 which the city authorities have appropriated to freshen things up around town — mainly the municipally-owned Convention Hall itself — and you get quite a sizable stake that Philadelphia pushed onto the table to capture the two major conventions.

Not a dollar of this can be used by either party for campaign pur-



The CBS television studio in New York reporting the 1944 election returns. This year, about half of the video public will be able to "attend" the conventions

poses. The money must be spent in Philadelphia for legitimate expenses of the two gatherings. And don't think for a minute that a million dollars matches the cost of getting a couple of candidates nominated.

There is a matter of railroad, bus, airplane, or other forms of transportation charge for some 20,000 people, for each convention. There is the item of hotel bills; there are telephone, telegraph, cable and wireless facilities to be paid for; there is laundry, food, and a present for the kids. This is not only the biggest convention year in history by any previous standards, but its cost is just about doubled by inflation — a phenomenon which the Republicans ascribe to the Democrats, and which the Democrats lay at the door of the Republicans.

What do Philadelphia and the Pennsylvania communities which joined in the invitation get back for their million dollars plus?

Plus and Minus

Dollar wise, it looks like a losing proposition. One promoter estimates that the total "take" will not exceed $10 million with the margin of net profit out of that pretty small. A convention does not enrich the host city.

Hotels, by agreement, are to get a 50% increase in room rates, with no advance in their prices of food

President Harry S. Truman is almost sure to be nominated at the Democratic Convention

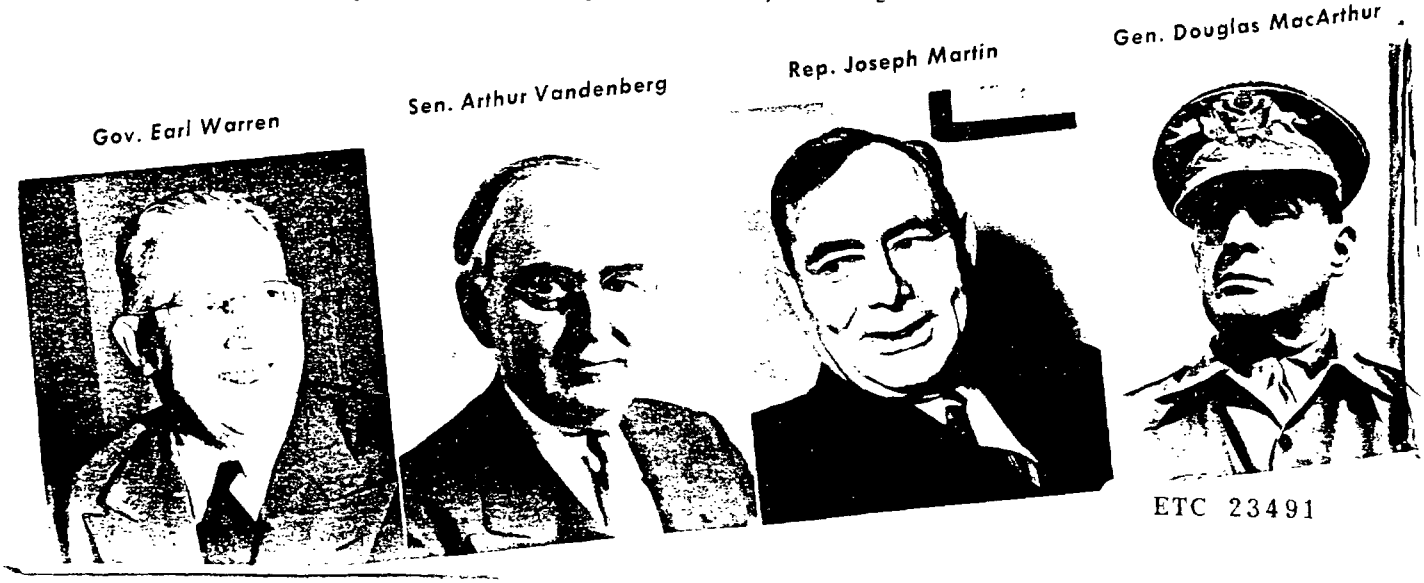
or drinks. The double room and bath that has been bringing $8 a day will cost $12 — a pretty minor increase in all to offset the losses incurred by the innkeepers in shooing away regular patrons for two weeks. All of the hotels have surrendered their reservation desks to the convention managers and evicted all but a few permanent guests, providing a pool of 6,000 hotel rooms.

The overflow will be handled partly in Atlantic City, with special trains morning and night, and partly in private homes in the city and suburbs. Whole estates along the Main Line or in Chestnut Hill are being taken over by Washington hostesses and bigwigs of the two parties. A party delegate craving quiet can get a completely furnished and staffed house not too far from the hall for $1,000 a week. Or he can get himself a small room which the housing committee calls "satisfactory but not preferred" for $1.50 a night.

The Republicans will begin arriving in force on Friday, June 18. Their meetings start on Monday, the 21st, and are expected to wind up in five days. The Democrats take their five days beginning July 12. The third party originally thought it could nominate the Henry Wallace-Glen Taylor team and complete its work in two days, July 24-25, but it has now asked for the use of the hall on July 23 as well. So far, no one in Philadelphia has gone out to raise $200,000 for the Wallace party's expenses. This group wanted to sell admission tickets, but was told No. No rent will be charged for the use of Convention Hall — by any of the parties.

Will Inherit Improvements

Incidentally, the Wallace convention will get a break through inheriting, at no extra cost, all of the temporary improvements installed for the Republicans and Democrats. This is no small matter. For one thing, the older parties are splitting



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Three leading candidates in the race for pledged delegates at the Republican Convention: Gov. Thomas E. Dewey, Harold E. Stassen, and Sen. Robert A. Taft

50-50 some sizable construction bills, among them an item of $55,000 for press, radio and television facilities. Tables are being installed for 850 working members of the press on either side of the giant stage, and provision is being made for 250 radio and television men.

Any ordinary citizen wanting to see the speakers in action would do well to avoid Convention Hall and get in touch with a friend who has a television set.

The hall seats 1,000 VIP's on the stage, and 13,200 on the main floor and in the balcony. Seats must be assigned to roughly 1,100 delegates and their wives, a like number of alternates with their wives, several hundred members of Congress, approximately 3,000 press, radio and special representatives, many non-official party brass hats, and several thousand Philadelphia burghers who contributed money to attract the conventions. That being the case, the supply of tickets is a little short of demand – perhaps twenty to thirty thousand short. As a harassed member of the Republican committee on arrangements said (while tactfully promising someone on the telephone to 'do the best he could,') if the convention were to be in the middle of King Ranch some of the onlookers would nevertheless find themselves outside of Texas.

Chicago Had Same Problem

Chicago, which has entertained twelve Republican conventions, has a hall seating 20,000, and still had ticket trouble in years when public interest could not approach that engendered by this year's free-for-all fight for the G.O.P. nomination. At the two party headquarters in Philadelphia's Bellevue-Stratford, it looks as though everybody is trying to get into the act.

Cheering loud enough to be heard in a crowd of fourteen thousand is hard on the throat, but lubricating the vocal chords will be a serious problem at Philadelphia. The hall is two miles from the hotel center, out by the University of Pennsylvania grounds, where liquor dispensaries are scarce. The city prohibits the sale of anything stronger than pop in any part of the huge auditorium. Downstairs, a thousand white-coated workers will

Gen. Dwight Eisenhower

Another contender who is almost sure of nomination is Henry A. Wallace, who has created a party of his own

The men at the left have all been mentioned as Presidential possibilities. One of them may conceivably emerge as the nominee of 1948

sell all kinds of food from a hot dog to a roast duck, but no whiskey, beer or wines, however light.

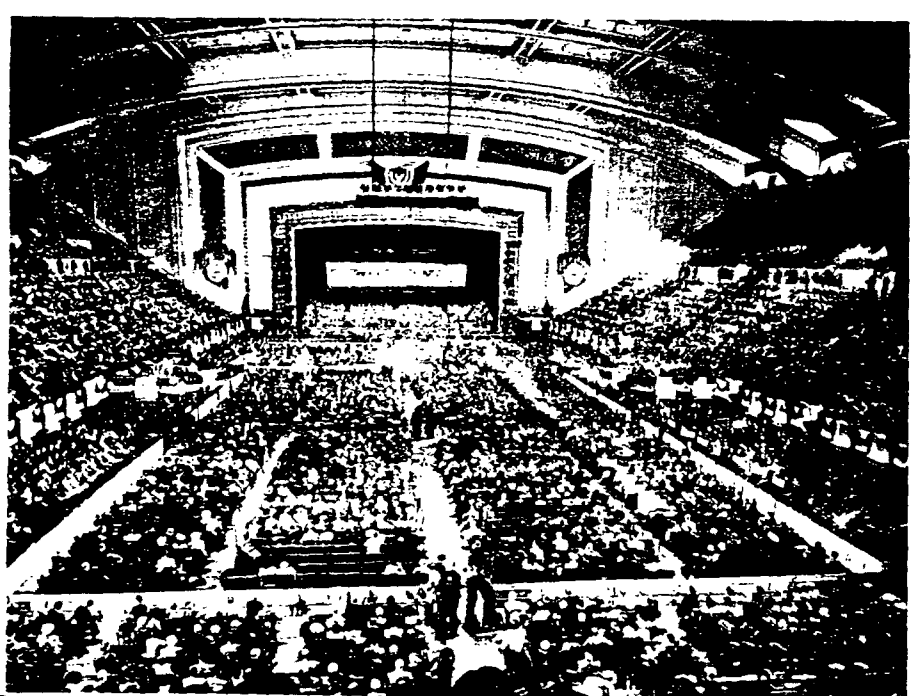
For the fourth estate, two cocktail-dinner parties, on the Saturday nights preceding the meetings, have been planned on a scale that should set some kind of a record. Seats have been provided for 1,600 writers, commentators and camera men.

Yes, the press should have a good time in Philadelphia this June and July — and Philadelphia intends to make the most of its day in the spotlight. For several weeks every front page in the country will be full of stories datelined "Philadelphia . . ." The staffs of all Washington news bureaus will converge on the new national news center, as will some 500 featured by-line columnists, commentators, and typewriter chatter artists. Lake Success, even Washington, will move to Page 2 for awhile.

This is the reward Philadelphia seeks — to be at the center of things, to be on everyone's lips, for awhile. It's good for business — good for growth.

Only once before have the Democrats held a convention in Philadelphia — in 1936, to put up F.D.R. for his second term.

The site of all three presidential conventions is the Philadelphia Convention Hall, which is some two miles from the center of the city. The interior of the hall has no posts or pillars, seats 13,200 in the arena and 1,000 on the stage



Fifth Visit for G.O.P.

Republicans, on the other hand, are paying their fifth visit this year. It was in the Quaker City they actually got their start, when in 1856, less than two years old, the party convened to nominate General John C. Fremont and adopt a platform opposing the extension of slavery, advocating the improvement of rivers and harbors, and building, with federal aid, a transcontinental railroad.

Convention Hall, the modern $5,352,000 cavern of steel, marble and limestone, stands on the same site as the little frame building where the General was nominated 92 years ago. It is one of the most completely equipped auditoriums in the world — and without a single post or column to block the view. There are 60 exits. More to the point, from a convention standpoint, there are 24 private meeting rooms tucked around here and there. Presumably there will be no cameras to record the many meetings that will take place in these little rooms, some of which may have more influence than actual maneuvers on the main floor.

THE FARMER IS A *Business Man*

By Ladd Haystead

The modern farmer operates his farm with essentially the same technique as a business executive — and has a sound and prosperous business to show for it

IN MY PROFESSIONAL capacity as an agricultural counselor to business concerns, I am continually surprised at how many acute and knowledgeable executives have a thirty-years-out-of-date conception of the farmer.

Not many think the farmer is still buying Brooklyn Bridge. Even fewer think he is the radio caricature that sings hill-billy songs. But, unfortunately, many still see the farmer as a pastoral fellow, a little slow on the uptake, rustic, not too literate, and forever crying to Washington for a hand-out.

Part of this misconception comes from the testimony before various House and Senate committees by farm "leaders," bureaucrats, and members with rural constituencies on the hunt for pork barrel. Newspaper readers are bombarded with stories of rural slums, bad housing, horrible health conditions, and all-round poverty on the soil. And such testimony is in fact true – but true for only a minority of the soil men. There is rural poverty as well as urban poverty. But there is also rural competence, intelligence and shrewd business management.

It is indeed strange that anyone

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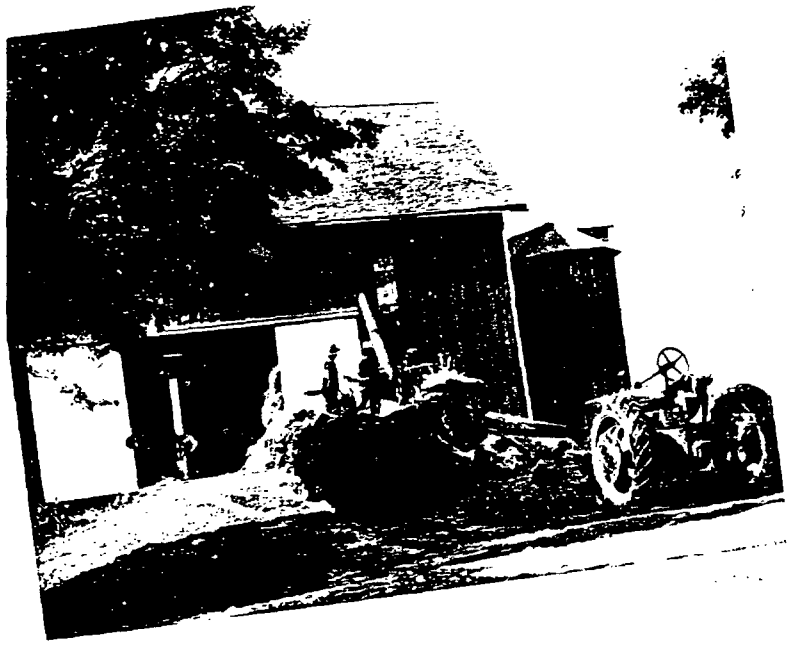


Not only do farmers know the importance of modern power machinery, but they also know how to apply its benefits most widely

should think a fellow (the American Farmer) who owns $111 billion in total assets, makes $34 billion of income (in 1947), has better than $20 billion of liquid assets, and owes less than $6 billion mortgage debt on his plant is naive and just lucky. The management of such an industry can no more be on a haphazard or "luck" basis than the management of the automotive or oil business. And, in fact, it is not.

How then can we reconcile the seeming ambivalence of one set of leaders crying about the farmers' sorry situation, and here and there, almost silently, a few people saying that the farmer is as alert as any other business man? The answer probably comes from income breakdown.

About one-third of the farmers gets 80% of the total farm income, one-third gets most of the remainder, and the final third averages anywhere from a few hundreds of dollars income annually to actually going in the red. The latter group is the one pointed to when appropriation bills come up. Their lot is indeed a sorry one.

Below: Two hours after leaving the field, these lima beans are packed and frozen. Right: Farmers' prosperity has also meant new kitchens

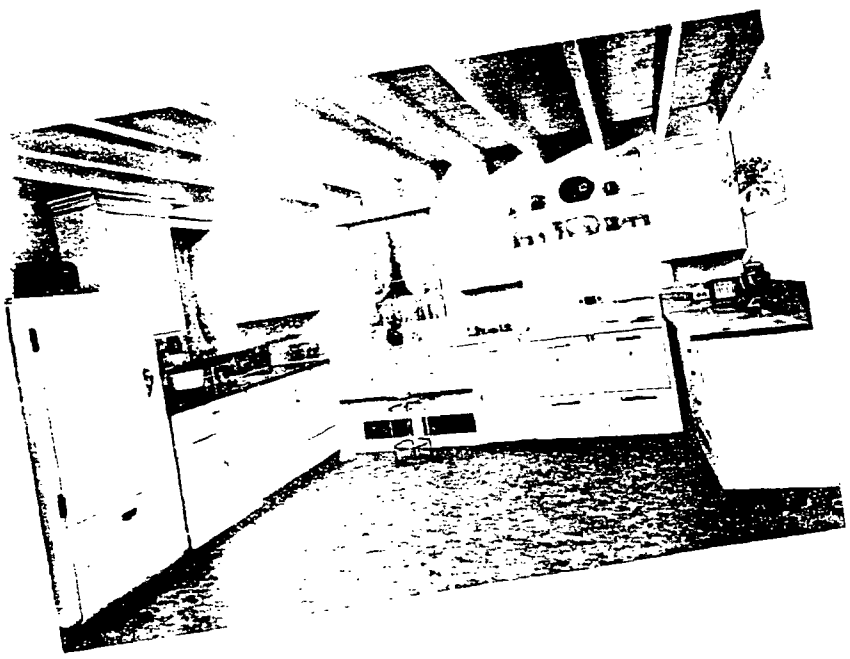
Spraying fields with an insecticide by plane is only one of many modern methods that farmers regularly use

But the people who want to "do something for the farmer" fail to point out that farm income in this lowest group is not the *only* income. In point of fact, many of these low-income farmers are not primarily farmers at all. Instead they are lumbermen, miners, fishermen, factory employes, seasonal workers, handcraftsmen, semi-retired folk. Nearly three-quarters of a million of them live on what the census calls "farms," but in truth get their major income from the city.

On the other hand, it's the top third (1,900,000 people) who feed and clothe the 118 million urbanites. And that segment is about as management-conscious as any group of executives you would meet. They have to plan and execute on the basis of more variables than practically any other business man. Yet they don't depend on luck – for year after year, in good times and bad, they manage to stay on top of the farm heap.

First, they must be alert to world conditions– more so than any other business man not directly in the export trade. What happens to Argentine and Australian wheat is of trenchant concern, as we have seen in recent months in the commodity markets. Whether or not the Orient gets cotton, Britain gets meat, or the Philippines ship copra (a competitor of domestic tallow and oilseed plants) will have a bearing on the crop choice of the year.

Ladd Haystead, who is a well-known farm writer and formerly editor of The Farm Column of FORTUNE *magazine, is the co-author of a new book on farming. In cooperation with Dr. Herrell DeGraff, professor of agricultural economics at Cornell University, he has written "The Business of Farming," which is intended to serve as a practical manual of farm management. The new book, which is published by the University of Oklahoma Press, is addressed to such fields as soil management, equipment management, labor management, and farm organization – in order to help farmers operate their farms most efficiently.*



Next comes the question of the availability or shortage of fertilizer and agricultural chemicals. If the demand exceeds the supply, such chemical helps as DDT, 2,4-D, IPC, BHC, et al., may be hard to find. They are needed to help fight pests, thereby raising or keeping up yields. If gasoline is short or in poor distribution, there will be lost tractor days for the power-farming owners – and they are the business men-farmers in the top third.

Seeds must be chosen well in advance. And the long winter nights are times when these management-farmers are busily studying the reports of the scientists in the state experiment stations and the seed houses on new strains that will be disease-resistant and have the least weather hazard. A seed that is fine for one soil type or climate may not even be a good gamble in another.

Then comes the weather jeopardy. Will fields be dry enough for seed-bed fitting? Will late frosts make replanting necessary? Can cultivating be done when needed, or must the chemical weeders be thrown into the deal? Or, in this modern scientific day, will it be necessary for the community to get together, make up a pot, and hire an airplane to "create" rain? In Kansas, a firm called Snow, Inc., was recently formed to provide the needed winter cover that protects the wheat crop.

And all the time the anxiety about the crop is in mind, the smart farmer must decide whether or not to go into the pit and hedge his crop. If he is a livestock man, he must prophesy correctly what the markets will be 60, 90, or 180 days hence. In some cases, he must guess right for two years ahead. Therefore, he must study charts, statistics, and the reports on general business conditions. Business forecasting is the very es-

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Fleets of farm tractors are kept at peak efficiency by the best utilization of fuels and regular maintenance

sence of his prosperity. That's why it is not at all uncommon to find the *Wall Street Journal* or the *Journal of Commerce* on a farmer's desk. That's why many a farmer who has no interest in the radio soap operas keeps the radio going in the barn and on the tractor for market reports and economists' panel discussions. (Of course, it must be admitted that in the fall the radios will be tuned to the World Series.)

It is not to be wondered, then, that Iowa, almost totally a farm state, has the highest literacy rate of any political subdivision on earth. Average incomes of Iowa farmers, by the way, run from seven to ten thousand dollars. That means many an Iowan is making several tens of thousands of dollars to keep the average so high, for there are spots in even that favored state where rural poverty is known.

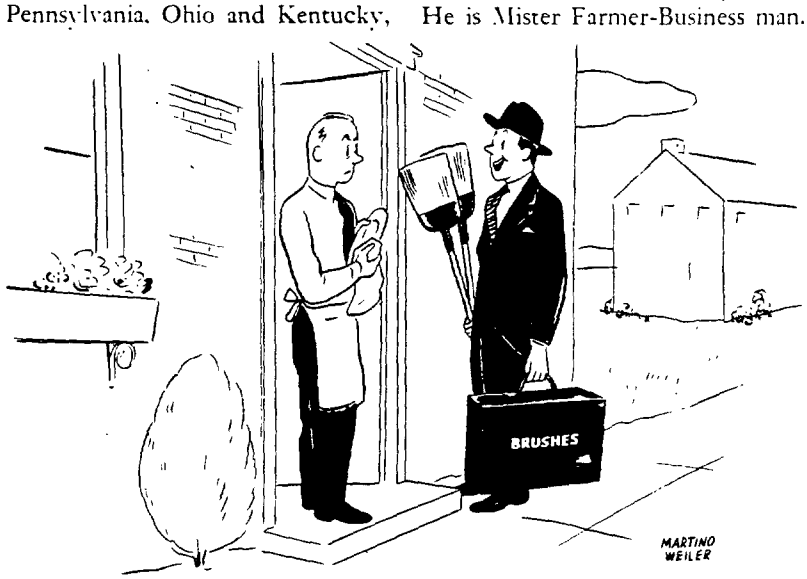
This business man-farmer will own an operation capitalized for something over $17,000 in Indiana, probably well over $25,000 in Iowa or the rich central belt of Illinois, and if he is a New York dairyman it will be upwards of $30,000. Of course, if he is one of the fabulous Californians, now the richest farm state, his business may be anywhere from $100,000 on up. Last year, choice citrus land sold for $6,000 an acre — and 40 acres is considered just a nice one-family job.

The management farmer's investment in machinery may run anywhere from a scant $3,000 on a small New Jersey vegetable operation through the $6,000 to $10,000 of Pennsylvania, Ohio and Kentucky, up to the $12,000 per worker on the big commercial farms of the Middle West.

As every operation on the farm becomes mechanized except the masticating of feedstuffs by livestock (and even they get vitamin pills), the $8,000 capitalization per worker that Industry has long boasted of seems relatively modest in comparison. Grain harvesters costing around $4,000 sold like hot cakes last year on the West Coast, were worked around the clock almost to exhaustion during the season, and then were shipped east to Texas and sold for $5,000. And the supply never caught up to the demand.

And did you note that the original vocational group to go to Europe to study the implications of the Marshall Plan at first hand was *not* composed of business men or financiers, but of twenty-odd Iowa farmers who paid over $1,500 travel money apiece out of their own pockets, to get grass-roots information? Also, it is true that as a vocation, farming boasts of more private airplanes than any other segment of business.

Reuben is not Reuben any more. He is Mister Farmer-Business man.



"Are you the lady of the house?"

"Dear Uncle Sam"

By Shirley H. Scheibla

Everybody with an idea, it seems, writes Uncle Sam about it. Handling these letters is a job that often puts Washington officials in a dither

UNCLE SAM, the nation's No. 1 correspondent, is getting more than his usual flood of peculiar mail these days.

"It is my duty to warn you," one citizen wrote Navy headquarters the other day, "that the Russians are tunneling down here from Alaska and soon will siphon off our oil reserves."

This is typical of epistles pouring in from all over the country. In government lingo they're classified as crackpot letters.

Some federal officials attribute the deluge to new cases of war jitters. Other communications make it clear, however, that the writers want to reap the advantages of peace before the ripening of another military emergency.

One deluded gentleman, for instance, didn't know that the Government already has disposed of the Big Inch and Little Inch pipelines. He sent the War Assets Administration one dollar with the explanation that 60 cents was for the Big Inch and 40 cents for the Little Inch.

Another intent letter-writer approached the Joint Chiefs of Staff with his problem. He had bought a pair of paratrooper boots from government surplus stocks. Now, he said, he wants the Joint Chiefs to see that he gets a paratrooper uniform to go with his handsome boots, of which he drew a picture. "I want that outfit, Sir. That's the way it is," he told them.

One federal functionary has a plausible explanation for the rash of letter writers. "The heat begins to get people this time of year," he says. Other officials think the new emphasis on national defense makes the citizens more government-minded. Many of them are serious in offering their help.

"Call me if I can be of assistance in affairs of state," a professional clairvoyant wrote Secretary of State Marshall. Declared another, "I can

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take a trumpet medium to the west coast and radio the voices of the departed and let the Lord advise us." Still another divulged that the spirit of George Washington wrote to him on 5x7 inch cards, giving him the grim warning that "this civilization has only 31 more years to run."

President Truman got a cryptic piece of advice. "If we can't get the Russians to do what we want them to, drop a bomb on them and let them have it, and they will come to their senses," one letter suggested.

Atom Bomb Spurs Proposals

Talk of new atomic weapons serves as a spur for the new spurt in strange letters. The prize of the Department of National Defense is a proposal for the defense of the atom bomb. Officers there insist it can't be fully appreciated unless quoted in its entirety with its original spelling. Here it is:

"I would like to suject to your dept. that there is as yet another Secret Wepon, more deadly and destructive than Germ Warfare of the Atom Bomb. This Wepon has not yet been invented, but research maybe gaining perfection in another country. This Wepon I call the (Artifical Gravity) Controled, or Gravitation power. This type of Wepon works very close in regar to the Atom Bomb, because of the basic physics applied in the manufacture of Atomic power.

"Here is how we do, 1st. We start research with a giant magnetic Bar. 2nd. We place a piece of Material whitch is radio active in the Middle of the Bar. 3th. We subject these 2 to the havey chargeing of the clyclone for a long period of time. Thus we have 3 types of Electronics working against each other, and it should produce something.

"I don't say this will produce artifical gravity, but it will do to start on, and from here we can go on, until we acchief our gold. Somewhere in the manufacture of atomic power, we have overlooked the missing lenk whitch causes the atoms to be atoms. Somewhere along this line is the answer to artifical gravity. And when we find that missing lenk, we will have the defince of the atom bomb."

Though they hate to part with it, the National Defense authorities say regulations require them to turn this document over to the Inventors' Council of the Commerce Department. There's always the chance that some letter may contain the germ of a brilliant idea which may look like crackpot material to the non-scientific officials reading their mail.

The Council itself has a secret file of 15 ideas for sabotage which its members say would be very useful in the event of war. A number of these originated in "crackpot letters" sent to the Council.

An idea for preventing plane wrecks now is on its way to the inventors' group. A writer said the thing to do was to eliminate the take-off because most accidents occur at that time. He would, therefore, build a huge airfield at an ele-

vation of 300 feet with an abrupt drop at the end. After the plane negotiated the runway, a gigantic parachute would permit the plane to float off into space at the end of the field.

Some of the industrious inventors aren't so anxious to give the details of their discoveries, however. One individual would only disclose that his secret weapon was a means of preventing war – but that it was not a gun, bomb, plane or military weapon. He offered to tell the secret to President Truman if the govern-

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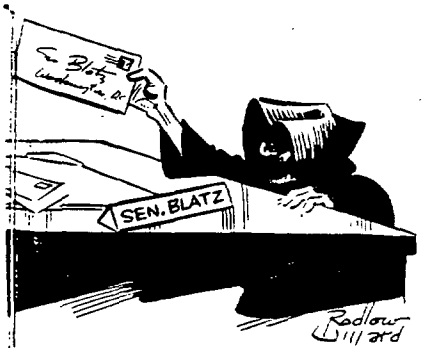
ment would pay his expenses for coming to Washington. Instead army intelligence agents checked up on him just to see if he had a source of undisclosed scientific secrets. They still don't know what he was talking about.

Some letters find their way to the FBI, too. One writer asked National Defense officials, "Is gold bank at Fort Knox intact?" They say they think they ought to turn the query over to J. Edgar Hoover just in case the curious man is contemplating something rash.

No matter what the crackpots say, however, they always get an individual answer. "Form letters infuriate them," one federal official explains. He points out, too, that it's often difficult to discriminate between a crackpot and an illiterate person trying to explain a serious problem. Then too, the truth is often so strange that it may sound like a hallucination when it's put down on paper.



During the war an army enlisted man told the War Department the details of the scandal on General Bennett Meyers which a Congressional investigating committee later turned up. The letter was ignored. Since that incident, however, the Government agencies have been meticulously careful in handling their mail.

Navy Public Relations

But one navy lieutenant apparently did too well in his reply to an elderly widow. He got an answer on pink stationery with two pictures of flowers pasted in the upper left corner. "I am keeping your letter for a keepsake, as it has the tone of friendships of a person I can get along with, as I am an affectionate sensible person," the widow informed him. She confessed to being "middle-aged," having been born in 1898. The lady said she would marry a gentleman who would settle down to home-making. Here is how she described herself:

"I am French, German, Swiss, Irish. I was a musician, pianist, violinist, singer, actress and dancer until my partner went to California. I also composed song poems and educated myself at college. I was a visual precision inspector nights and cooked for three a day."

A postcript warned the lieutenant to write again only if he was single.

Most of the men aren't so easily pleased with the answers to their requests. A mid-westerner asked WAA to send him some information on a steel plant because he was interested in purchasing it.

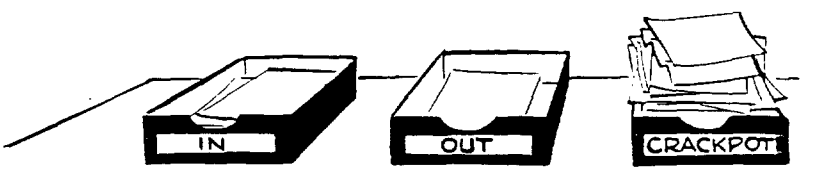
When he received a WAA pamphlet on the plant, he returned it with a pencilled notation that the information was inadequate. The agency then sent him a complete brochure. He scribbled a note on that, too, and sent it back. What in the world did he have to do, he wanted to know, to get some information on the steel plant?

Though these epistles plague Washington officialdom, the agencies worry too when they don't get them. Before the Labor Department received its recent budget cut, the crackpot mail fell off. "That was a bad sign and we had a hunch we were in for a tough time," one department authority explains. "We knew it meant that public interest in us was declining," he adds.

The National Labor Relations Board, on the other hand, is buoyed by the fact that the peculiar mail is beginning to come in. Officials take it as an indication of the board's public appeal. Workers write strange letters about everything from their plant problems to the size of their pay checks.

National Defense Secretary James Forrestal, however, is beginning to get perplexed by the whole matter. Anxious to please, he joined a pipe smokers club. This resulted in a deluge of messages remonstrating with him for smoking. Now his rule is that he won't join any club or society in which he can't take an active part.

Of one thing the Government agencies are sure. This kind of letter-writing could only take place in America. Only in a government of the people would the citizens write to "Dear Harry" at the White House and correspond with Uncle Sam on every subject from matrimony to atom bombs.



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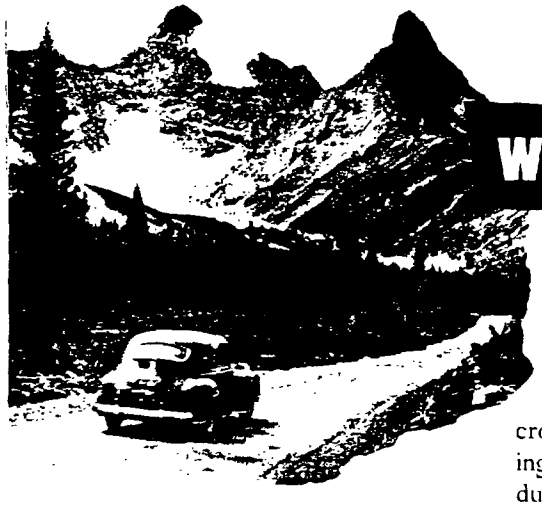


WHAT CANADIAN MOTORISTS WANT

The majority of Canadians, an Ethyl survey shows, prefer premium gasoline, and patronize one service station regularly

CANADIAN MOTORISTS, for whom their automobiles are a daily necessity, know the importance of operating their cars at peak efficiency. They show the same decided preference for quality in gasolines and motor oils as do American drivers. More, the majority of them patronize one service station, usually near their home, are predominantly loyal to that station because of the service given, but when on the road will select a service station primarily because of the brand of gasoline sold.

These are some of the highlights of an interesting survey recently concluded by Ethyl Corporation. Entitled "The Canadian Motorist — A Study of His Gasoline and Oil Buying Habits and Preferences," the survey was undertaken primarily as a service to the Canadian oil industry. But it reveals, in addition, many things of general interest about Canadian motorists.

To learn the buying habits and preferences of Canadian motorists, Canadian Facts, Ltd., of Toronto, which conducted the survey on behalf of Ethyl, held personal interviews with 1,798 drivers. These interviews, which took place most often in, or just outside, the motorists' homes, were conducted in 96 different areas of the Dominion, and encompassed the Maritime Provinces, Quebec, Ontario, the Prairie Provinces, and British Columbia.

In order to reach a representative cross-section of the Canadian motoring public, the survey was conducted according to the latest data covering Canadian motorists and their distribution by regions and classes. One out of every four Canadian motorists interviewed is a farmer; nearly one out of five is a skilled laborer; one in six is a business executive, and one out of ten is engaged in selling. Slightly more than half of all Canadian motorists are in the upper income brackets; nearly half of them are between 30 and 44 years of age, and more than 69% own their own homes. The average Canadian car in use, according to the survey, is 7½ years old.

Service Station Choice

One of the four fields of inquiry which the survey explored related to the service station preferences of motorists. And here, it was learned, more than three out of every five Canadian motorists are regular customers of the same service station. Preferences for one particular station ranged from 51% of the drivers interviewed in the Maritime Provinces to 66% of the drivers interviewed in Ontario. Moreover, this preference held true for 65% of all urban drivers and 55% of rural motorists.

Besides being regular customers of one service station, slightly more than half of all motorists said they patronized the service station near their homes, while another 22% used the station near their place of business, and 1-% used a station where they do their shopping. Drivers preferring service stations near their homes ranged from 32% of all drivers in the Prairie Provinces to 60% of all drivers in Ontario.

The service given is the outstanding reason why Canadian motorists patronize the same station. This was the opinion advanced by 73% of the motorists. Next to service, the majority of motorists cited the convenient location of the station, the personality of the attendant, and the brand of gasoline sold as other important reasons for patronizing the station.

While the brand of gasoline sold ranked fourth among the reasons for patronizing one service station regularly, it is the major factor influencing motorists' choice of a service station when they are on the road.

Sixty-four percent of all motorists interviewed cited the brand of gasoline as the predominant reason for selecting a given station on the road, followed by such others as the ease of driving in and out of a station, the cleanliness of rest rooms, and the general appearance of a station.

Turning to the subject of motor oils, half of all the drivers reported that they buy one brand of oil exclusively — and nearly half declared they bought premium oil for their cars. The reasons? Good performance is the leading reason, in Canadian motorists' opinion, followed by the quality and economy they found in the brand.

Many interesting disclosures came to light as to the gasoline buying

habits and preferences of motorists.

Eight out of ten motorists buy the same brand of gasoline exclusively or quite regularly. Forty-two percent say they buy one brand exclusively while another forty-one percent buy one brand quite regularly. Only 17% declare that they buy the same brand only occasionally.

Questioned further as to their gasoline preferences, nearly one out of every three motorists, or 31%, declared that good performance prompted them to buy one brand of gasoline exclusively. The second reason cited was the quality of the gasoline, followed by such factors as the availability of the gasoline, and a preference for a dealer and the service he provided.

Premium grade gasoline is the choice of two out of every three Canadian motorists. For Canada as a whole, 67% of all drivers said they had bought premium grade gasoline the last time they filled their tanks. This preference for premium gasoline ranged from 63% of all drivers in the Prairies up to 76% of all drivers in Quebec and British Columbia.

Not only is premium gasoline the choice of most Canadian motorists, but it is also bought most consistently by them.

Nearly three out of four motorists declared they buy premium grade motor fuel exclusively against only 40% buying regular grade. And the preference for premium gasoline ranged pretty closely throughout the Dominion, ranging from 71% of all motorists in Ontario and the Prairies to 83% of all drivers in British Columbia. This preference for premium gasoline, moreover, held true for 58% of urban drivers as against 67% of rural motorists.

Premium grade gasoline won the endorsement of most motorists for two important reasons: good performance and quality of the grade. Fifty-eight percent of all drivers said they buy premium gasoline exclusively because of its good performance, while another 27% said the quality of the gasoline accounted for their choice.

"Ethyl" Trade-Mark Influence

One especially interesting phase of the survey related to the influence of the "Ethyl" trade-mark on the gasoline preferences of Canadian motorists.

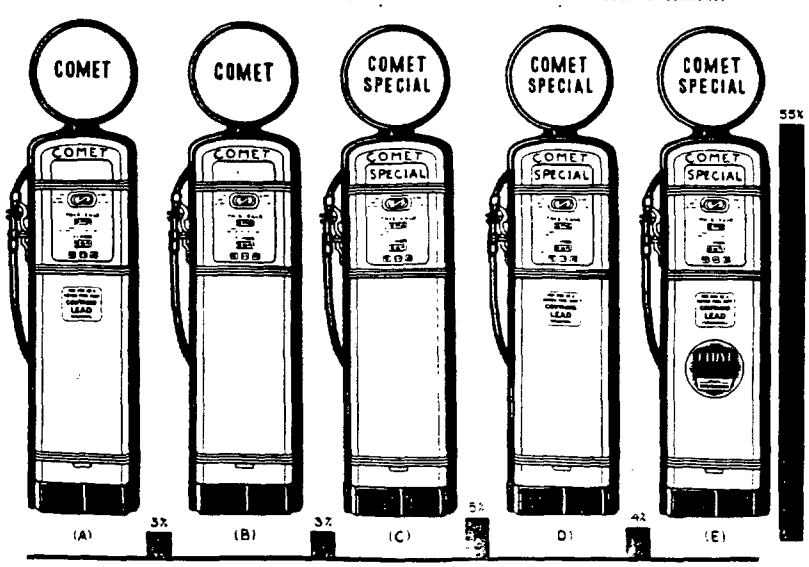
Each of the 1,798 motorists interviewed was handed a card (see illustration) showing five different gasoline pumps of a hypothetical brand. Each of these pumps, as can be seen, was differently labelled. The motorists were then asked, "Suppose you were to drive up to a service station that sold brands of gasoline with which you were not familiar. If these were the pumps, from which would you buy?"

Without hesitation, 55% of all drivers pointed to the pump with the "Ethyl" trade-mark as their choice. Asked why they selected the pump with the "Ethyl" emblem, 62% of these motorists said because they knew the gasoline contained "Ethyl" antiknock compound, while another 25% cited the quality of the gasoline as the reason.

It was one thing to determine the influence of the "Ethyl" emblem upon the motoring public when buying an unknown brand of gasoline. But, in order to obtain a complete picture, each motorist was next handed a card showing four familiar brands of gasoline. Each of these brands was represented by two pumps – one displaying the "Ethyl" trade-mark and the other without it.

Once again, Canadian motorists, expressed a decided preference for the "Ethyl" pump. In answer to the question, "From which of these two pumps would you expect to get higher quality . . . ?" 65% of all motorists pointed to the pump with the "Ethyl" emblem. Asked why they make that selection, 62% said because of the "Ethyl" fluid content of the gasoline, while 18% cited the factor of quality, and another 14% pointed to performance.

Ethyl's survey confirms a long-held belief: Canadian motorists want the same things that American drivers do. Not only do Canadians show a decided preference for premium gasoline – and even in a greater degree – but they share with American motorists the same high regard for the "Ethyl" trade-mark.



55% of Canadian motorists, if unfamiliar with a gasoline brand, would buy from the pump displaying the "Ethyl" emblem. Only 15%, all told, would buy from the other four pumps, while 30% expressed no preference

ETC 23502

GREAT SHAKES

The seismograph is a double threat instrument. It helps man search for oil and keeps track of a trembling earth

A [illegible] ago a French [illegible] decided that the best [illegible] composition [illegible] take a look at it. [illegible] started collecting [illegible] instead of digging an [illegible] to be about a half-[illegible] and 15 miles deep. [illegible] figured out so much be[illegible] concerning practicalities. [illegible] concerning the [illegible] 15 miles under[illegible] thought it [illegible] molten mass, [illegible] and intense [illegible]

While [illegible] has yet had a [illegible] reach 25 miles, we [illegible] pretty fair idea of its [illegible] composition. Accord[illegible] John Joseph Lynch, of [illegible] Fordham University, [illegible] something like a golf [illegible] quake emergency center. An [illegible] number of causes give the [illegible] exact cause of the shakes. [illegible] instrument recording the [illegible] of vibrations in DTs is called [illegible] graph. Thus, a seismograph [illegible] a recorder and a seis[illegible] who studies [illegible]

[illegible] is one of the top [illegible] the United States — and probably the world. The seismograph vault which he runs at Fordham University is the largest underground observatory in the world and Father Lynch often refers to it as "Palomar in reverse."

Father Lynch has been studying earthquakes for 28 of his 53 years and he believes that we would have a bursting planet if we didn't have quakes once in a while as an outlet for the earth's nervous energy. He consoles those who are quake conscious by pointing out that most earthquakes occur at the bottom of the sea and other unpopulated places.

One of the last life-taking Great Shakes occurred on April 1, 1946, at exactly 7:40 a.m. (EST). The upheaval shook itself loose two miles down in the bed of the Pacific ocean. The real damage didn't come from the quake but from the tremendous waves of water heaved up by the erupting ocean floor. Huge waves thundered against the Hawaiian and Alaskan Islands and points along the Pacific coast, taking 113 lives.

Father Lynch still feels that some of this loss of life might have been avoided if the information given out in time by the U. S. Coast and Geodetic Survey had been heeded. The Coast Survey is the clearing house for earthquake data from Fordham, California Tech at Pasadena, Calif., and other colleges. This information enables the Coast Survey scientists to definitely locate almost any earthquake. In the case of the 1946 Quake the center was a point 50 miles south of the Alaskan mainland.

The eruption generated a tidal wave about 30 feet high and a mile from crest to crest. The wave rolled along at 300 miles an hour and took around six hours to reach the city of Hilo, on the island of Hawaii. (Similar waves have killed as many as 30,000 Japanese in one swamping). The six hour elapsed time, Father Lynch feels, is enough to warn those who might be in danger.

Experienced seismologists will tell you that the earth shakes itself about 85 times a day. Most of the shakes are little ones, but not too small to be picked up by a sensitive seismograph. The fact is that the earth is constantly shaking under your feet, but most big quakes and tremors are usually found in the area around the Pacific ocean. Japan has five or six local quakes a day and California has one or two. Although the United States is not noted for earthquakes, some of its territories such as the Aleutians, Hawaii, the

ETC 23503

Philippines and Puerto Rico are pretty constantly in a shaky state. The most earthquake ridden country in the world is probably Chile, which averages around 5,000 shakes a year.

It is standard practice among seismologists to rate earthquakes according to a scale which ranges from zero to 10. A zero situation represents a completely placid earth and a class 10 shake would be a catastrophic upheaval. The shakiest quake on record is one rated at 8¾. The 1946 Alaskan quake hit 7½, and more recently a 1947 quake in New Guinea hit 8¼. In the last 45 years there have been about 60 earthquakes in Class 8. Despite the horror and destruction of the atomic bomb, the explosions at Hiroshima and Nagasaki didn't even rate a Class 1 reading on the earthquake scale. So far as Father Lynch knows, the explosions were not earth-shaking enough to be recorded on most earthquake seismographs. The underwater Bikini blast, however, was feebly recorded at Pasadena.

Each day Father Lynch and his assistants spend about an hour inspecting 1,650 feet of zig-zag lines on rolls of photographic paper. These lines are an electro-cardiograph of the earth's pulse-beat. They show the normal trembling of the earth which is attributed to the pounding of the ocean surf. The surf vibration is felt over the entire continent and beats normally under New York City at a rate of 33 throbs (microseisms) per minute. Dr. L. Don Leet of Harvard has made a careful study of the ocean's microseisms and has developed a handy 65-pound seismograph which can spot an ocean-going hurricane 1,000 miles away. Dr. Leet has suggested that our coastal weather stations be equipped with seismographs as a means of spotting storms.

According to Father Lynch, New York City's pulse rate jumps to 200 beats every day when the morning milk train zips by on the New York Central tracks which border Fordham University. When the children of the Bronx public schools hold their annual Maypole dance on the Fordham campus, the earth beats out the rhythm of their dancing and the seismograph records it at 120 throbs a minute.

Some of Father Lynch's seismographs are sensitive enough to record the difference between the stomp of a heavy foot and the tread of a light foot. During spring parades in which Xavier High School Cadets march with grade school

Rev. J. J. Lynch, Fordham University seismologist, points to traces made by a seismograph

children, the seismograph beats out a deep wavy line for the heavy-footed cadets and a shallow line for the parading children. These man-made disturbances along with others such as city traffic and explosions must be weeded out of the record in order to get a true picture of genuine earth-made nervousness.

The deep underground vault where Father Lynch keeps his seismographs is especially designed to keep out all outside disturbances. It is chiseled out of deep bedrock and sealed behind layers of brick, sand and concrete.

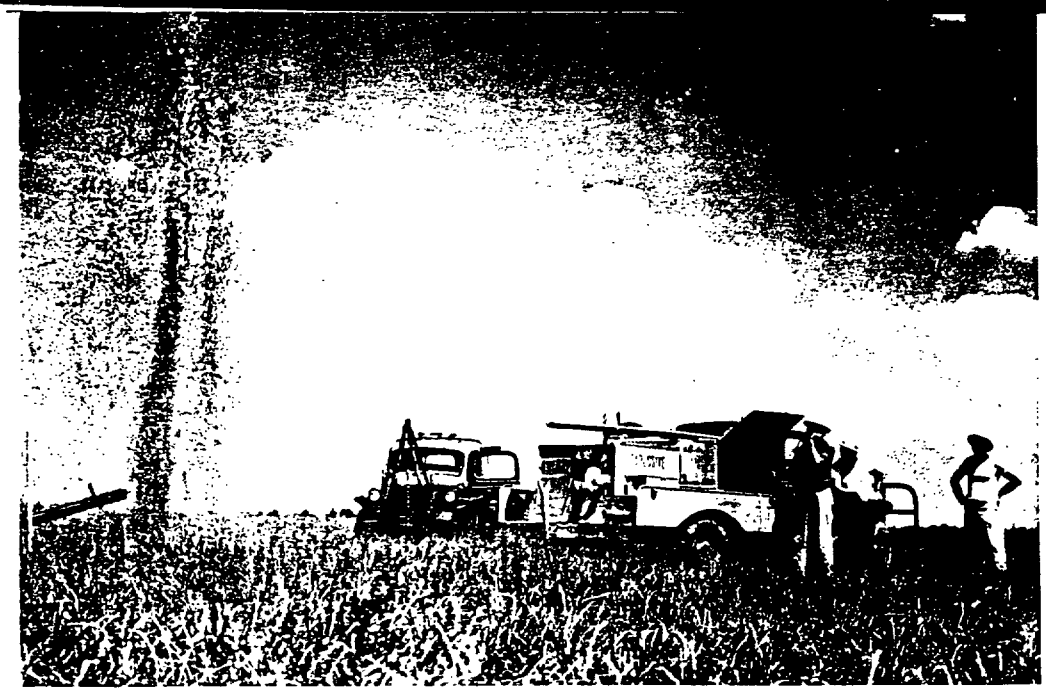
The seismograph is essentially a pendulum which remains stationary while the earth shakes. A moving strip of photographic paper slides under the pendulum from which a tiny electric bulb transmits a needle-thin beam of light. The beam traces the earth's shakes onto light sensitive paper which is marked off in minutes for 24 hours. Of Fordham's nine seismographs, the largest and most delicate weighs 1,500 pounds and is named after its inventor, Professor Benioff, of the California Institute of Technology. Its electronic hook-up magnifies the earth's pulsations up to 100,000 times.

The Fordham seismograph room is sealed light-tight with only a faint red bulb near the door. Father Lynch discourages visitors because the moisture from their bodies plays hob with the delicate electrical equipment. But although the heavy door is open only a few seconds every day, spiders are constantly slipping in. They seem to enjoy the tomb-like atmosphere and apparently they have great fun romping among the instruments and creating earthquake records all of their own. Father Lynch has found the best method of spider elimination is a process whereby he gets on his hands and knees and hunts for them.

Every earthquake, according to Father Lynch, sets up two waves — a *push* wave which travels through the earth at five miles a second and a *shear* wave which travels at about three miles a second. The whole effect is similar to what happens to a golf ball when it is whacked.

The ball is first squashed or compressed and then bounds back to its original volume. It then starts vibrat-

ETC 23504



Man-made earthquakes map the substrata and aid in the search for oil. A small explosive charge sets off a shock wave. It produces a seismographic record of the earth's crust as it travels underground

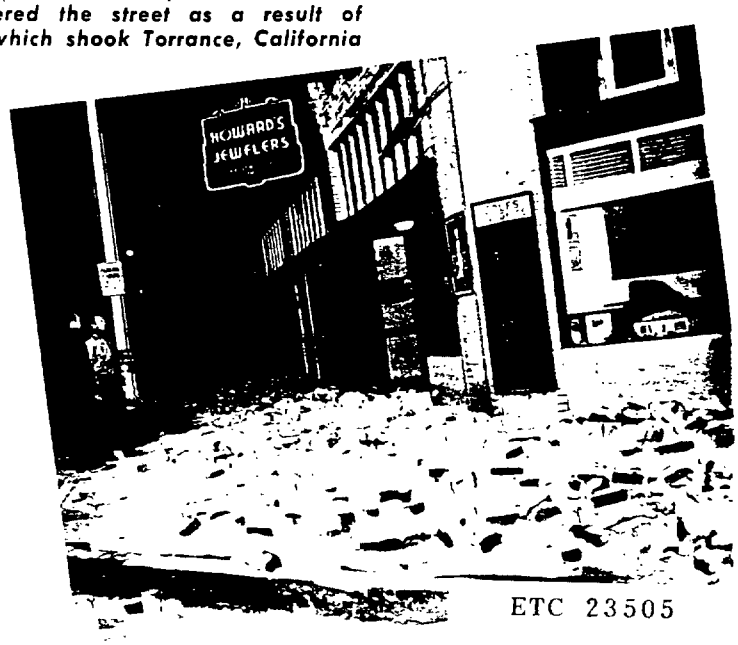
ing in and out until the energy which created the initial squash is used up. Unlike a golf ball, however, the earth does not come back to its original shape. Instead its shape is displaced like the rapid shimmying of a dish of Jello. Here the whole chunk of Jello is shaking at one vibration rate while the outer surface is wrinkling and unwrinkling at another rate. In other words, the Jello is heading for a rupture and is emitting waves similar to earthquake waves. With this knowledge of the earth's vibrations it is possible for seismologists to compute how far away an earthquake is.

Interestingly enough, the seismograph has an important industrial application: exploration for oil. But instead of sitting around and waiting for earthquakes to happen, these portable units are used to record the action of man-made earthquakes.

Although the only sure way of determining the presence of oil is still to drill for it, around 1930 geophysicists took a hint from earthquake seismologists and started using the seismograph to take some of the guesswork out of drilling. From experience geologists have learned that oil often lurks under rocky domes in the substrata. By setting off charges of dynamite ranging in size from 1 ounce to 100 pounds, seismologists are able to record the path of the explosion's vibrations as they travel downward, hit rock formations, and travel back up to the earth's surface. By charting the vibrations it is possible to produce an underground map of the earth.

Although simple in operation surveying the underground is a job which requires considerable experience and skill. Once oil company geologists have picked an area which they believe will be oil-bearing the seismograph crew moves in. Their equipment is transported by truck, boat, or swamp buggy. First the land is carefully surveyed and then geophones—recording microphones—are planted according to a definite pattern. The geophones, or "jugs" as they are sometimes called, are wired to a recording truck where even the "tramp of chicken feet" will be put on a graph. A dynamite charge is planted and set off, send-

Business came to an abrupt standstill when bricks littered the street as a result of a quake which shook Torrance, California



ETC 23505

ing vibrations into the earth and back up into the geophones.

More recently techniques have been developed which make it possible to chart bay and off-shore areas covered with shallow water. A seismograph fleet usually consists of four boats about 35 feet in length. One is used for surveying, one for drilling (to plant the dynamite charge), one for shooting, and the other for recording. A couple of row boats are also used to plant and retrieve the lines and geophones.

Once on location the procedure is identical to that used on land, and on a calm day a marine crew can cover as large an area as a land crew. In the early days of marine seismological surveys it was not uncommon for a crew to be threatened by shrimp fishermen, who thought the dynamiting would kill marine life. The oil companies lost no time in conducting tests which proved that seismographing rarely harms marine life. Once the results of the tests were explained to the fishermen they ignored the blasts which occasionally shook their fishing grounds.

Seismologists know that the earth weighs 6,000,000,000,000,000,000,000 tons and that it measures 4,000 miles to its center. Furthermore, they know a lot about how earthquakes behave, but they still don't know what makes an earthquake. They used to believe that millions of years ago the earth was a seething molten mass which gradually cooled on the outside until it was habitable. The inside, however, remained hot and in cooling caused surface eruptions.

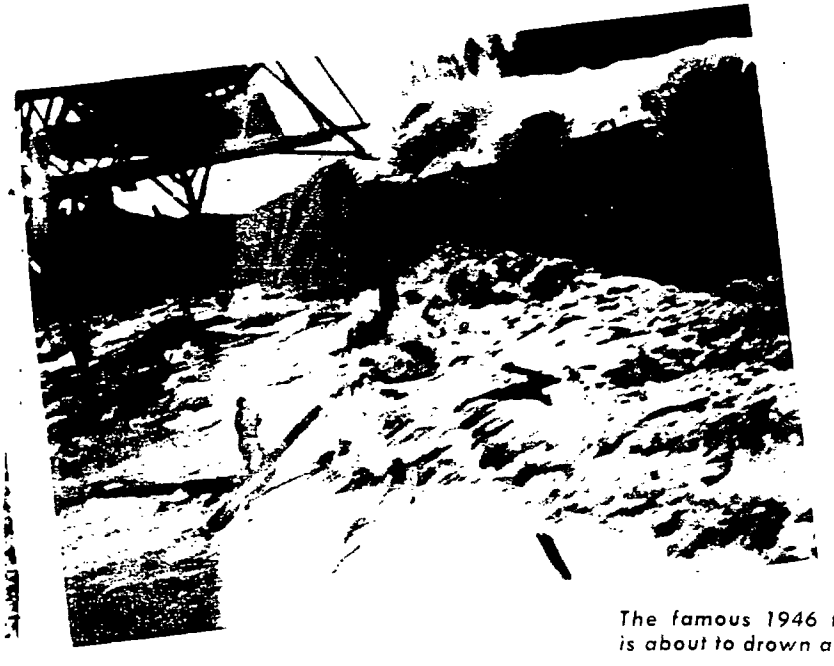
Few seismologists today care to say whether the earth is getting hotter or colder. They simply don't know. Nor do they know what activity causes an earthquake. They know only that if you bend a ruler too much it will snap, and the earth's crust snaps at times because forces bend it too much. What these forces are no one knows.

Although California is the spot in the United States most likely to experience a healthy earthquake, there is no location anywhere which is completely immune. For example, the earthly calmness of Chicago is shattered three or four times a year by small shakes caused by what Father Lynch describes as "creaking stair" earthquakes. These Father Lynch calls the "retreating footsteps of the ice age."

"When a heavy man goes upstairs in an old house the stairs creak for a long time after he is gone," explains the Jesuit Father. "They are trying to readjust the displacement caused by his weight. When the great glaciers covered parts of North America and Europe they put an enormous weight on the earth's crust. After they melted thousands of years ago, the crust began to lift and creak. It is still creaking and that sometimes causes a small fracture or two."

About 100 out of the world's 400 seismologists are Jesuit trained like Father Lynch. This Jesuit interest in seismology came about when in the 16th Century the Jesuits attempted to convert the Orient to Christianity. Naturally China's leaders were concerned about earthquakes and welcomed authorities on the subject with open arms. The Jesuits thus gained an entree with their knowledge of seismology and have been studying the subject ever since. They were the first to introduce it on a large scale in the United States, and there are now 14 Jesuit observatories operating from coast to coast.

Father Lynch feels that the science of seismology is still in its infancy and that quite a few persons still think it is a black art. He regularly gets letters from people who demand that he "stop making earthquakes," or "avoid getting too curious or you'll blow us all up." Father Lynch blithely ignores this segment of his public and points out that perhaps years hence we will be tapping entirely new sources of power lying deep under the ground we daily walk on.

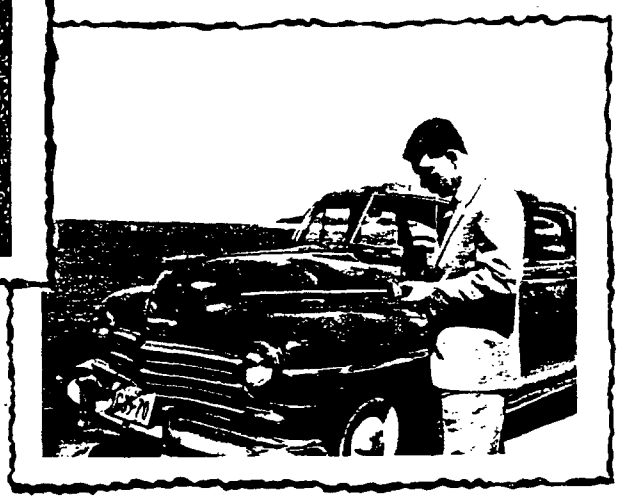


The famous 1946 tidal wave is shown as it is about to drown a stranded Hawaiian at Hilo

ETC 23506

A CAMERA IN EVERY CAR

A camera can be a highly useful automotive accessory — on a business trip, a tour, or even in day-to-day driving



By Joseph C. Keeley

NOT LONG AGO I was talking with a friend who is an ardent amateur photographer. You know the type – the kind of fellow who feels undressed unless he is carrying a Leica or Graphic, and whose home bears a strong resemblance to the processing departments of Paramount or M-G-M. He told me he had just placed an order for a car.

"How come?" I asked, surprised, since up to this time his only interest had been photography.

"Well," he replied, "I've come to the conclusion that an automobile is a very important camera accessory."

The remark was made in fun, but on second thought, there's a certain amount of sense in it.

Besides your everyday use of your car, a good deal of the mileage you roll up on your speedometer represents a quest for interesting new things to be seen. It might be vacation travel or Sunday driving, but its purpose is to get you away from the humdrum and familiar. Why not, then, make it a point to record the exciting and beautiful things that your car sets before you?

How many times have you returned from a trip lamenting that you didn't have your camera along? Well, you're not alone. I used to sing the forgotten-camera blues so often that I finally did something about it. Now, whenever I step into my car, my camera goes with me. When I return, instead of trying to put into words some of the interesting things I've seen, I merely pass the pictures to my friends. I'm sure they enjoy the photographs far more than the word pictures I used to convey.

However, there are pictures and pictures. If you're going to carry a camera in your car you might just as well use it in the most effective way possible. Have you ever noticed the way the big picture magazines such as *Life* and *Look* use pictures? They publish a lot of photographs in every issue, but they also employ a device which you can use to make your pictures a lot more interesting.

Their method is to use a series of photographs to tell a story – in sequence – much as a motion picture film does. Certainly there is nothing difficult about it. Let's say, for instance, that you plan to drive to a favorite resort. Instead of waiting till you get there to unlimber your camera, start using it before you get under way. Get a picture of yourself and your wife studying a road map. Get another at the service station, when you have the tank filled up. Next snap the kids piling into the car, and your wife lugging the lunch. Then, along the road, photograph some of the interesting landmarks, not forgetting a highway marker directing you to the resort. And, at the place itself, you'll want to photograph all the members of your family enjoying themselves. For the finale, get a shot of your weary brood, happy to get home after the day's outing.

Paste these in sequence in your album, and you'll find yourself turning to them time and again. Furthermore, when you show them to your friends you'll find they are really interested, not just polite.

In all likelihood, though, most of the pictures you take won't be of this sequence type, but occasional scenic shots. They may be of old houses or barns, kids bathing, deer along the road or interesting characters. But whatever they are, use enough care in photographing them so they will turn up in your album as pictures you can be proud of. In

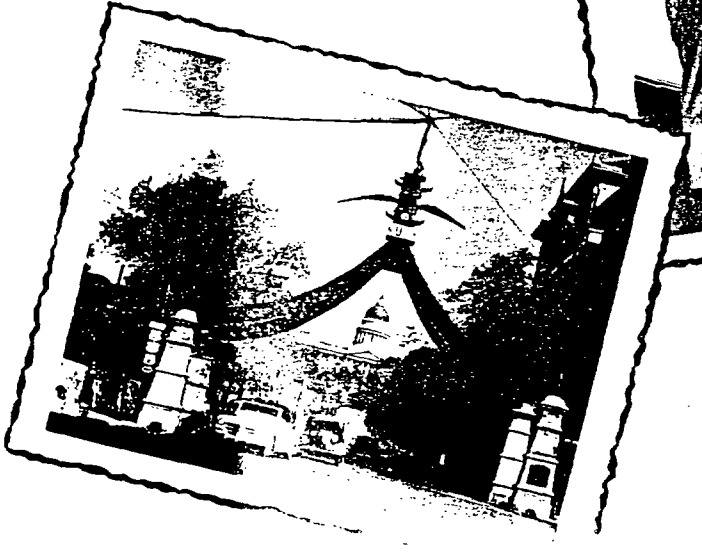
other words, take enough time so you won't get prints that are out of focus, blurred from camera movement, or lacking in important detail.

Be prepared for picture opportunities by keeping your camera close at hand. Many people who carry cameras in their cars keep them in some inaccessible spot – in the luggage compartment, for instance. If you're going to carry a camera at all, have it loaded and ready for use within arm's reach. Unless you're driving in very hot weather the glove compartment is the logical place to keep it. If it's hot and the glove compartment is likely to be a miniature oven which can damage the camera or film, keep it alongside you on the front seat.

The reason? Well, there are some pictures which won't wait to be taken.

Once, for example, I was driving through desert country when I saw a large snake on the road ahead of me. As I approached, a big bird, possibly a hawk, swooped down and gave battle to it. Finally the bird won out, beating his way into the air with the still squirming reptile. It was a thrilling bit of natural history, one I wish I could have photographed. Oh, yes, I had a camera in the car. The only trouble was, it was locked up in some luggage in the rear deck.

There's another reason for keep-



Good trip pictures speak louder than words. Each shot by itself is a story and the whole series will give you a permanent record

ETC 23508

ing your camera close at hand, a psychological one. Many motorists don't like to interrupt a trip for any longer than is absolutely necessary. But it's one thing to pause for a moment to make sure your camera is up front, and it's something else again if it's necessary to pull off the road, unlock the luggage compartment and dig through everything else piled inside in order to find it. When that's the case, many car owners are inclined to pass up the opportunity to take a picture worth having.

Having a camera along is helpful too, whenever you go on a business trip. You'll find occasion quite often to take pictures *en route* – of new facilities your company may have built, of possible sites for new locations, and of new plants and facilities of interest to your company or industry. A simple snapshot helps people to visualize a far-away project better than the most detailed report.

Thus far this has been mostly a discussion of taking pictures incidental to the motoring you do. Have you ever thought of going on a trip *primarily* to take photographs? That such trips can be interesting seems evident from the fact that certain railroads make a practice of running special photographic excursion trains.

Good Pictures by Amateurs

It goes without saying that the fellow with a car is much better off in this respect than the one who has to depend on a train. Able to get into the byways, he can find all kinds of photographic possibilities. Try it sometime. A man I know did it on a grand scale last summer by making an extensive trip through Canada. He had just bought an inexpensive 35mm. camera which he of course took with him. He returned with a large selection of good pictures, both black-and-white and in color.

Driving in the midwest a few years ago I stopped for gas and oil and struck up a conversation with the attendant. I asked if there were any spots of interest to be seen in that vicinity. He invited me inside and brought out an album of photographs. Carefully mounted in the album were scores of excellent photographs showing places of interest for hundreds of miles around. Opposite each page was pasted a section of road map showing just where each place was located. Photography, he explained, was his hobby.

"Do you find it worthwhile?" I asked.

"Sure do," he grinned. "That album sells a lot of gas and accessories for me. You'd be surprised at how many people come in here to get ideas about where to travel. The book helps them make up their minds and I sell them what they need to get there."

That attendant, incidentally, had made all his pictures with an inexpensive little camera which had probably cost him less than twenty dollars. However, he was using two very important accessories – his car and his head. Try them in combination sometime. If they don't produce some excellent pictures then there just aren't any pictures to be taken.

"This one doesn't use film — There's a postcard collection inside."

OUR COVER: Color photograph of Mt. Rainer National Park, Washington, by David W. Corson through A. Devaney, Inc. **OUR PICTURES:** Pages 3-6, all Acme Newspictures, Inc., except as follows: Page 3 (bottom), courtesy CBS; Page 4 (second left bottom), 5 (top left and right and bottom right), Press Association; Page 6 (top), Wide World; Pages 7, 8, and 10, courtesy Standard Oil Co. (N.J.); Page 9, courtesy Westinghouse Electric & Manufacturing Co.; Page 10, cartoon by Martino Weiler; Pages 11-13, illustrations by Rodlow Willard; Page 14 and third cover, Philip Gendreau; Pages 16, 17, 18 (bottom) and 19, Press Association; Page 18 (top) courtesy Shell Oil Co.; Page 20, Camera Associates; Page 21, Look Magazine, cartoon by Laughs, Unlimited.

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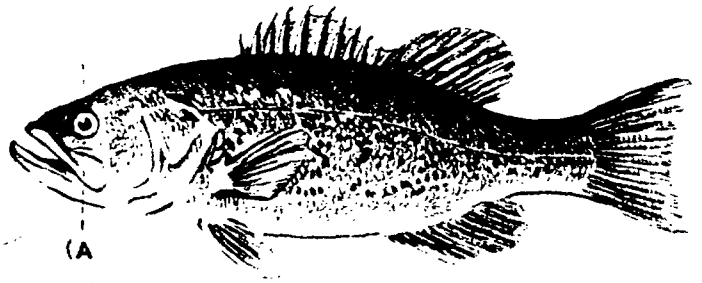
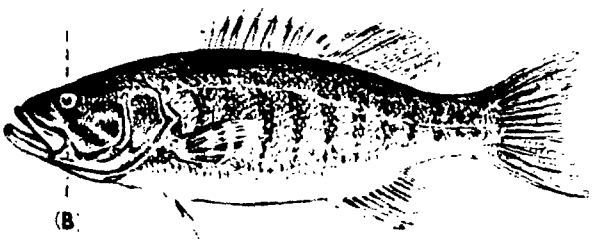


You can distinguish between Large-Mouth Black Bass and Small-Mouth Bass if you look for their special characteristics:

(A) The **Large-Mouth Black Bass** has jaw which extends back of his eye. Also the dorsal (top) fin is deeply notched.

(B) The **Small-Mouth Black Bass** has a jaw which does not extend back of the eye. Moreover, his dorsal fin is not so deeply notched.



When you go fishing

TRADE-MARKS" OF NATURE*

identify these fighters

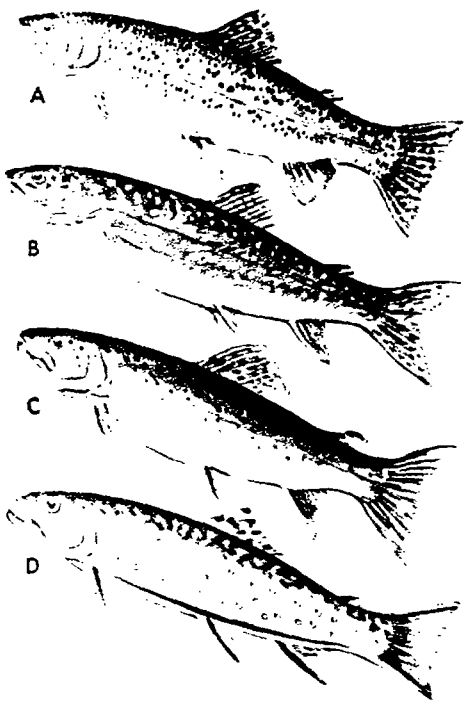
Trout are marked by a group of distinguishing characteristics. For example:

A **Rainbow** (Steelhead). Many strong teeth in zig-zag rows on roof of mouth. Tail fin usually spotted.

B **Lake Trout.** Teeth on roof of mouth on an elevated crest. Has teeth on base of tongue. Red or pale spots on body. Forked tail.

C **Brown Trout.** Brownish, rather large scales. Red spots on sides surrounded by light rings.

D **Brook Trout.** No teeth on base of tongue. Red or pink spots on sides. Lower fins with light-colored edges. Tail square or only slightly forked.



When you buy gasoline

THE TRADE-MARK "ETHYL"

identifies gasoline stepped up with "Ethyl" antiknock fluid

To get the best performance from your car, use high quality gasoline improved with "Ethyl" antiknock fluid—the famous ingredient that steps up power and performance. To show you that their best gasoline contains "Ethyl" fluid, gasoline companies display "Ethyl" trade-marks on their pumps. "Ethyl" antiknock compound is made by *Ethyl Corporation, Chrysler Building, New York 17, New York.*

*[illegible] of American Museum [illegible]

ETC 23511

ETHYL NEWS

JULY ★ AUGUST ★ 1948

ETC 23512

IN THE

ETHYL NEWS

JULY-AUGUST 1948

Benjamin Brewster, whose service with Ethyl Corporation dates back to 1927, has been appointed to the new position of Manager of Technical Service Operations of the Ethyl Research Laboratories in Detroit.

The Technical Service Division is the liaison group between the Ethyl Laboratories and the technical departments of oil companies and automotive and farm equipment manufacturers.

As Operations Manager, Mr. Brewster will supervise the execution of activities planned by the Director of Technical Service, Richard K. Scales, and his staff. He also will continue as a member of the Technical Representative group, one of the five sections which make up the Technical Service Division. This group maintains contact between the Ethyl Laboratories and the research and development laboratories of oil companies throughout the country.

Mr. Brewster is one of nine men now with Ethyl Corporation who helped establish the Ethyl Laboratories in Detroit slightly more than 20 years ago upon their transfer from Yonkers, N. Y. He joined the company in 1927, immediately upon his graduation from Harvard Engineering School with an S.B. degree. He left Ethyl's employ the next year to accept a sales engineer position with an electric company in Boston, and remained in Massachusetts until 1936, when he rejoined the Ethyl Laboratories.

Mr. Brewster is a member of the Society of Automotive Engineers and the Harvard Engineering Society.

MEMORIES ON WHEELS 3

The oldtime automobiles which literally put America on wheels are not entirely gone from the scene. Many can still be seen in action, every so often, thanks to the efforts of a group of hobbyists.

THE OLD TRAVELER 9

Meet the man who has probably seen more of the United States than anyone else — and learn his way of discovering the real beauties of our country.

100 YEARS OF SERVING FARMERS 12

The Oliver Corporation has come a long way since it was founded in Battle Creek, Mich. in 1848. Today a leading member of the farm equipment industry, it inaugurates its second century of service by introducing a complete new line of modern gasoline-powered tractors.

ALASKA — OIL OUTPOST 15

The U. S. territory is famous for its wealth of minerals, metals, fish, fur and lumber — and it may also contain noteworthy reserves of petroleum. To determine for sure, a unique exploration is now going on inside the Arctic Circle.

FAIR DAYS AHEAD 19

Country fairs are easily as old as the Bible, but they give millions of people an opportunity to see at first hand many of the latest industrial developments and products.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Julian C. Gonzalez, secretary

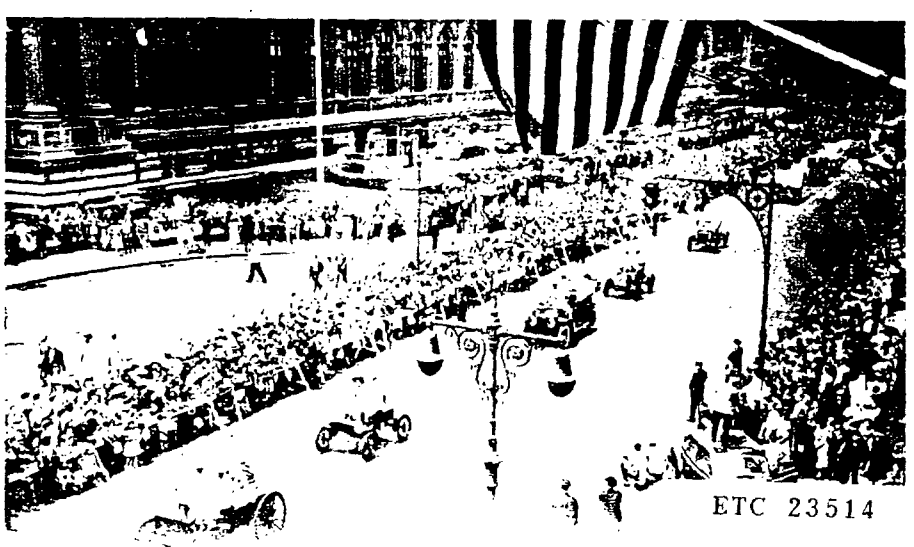
ETC 23513

MEMORIES ON WHEELS

Nostalgic reminders of the America of yesteryear are the antique autos carefully preserved by collectors

TO CELEBRATE the golden anniversary of the consolidation of its five constituent boroughs, New York City recently staged a wonderful five-hour parade. The city dropped its sophisticated attitude for a day as it recalled the lighter side of its past 50 years — and like any town, it was real proud. A million people lined the sidewalks of Fifth Avenue as some 50,000 marchers, many in colorful costume, passed in review. And as the pageantry unfolded, the spectators could see many nostalgic reminders of how people used to work and live.

New York's beaming Mayor



A part of the cavalcade of antique automobiles, as it motored down Fifth Avenue

ETC 23514

Two of the cars in the New York parade — a 1907 International Auto Wagon and a 1900 one cylinder De-Dion Bouton Motorette. Both are owned by James Melton, the noted singer, who is seated on the DeDion

O'Dwyer led the parade in an 1898 Tally-ho drawn by four spirited horses. There was a detachment of bicycle cops, such as patrolled the streets back in the Gay 90's, replete in their impossible helmets and handlebar mustaches. There was a horse-drawn street car and a band of cyclists aboard single seaters and a tandem. And there was a group of autos that formed a very real part of the America of yesterday.

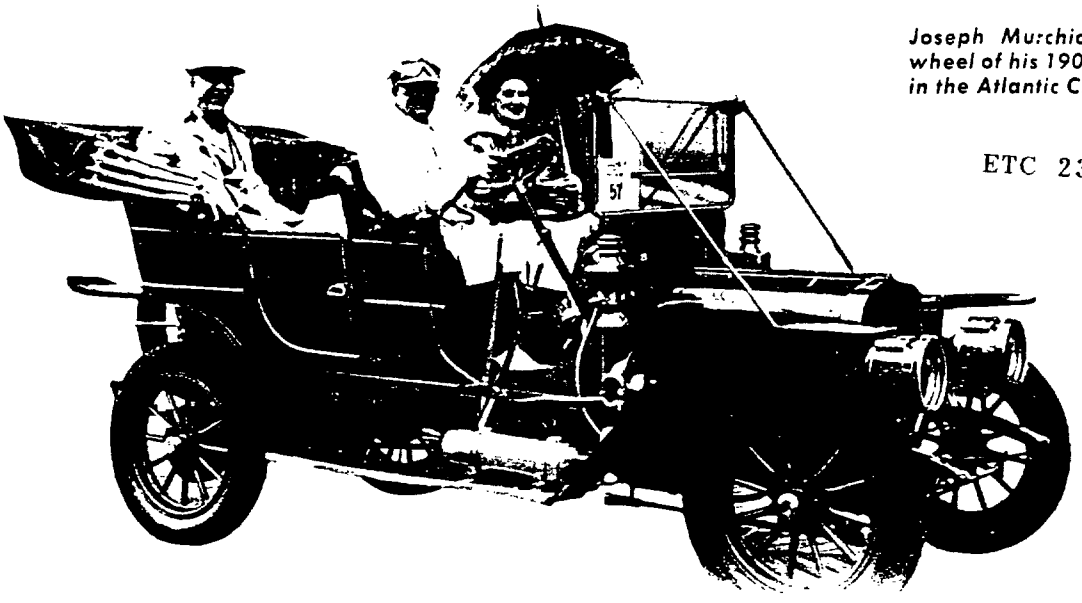
Of all the souvenirs of a bygone day, none held more meaning than these ancient cars, bravely chugging along in the procession under their own power. There were antique Packards with their characteristic hoods and radiators, rugged and reliable Model T Fords, Oldsmobiles, Buicks, Hudsons and Cadillacs, and some almost forgotten names like the Simplex, Stanley and Mercer.

A number of postwar automobiles were in the parade, frequently alongside an early model of the same make. But if their presence dramatized the progress in automotive transportation in the last half century, it also heightened the respect for their antiquated namesakes. For it was these ancient vehicles, crude and cumbersome though they seem, that in a real sense gave birth to today's modern cars.

To the children watching the panorama, the antique cars were a strange sight indeed in this modern, streamlined age. Many kids probably marvelled that their grandparents ever got up enough nerve to take a trip in one of them, and they shrieked with delight at the sounds of their pipsqueak bulb horns. But for their parents and grandparents, the cars brought back a flood of memories of years ago.

They recalled days of muddy roads and high adventure, when people wore dusters and goggles and gauntlets, and took along wicker lunch baskets for a day's outing. Those, too, were the days when motorists knew practically every nut and bolt on their car, because many's the time they had to "get out and get under" on the highway.

After completing the course of the New York parade, the ancient cars assembled at the Hudson river for a trip to Atlantic City, N. J., where a second parade was to be held the following day. And in a manner reminiscent of the famous Glidden Tours, the cars bravely set forth on the 123 miles to the New Jersey resort.



Joseph Murchio at the wheel of his 1908 Corbin in the Atlantic City event

ETC 23515

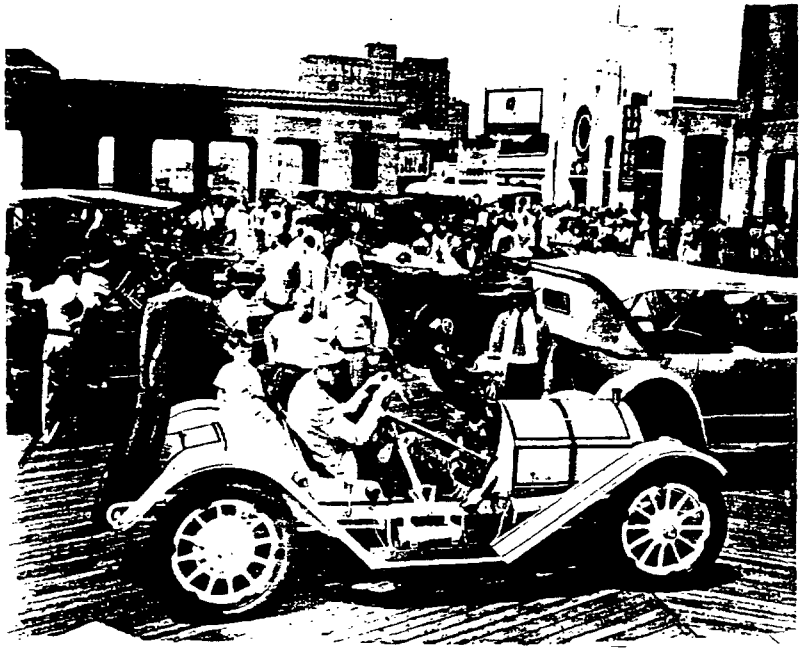
Almost all the cars made the trip on their own; only the oldest of them had to be taken along by trailer. And as the cars chugged along, interspersed throughout the stream of highway traffic, they were the object of great curiosity and even outright astonishment. Drivers of other cars, passing by, stared at them with disbelieving eyes. They couldn't realize, for the moment, that the oldtimers were part of a caravan; they thought they were still being used in day-to-day driving. Said a typical driver, as he saw a 1905 model rattle along: "Can the car shortage still be that bad?"

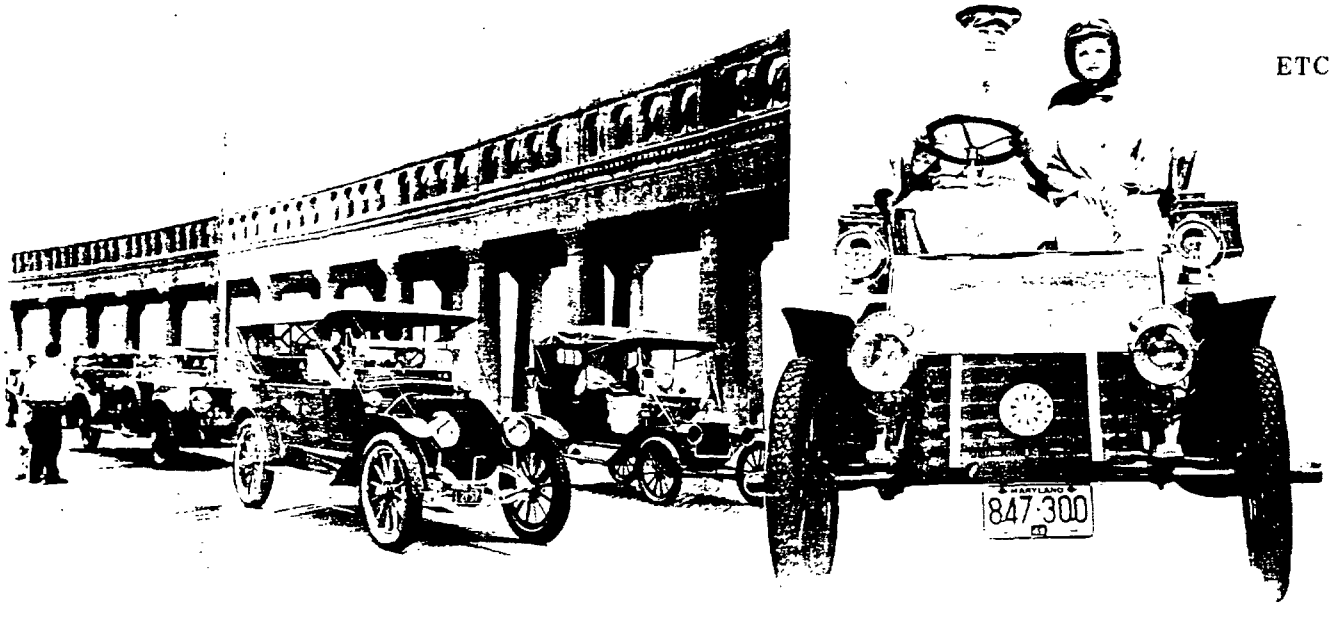
In Atlantic City, the oldtime cars were met by another contingent of antique vehicles that had motored over from Philadelphia. Joining forces, the two groups staged a parade down the resort's famous boardwalk, to the plaudits of the thousands of vacationists there. And to cap the proceedings, the cars were then driven out to the Atlantic City Country Club where during a luncheon awards were made for various classes of cars.

Only on such occasions as the New York and Atlantic City parades does the American public at large get a chance to see these oldtime cars in action. Only then can present-day motorists appreciate fully what motoring must have been like back in the early days of the automobile. At other times, these cars are, for the most part, stored in museums or garages or barns, where they are carefully housed to preserve them against the ravages of old age.

Thanks to the efforts of a fraternity of collectors, the United States still has today many fine examples of early motor cars. These collectors make a hobby of acquiring and restoring old cars, and they are banded together into such clubs as the Veteran Motor Car Club of America, the Antique Automobile Club of America, and the Horseless

Some of the cars participating in the Atlantic City parade are shown below. Bottom right, Mr. C. R. Levis and his daughter, Carol, riding in their 1903 Cadillac





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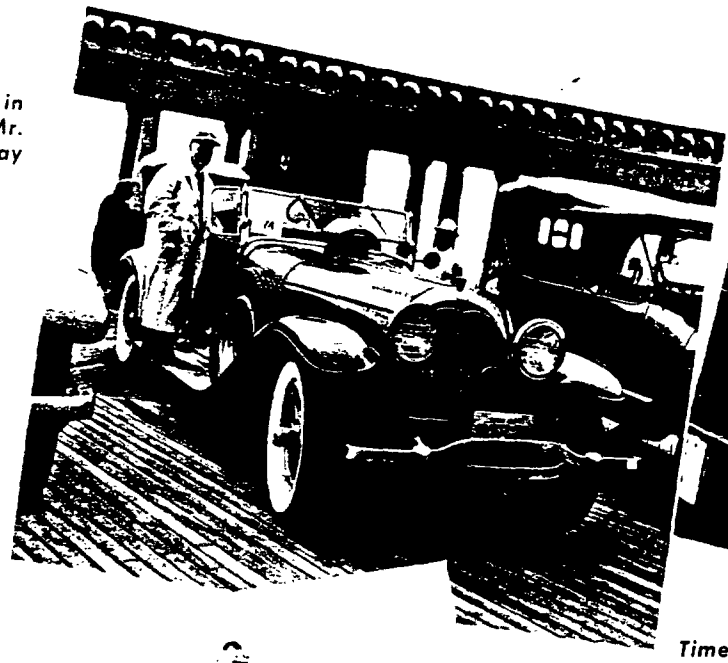
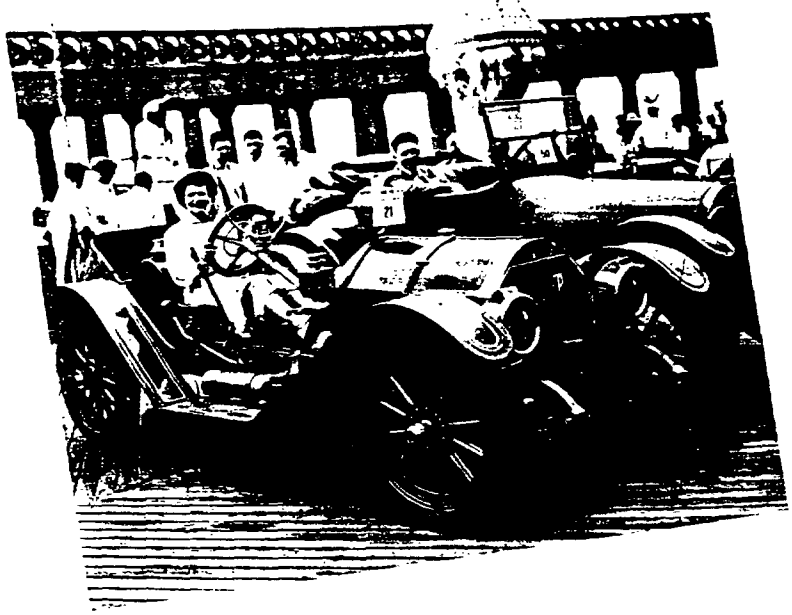


Mr. and Mrs. George Wood in their 1915 Crane Simplex. Mr. Wood still drives it every day

Below, Mrs. Samuel Bailey in her Mercer. Bottom, the scene in front of Convention Hall, Atlantic City, as the parade of old cars came to a halt

Time out for a slight repair on this 37-year-old Twombly



Carriage Club. The effort to preserve for posterity a record of the early days in motoring has also been spurred by such organizations as the Automobile Old Timers, Inc., which is composed of America's motor car pioneers, and such others as the Sports Car Club of America.

The collectors all acquire antique cars as a hobby. Their collections may range anywhere from one or two models on up to several hundred. Notable among the large private collections are those of D. Cameron Peck, George H. Waterman, Jr., and James Melton, the Metropolitan Opera star.

Eager collectors regularly tour

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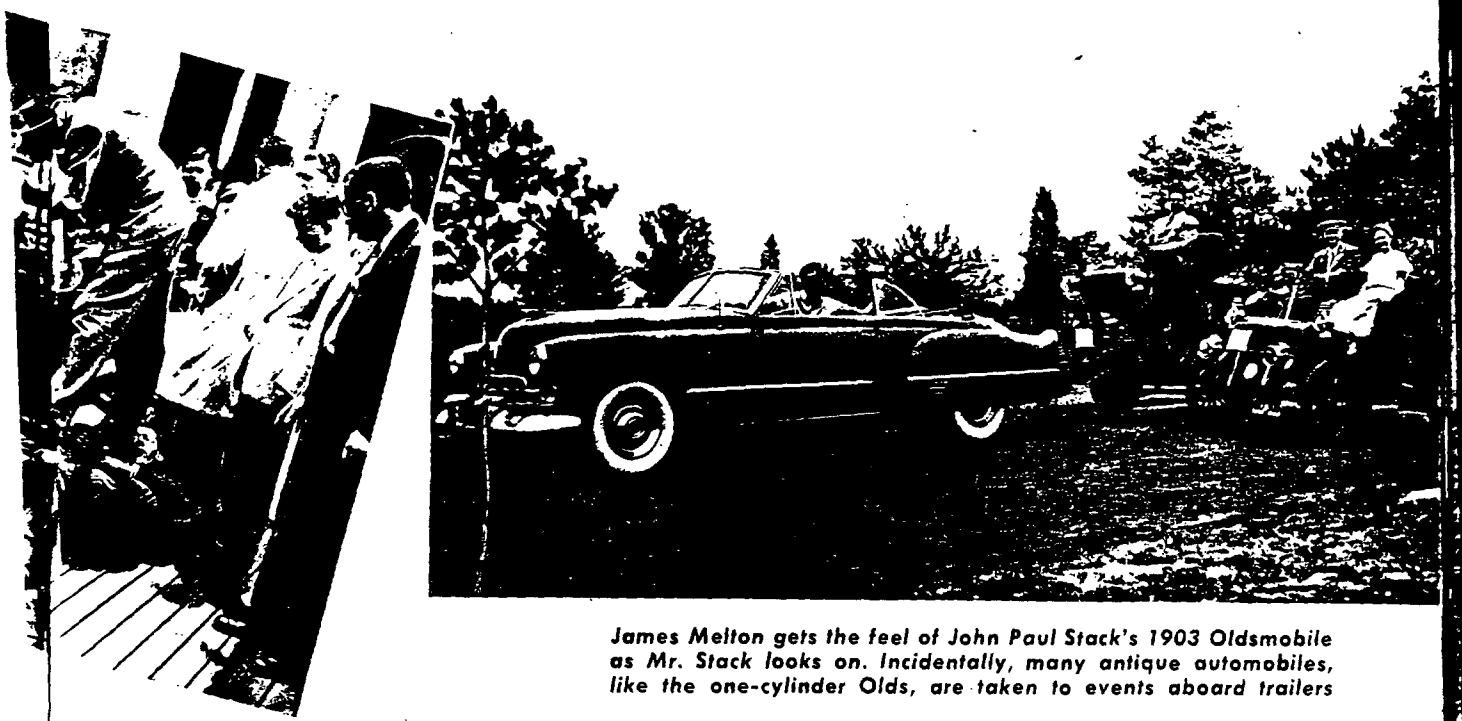


James Melton gets the feel of John Paul Stack's 1903 Oldsmobile as Mr. Stack looks on. Incidentally, many antique automobiles, like the one-cylinder Olds, are taken to events aboard trailers

the countryside on the lookout for representative old models. And when they come upon a rare find, they frequently spend much time and effort in cleaning it up and trying to restore it to its former condition.

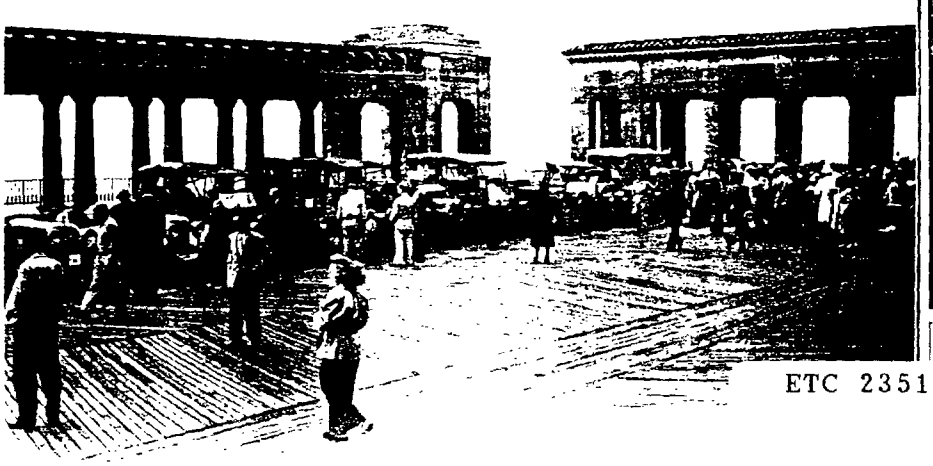
The average collector is also a tinkerer. He may have three cars and a half dozen engines for them. In his spare time he polishes every part on his cars and puts it in first class shape. Sometimes he may spend months looking for a replacement part, but he knows that is part of the game.

Throughout the year, these antique car collectors hold regular meetings to which they take their cars and enter them in various events. The cars compete by various classes, and are awarded prizes on the basis of such factors as their age and general appearance, their completeness and authenticity, and their general interest. In addition, they also compete in action contests of various kinds.

While antique auto collectors value a car on a number of counts, one of the most important is how well it runs for its age. A consistent blue ribbon winner at antique auto meets is Mrs. John Paul Stack's 1903 one-cylinder Oldsmobile. Its restoration has been so thorough that a veteran Olds mechanic once said it looked as if it had just come from the factory.

Besides the antique cars which are seen only in parades or at exhibitions, there are others in constant use. One of these is a 1915 Crane Simplex, owned by George Wood, of Brooklyn, N. Y. This is Mr. Wood's only car, and when he decides to enter it in a parade or meet he merely shines it up a little, and he and Mrs. Wood get out their dusters, and off they go.

In addition to such public mu-



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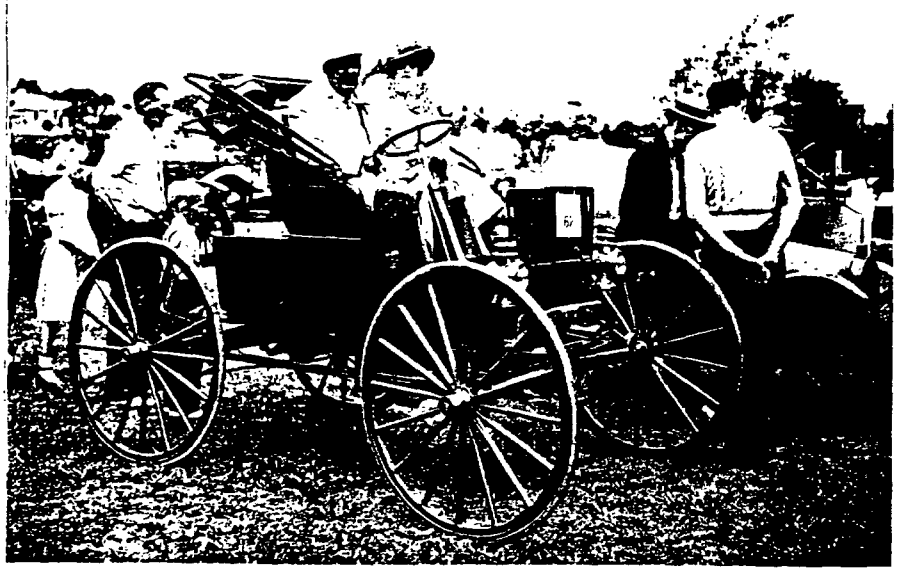
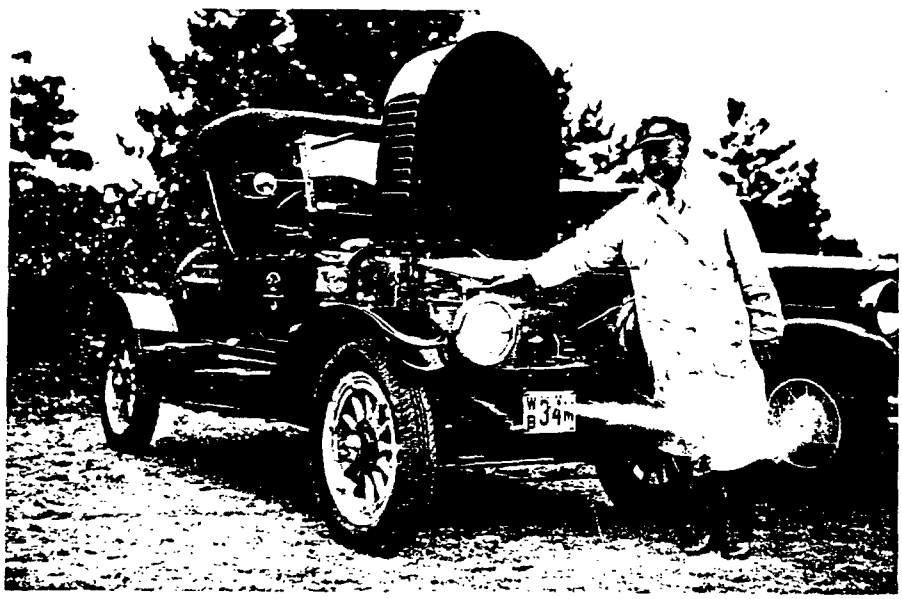


A 1903 Black and a 1914 Stanley Steamer at the Atlantic City Country Club, where the Antique Auto Collectors Association and the Veteran Motor Car Club held a luncheon



seums as the Smithsonian Institution, Chicago's Museum of Science and Industry, and the Dearborn Museum, many private museums housing antique cars are to be found in at least eight cities throughout the country. Only recently, James Melton announced the opening of the new Melton Museum, in Norwalk, Conn. where he will publicly display his famous collection of cars.

Many antique car collectors are not only authorities on the cars they own; they are also historians of a romantic and yet important period in American life. Some of them, like Charles B. King of Larchmont, N. Y., can speak out of personal history. Mr. King drove the first horseless carriage on the streets of Detroit in 1896.

For countless thousands of American families, these early cars have been more than a physical possession; they have been a very real and substantial part of their lives, contributing in no small measure to the tremendous development that put America on wheels. Thus, in acquiring and restoring these old cars, the collectors are making an important contribution. They are preserving for posterity the central character in one of the most delightful episodes in the American drama.

A few of the old-time cars as they were lined up on the lawn of the Atlantic City Country Club

ETC 23519

THE OLD TRAVELER

If you seek beauty and adventure in your travels, take the advice of a veteran sight-seer and turn to the side roads

WHENEVER JIM WELSH is introduced at a meeting of one sort or another as "the man who probably has seen more of the United States than any other person" — and that's on an average of nearly six times a week — his opening acknowledgment almost invariably is:

"That's just a polite way of saying that I am just a bewhiskered old goat who spends his days prowling."

Actually, he does sport a graying goatee, and he is a prowler of a sort. As far as being old — well, he's 58. During his lifetime he has set foot in just about every nook and corner, every metropolis and crossroads hamlet, and every historical spot and scenic area that this country has to offer. Jim Welsh calls these hundreds of visits of his "prowling expeditions" because he delights in veering off the main highway to roam about in the backwoods, along the narrow country roads, or even in somebody's backyard in search of a touch of unusual America.

If the name James Parker Welsh fails to strike a responsive chord, chances are you'll recall him instantly as "The Old AAA Traveler" of Automobile Club of Michigan.

That cognomen grew on him while he was doing a series of radio travel talks in Cleveland several years ago, and is so associated with him today that the name is very carefully protected by the American Automobile Association. Even he himself sometimes finds it difficult to keep the two personalities straight, and on more than one occasion has found himself signing a bank check "The Old Traveler" instead of with his own name.

Seeks the Unusual

There isn't much that the portly, genial Jim Welsh hasn't seen or done in his ramblings around the country.

He has sailed with the fishing fleet out of Gloucester, he has explored the wastes of the Yukon, he has walked the foot trails to mountain shacks in Tennessee, and he has roamed up and down Death Valley. Through it all, he has emerged as a personality perhaps more colorful and exciting than his many experiences themselves.

The Old Traveler is not a nomad or a victim of wanderlust, as such. His extensive travels spring from sheer love of country. Three hundred and more times a year he appears before meetings, ranging from small town women's groups of a dozen members to national conventions with thousands of delegates, to urge his listeners to appreciate the beauty and richness of their native land more than they already do.

"Get off the beaten path," he urges. "Instead of driving from Detroit to Miami in three days, take five days and spend the extra time visiting the glory spots that polka dot this nation of ours."

To illustrate what he is wont to call an "unforgettable," The Old Traveler tells of a hill that stands not far from Atlanta, Ga. Millions of motorists pass it on U. S. route 41 each year, but few know the role this twin-peaked mountain played in naming a famous American.

During the Civil War, this hill was among the last defenses before Atlanta, and so was the scene of a North and South Armageddon.

Seeing these moss-covered cypress trees growing on Lake Veret, La., is well worth a few minutes of extra travel

At the height of the battle, a courier delivered a message to a Confederate medical officer. The note was from his wife, telling that a son had just been born to them and asking that he name the baby. Somewhere on the bloody battlefield the Southern officer managed to find a fairly protected spot in which to reply to his wife's letter. He asked that the son be named for the field of battle.

And that, The Old Traveler tells you, is how Kenesaw Mountain Landis, the late high commissioner of baseball, got his name. The little two-peaked hill just outside Atlanta is Kenesaw Mountain!

Jim Welsh has hundreds of vignettes like that up his sleeve. You name the city, region, or state, and he can relate fascinating stories not to be found in the guidebooks. He digs up virtually all his "unforgettables" personally, although his weekly mail sometimes contains a score or more of historical and folklore tidbits sent in by fans all over the country.

Prowling the United States is a profession for him, it is true, but few men have done so much to encourage John Q. Public and his family to get to know and treasure their country more. The Old Traveler is a goodwill service of the Automobile Club of Michigan, whose 270,000 members make it the largest motoring organization in the world. His trips are sponsored by that club as a means of stimulating tourists and vacationists to "see America—the little-known America—first."

Sometime this summer he will reach the 2,000,000-mile mark in his roamings. No special celebration will observe this significant milestone for the simple reason that the bewhiskered wanderer has no idea just when the milestone will sneak up on him or exactly where he will be at the time. Whenever and wherever it occurs, however, he undoubtedly will be busy uncovering another morsel of Americana to feed his avid club, radio, newspaper, and magazine audiences.

During his travel career, polytopian Jim Welsh has driven and "outgrown" more than 20 automobiles. His first vehicle, back in 1908, was a Mitchell phaeton. Since then he has guided such old timers as the Brush, Chalmers-Detroit, Paige Daytona Special, and Diana, as well as almost every present make, up and down and across the North American continent. He was among the first to buy "Ethyl" gasoline when it went on the market 25 years ago, and has used it regularly ever since.

His accident record is perfect. In 40 years and nearly 2,000,000 miles of traveling, he has never so much as dented a fender. Once, however, the right front wheel of a Stevens he was driving came off and rolled down the highway embankment. Mr. Welsh didn't realize what had happened for several moments, since the vehicle had continued on its merry way almost as well on three wheels as it had on four.

"Best balanced car I ever drove," is his sage recollection.

One of Jim Welsh's fondest recollections of his boyhood is "borrowing" some of his father's tobacco to give to Geronimo, the famed rebel Indian leader, while the latter was being held captive in a jail in the little Alabama community of Vine-

This Tennessee mountain cabin is a good example of the scenic wonders you can find on the nation's back roads

gar Bend. The Indian fighting in the Southwest was over, but Geronimo was locked up in a distant state so he could not inspire a renewal of the warfare. Jim had been sent to his grandparent's home in Alabama at the age of nine to go to school.

As a sequel to that incident, The Old Traveler relates how, even in death, Geronimo could not escape the flag of the United States, which he hated above everything else. For, today, as the sun sets behind Fort Sill, Okla., it ironically throws the shadow of that post's flag across the grave of the Indian warrior who held such bitter hatred for the Stars and Stripes.

At none of the 5,000 personal appearances The Old Traveler has made during the past 11 years has someone in the audience failed to ask what places he considered the most beautiful and most interesting. Mindful that he might be incurring the wrath of more than one Chamber of Commerce, he nevertheless answers unhesitatingly: Most beautiful – Natchez, Miss.; most interesting – Tombstone, Ariz.

History relates that General U. S. Grant must have thought Natchez a center of scenic beauty and culture, too. During the siege of Natchez, the Union commander ordered that the town high on the bluffs of the Mississippi River be spared shellfire in order that its beauty not be marred.

In selecting Tombstone as America's most single interesting "glory spot," The Old Traveler refers to is as "the town too tough to die." He notes that the local newspaper was (and still is) called *The Epitaph*, and he takes you on a verbal inspection of Boot Hill, the cemetery so named because in it sleep only those who "died with their boots on." More than any other reminder, the wooden headboards tell of the Tombstone that was. "Murdered," says one. "Killed in the Crystal Palace," says another. "Hanged" and "Legally Hanged," read others. Often the epitaph was burned into the headboard with a branding iron.

Tombstone, once the leading silver-producing city of the West but now almost a ghost town, still boasts its wooden sidewalks, many of them pock-marked with bullets. And as you walk down old Allen or Toughnut Streets, you still can dig .45 slugs from the walls of the buildings.

"Here is truly the most unusual town in America," sighs The Old Traveler, "and yet so many of us pass right by or through it without a second thought."

Jim Welsh personally is no reformer or crusader, but his travels about the United States have convinced him that American history books should be revised to report the various events in a more interesting and complete fashion.

As an example, he says that 800 pirates from the bayou country of Louisiana, loaned by Jean Lafitte, the pirate chief, enabled Andrew Jackson's pitifully small army to crush the superior British forces in the Battle of New Orleans. "But you'll never hear about those pirates in any history book," Welsh claims.

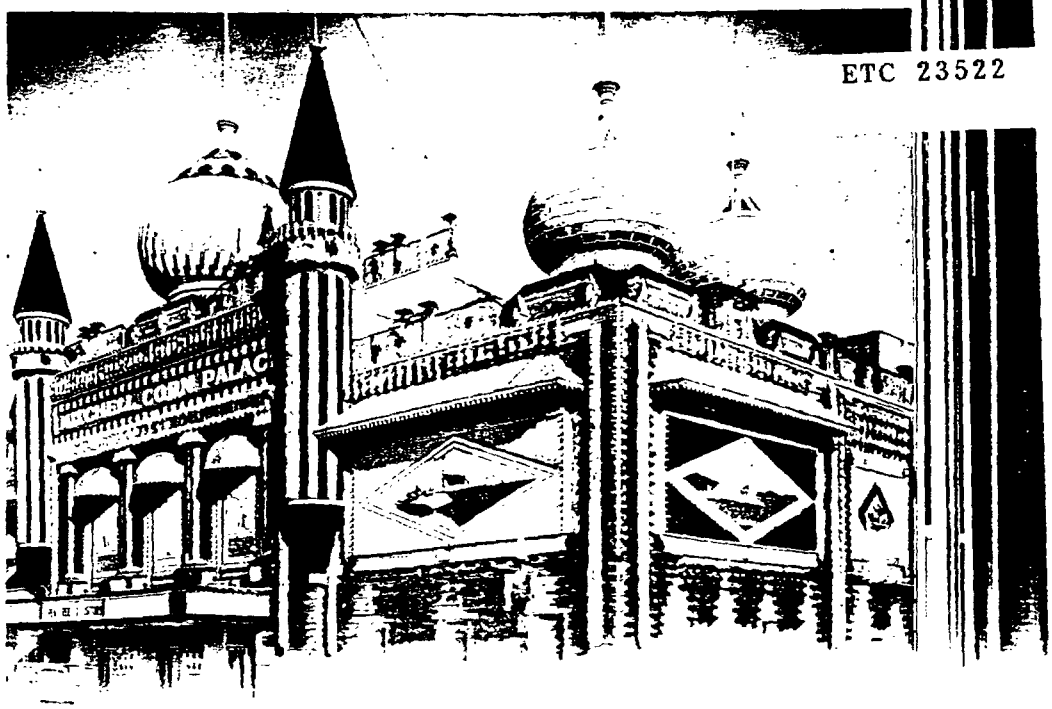
"Give our students just one interesting fact, and they'll remember the whole story. For instance, no one will ever forget the details of the Battle of Gettysburg if you tell them that the Union forces were about to suffer a major defeat until one little factor changed the tide of battle. The fifth day of fighting was the Fourth of July, and the patriotic urge experienced by the Northerners gave them a new will to go on and win."

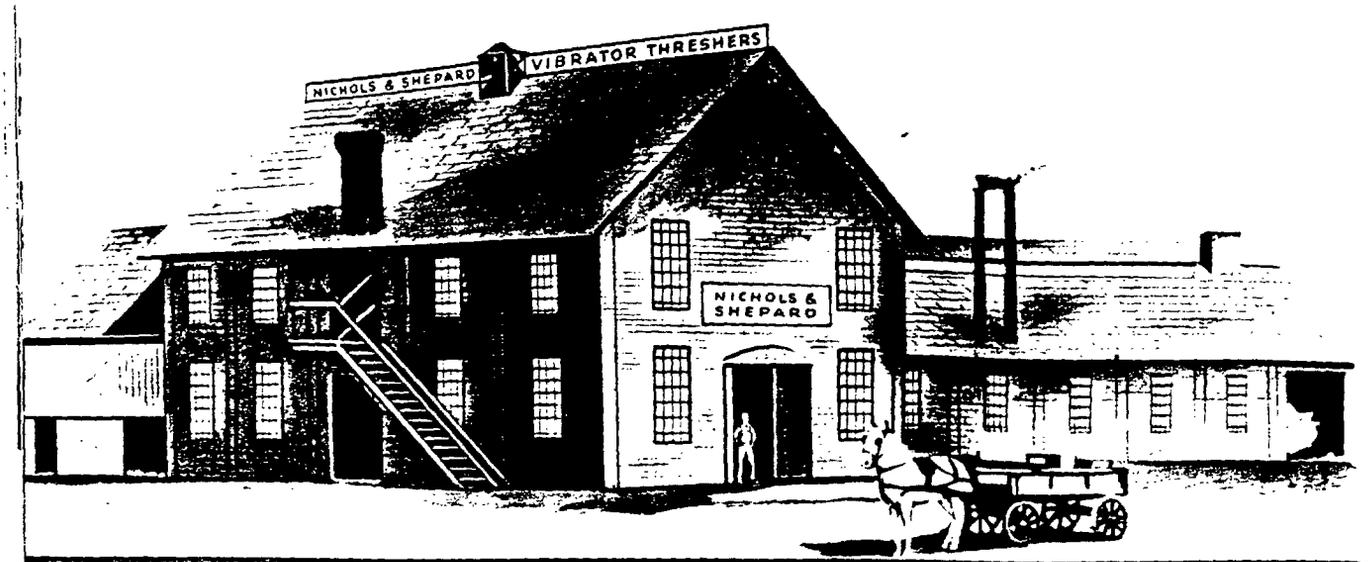
"People don't forget things like that," he believes.

Jim Welsh is a man of many talents. He is a story-teller *par excellence*, a soldier, a veteran newspaperman, a magazine writer, a radio commentator, an expert photographer, a public speaker, and a leading authority on outdoor cooking.

But, above all else, he says, he is "a goateed old man who likes to prowl these United States."

The rushing tourist sometimes passes up obvious spectacles such as this ornate Corn Palace in Mitchell, South Dakota





100 YEARS OF SERVING FARMERS

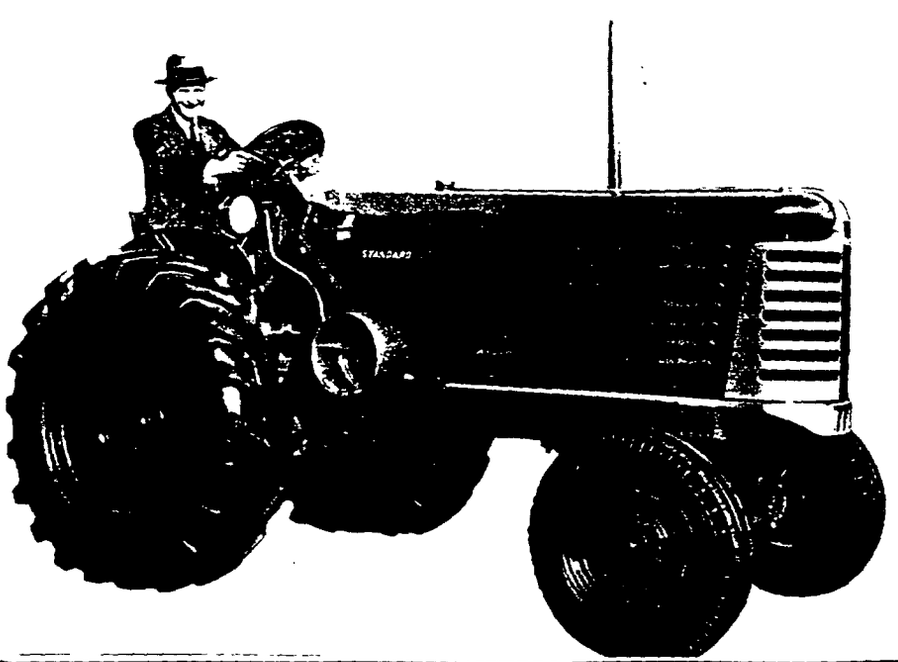
The Oliver Corporation, which has made many important contributions to better farming, this year observes a milestone in its career

ONE HUNDRED YEARS AGO a young Michigan iron worker struck out on foot along the primitive forest paths leading inland from Detroit. John Nichols wasn't exactly sure of his destination, but he settled eventually for Battle Creek. The farmers surrounding that busy little community needed farm implements and needed someone to do their iron work. Nichols recognized this as his opportunity and opened a farm implement shop and a foundry. Then and there, for all practical purposes, was founded The Oliver Corporation of today.

The Nichols enterprise grew and acquired a partner. It became the firm of Nichols & Shepard, interested in threshing machinery. One of the most important contributions in the design of harvesting equipment came out of this partnership, for the Nichols & Shepard vibrator type thresher produced in that early day rendered all others virtually obsolete.

As the Nichols & Shepard Company came to the booming 1920's, behind it was a long record of successful business operation and service to American agriculture.

The late '20's are often referred to as the years of mergers. The needs of agriculture were becoming too great. Efficiency in production, as well as reduction of prices, called for large companies. Everywhere competing and non-competing companies engaged in farm equipment manufacture were getting together to the eventual benefit of the American farmer.



Joseph D. Oliver, Jr., a director of the Corporation, driving a Standard 77 model—one in the new line of tractors Oliver has introduced as it begins its second century

So it was that Nichols & Shepard, with their power harvesting equipment, joined with the Hart-Parr Company, first to manufacture gasoline-driven tractors. Too, the American Seeding Machine Company, pioneer in the manufacture of drills and planting equipment, and the Oliver Chilled Plow Works, which had pioneered in the design of plows and tillage tools, were brought together under the Oliver banner to form an important segment in the farm equipment industry. In 1943, Oliver acquired the Ann Arbor Machine Company, which for many years had manufactured hay balers. Finally, in 1944, the Cleveland Tractor Company was acquired, bringing to the Oliver line of tractors a fleet of crawler type tractors.

The man who gave the company its name was James Oliver, an Indiana land owner who "improved the plow more than it had been improved in all the time since man first turned the earth with a sharpened stick." His son, Joseph, effected the merger that has kept the Oliver name among the foremost in the farm equipment field.

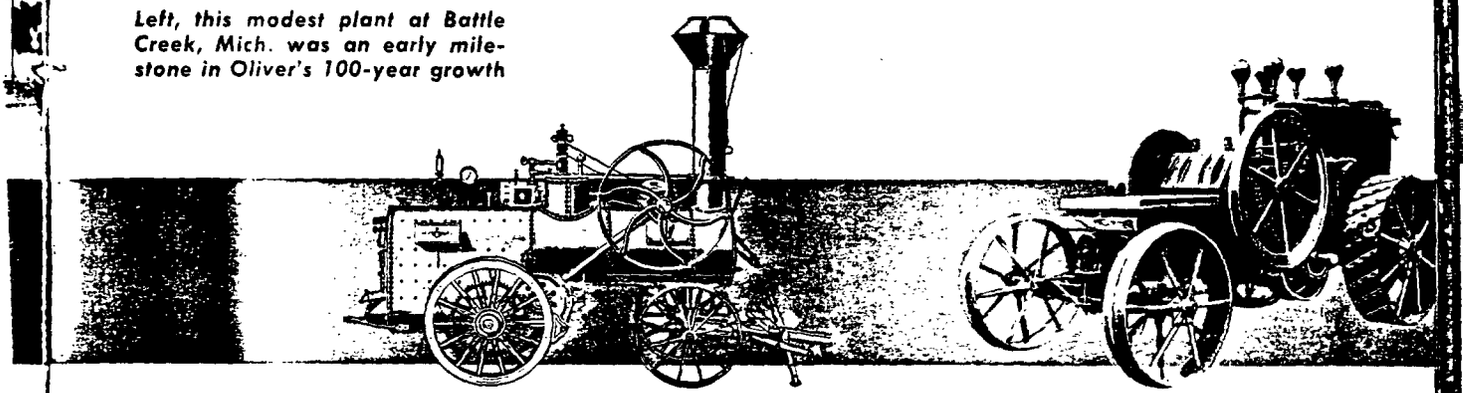
To observe its centennial, the Oliver firm paused briefly a few weeks ago in its task of all-out production of tractors and other farm equipment. But to those in the company the June 30th ceremony at Battle Creek did not mark a 100th anniversary alone. Rather, it was "the beginning of the second century." As its own birthday gift to the farmers it serves, Oliver unveiled a new line of tractors – the "66," "77," and "88" – to replace its popular "80," "70," and "60" models.

As is true of all long-established farm equipment manufacturing companies, the history of Oliver is the history of American agriculture. Through its manufacture of time- and labor-saving devices, it has helped the farmer increase productivity to the point where today he feeds not only his fellow countrymen but millions of starving people in all corners of the earth as well.

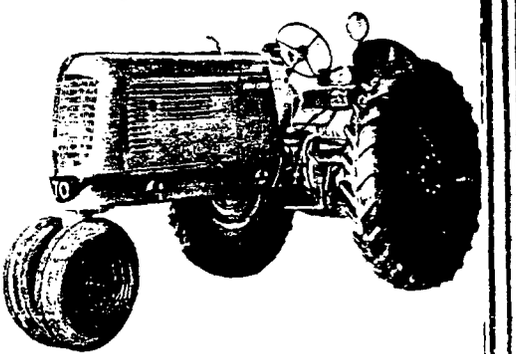
Several "firsts" highlight Oliver's achievements in mechanized farming. Chief among these are the manufacture of the first successful gasoline traction engine, and the fact that Oliver was one of the first companies to market a commercial high compression tractor engine designed to use gasoline exclusively.

Some even say that Oliver coined the word "tractor," but this is not true. Company officials will tell you that "tractor" was used in a patent received by a Midwest farmer back in the late Eighties, some 17 years before the word appeared in an advertisement of 1906. As the story had it, the sales manager of what is now the Hart-Parr Division of the

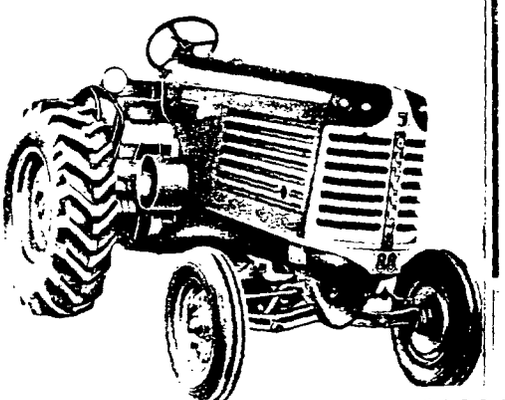
Left, this modest plant at Battle Creek, Mich. was an early milestone in Oliver's 100-year growth



A great deal of progress separated the early steam-powered machine (left) and the first successful gasoline tractor (above)



The famous Oliver 70, one of the first modern high compression tractors, was designed to operate on 70 octane gasoline



Oliver's new gasoline tractors, of which the Standard 88 model is shown here, all have high compression engines

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Oliver Corporation found the phrase "gasoline traction engine" too cumbersome. Somehow, he arrived at "tractor" in his mental search for a catchy advertising word, and it went into the ad he was writing at the time. Since Oliver officials themselves only recently learned of the ancient patent, it is possible that the sales manager also invented the word. At any rate, his was the first use of it in any advertisement.

Paralleled Auto Progress

The first gasoline traction engine built by the partnership of Charles W. Hart and Charles H. Parr at their gasoline engine manufacturing plant in Charles City, Iowa, was as much unlike the present streamlined tractor as are the Stanley Steamer and a 1948 model automobile. It was big and clumsy and bore a strong resemblance to one of the war machines created five centuries ago by Leonardo da Vinci. America's first tractor was powered by a two-cylinder oil cooled horizontal engine. Compared to the modern six-cylinder Oliver "70," the first unit was truly big and clumsy. But what was important was that it worked and that it was a vast improvement over steam-powered "tractors."

The very first Hart-Parr tractor was built in the winter of 1900-01. It was sold to an Iowa farmer whose name has been lost in the annals of time. The owner and destiny of the second tractor also are unknown. But old No. 3 is on view daily for the thousands of visitors to the Museum of Science and Industry in Chicago. It was originally purchased in 1903, the year of its manufacture, by George Mitchell, a Floyd County, Iowa, farmer, for $1,550. He used it until 1922, when Hart-Parr bought it back for showing at state fairs and farm expositions. It was placed in the Chicago museum ten years ago amid much ceremony.

The life of the gasoline traction engine, as such, was a short one.

In the early 1900's the petroleum industry was still in short pants and had not yet realized the enormous growth in demand that was to come for gasoline and other refined products. The result was that gasoline, then a byproduct of the industry, was not generally available on farms. Because of this, Hart-Parr turned to the manufacture of a tractor that could burn kerosene and the lower grades of oil which were more readily available. In 1905, Hart-Parr perfected the first satisfactory system for using fuels other than gasoline in tractors. For 30 years thereafter, few indeed were the tractors that were built for gasoline. Farmers obtained satisfactory results from tractors designed to operate on kerosene and distillates, but they were not enjoying the *fullest* performance of which their tractors were capable.

One of the first men to realize this was George Krieger, of Ethyl Corporation. With Dan Guy and other Ethyl Corporation tractor engineers, he began campaigning in the early 1930's for higher compression tractor engines designed for gasoline. This group concentrated its efforts on farmers themselves as well as the manufacturers of tractors. Their cause was aided by the decision of Ethyl Corporation, in 1933, to market an antiknock compound which oil companies might add to their regular grade motor fuel.

The success of their efforts to bring about greater tractor performance and economy is too well known to be elaborated on here. Working in close cooperation with design and production engineers of the farm equipment industry, the Ethyl Corporation engineers aided in marketing the first high compression *gasoline* tractors. That was in 1935. One of the first to appear was the Oliver "70." It had a six cylinder engine and derived its name from the fact that it was designed to operate on 70 octane gasoline.

High compression jobs required relatively little time to reach the top of the tractor best seller list. In fact, the first Oliver "70" was purchased before it even had a name. One day in January 1935, farmer Elmer Niebel, of the northwestern Ohio town of Napoleon, stopped in at his farm equipment dealers' store. Salesmen of the Von Deylen-Wiemken firm, Oliver dealers in Napoleon, showed him a set of blueprints and a typewritten sheet of specifications of the new tractor Oliver planned to produce later that year. The tractor already had been tested and proved both in the laboratory and the field. Mr. Niebel was convinced, and immediately ordered an unnamed tractor that was delivered to him as the Oliver "70."

Farmers Prefer Gasoline

Since that day 13½ years ago there have been many Elmer Niebels. Today, approximately 60% of all tractors on U. S. farms are high compression. Eight of every ten farmers use gasoline as their tractor fuel, and this preference is growing almost daily because of gasoline's greater power and quicker starting, cleaner burning advantages.

Power farming, of which the tractor is the backbone, has come a long way in the past three generations. Equally as much progress lies ahead. It is in that spirit that the Oliver Corporation, during its present centennial, looks back not on 100 years of outstanding contributions to mechanized farming but rather looks ahead to a second century of service to the farmer as a leading member of an important industry.

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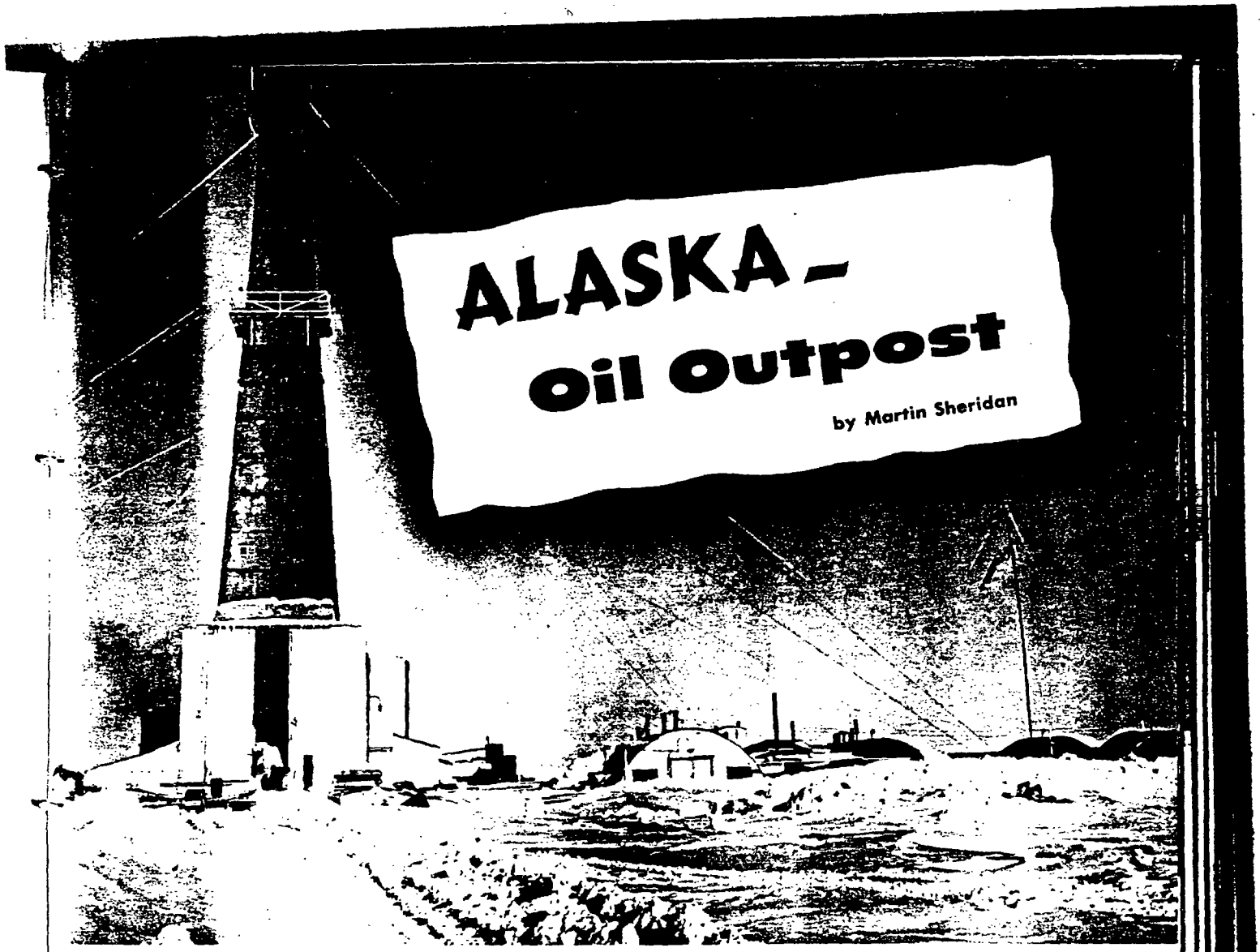


ALASKA – Oil Outpost

by Martin Sheridan

The Arctic Circle is the locale for one of the most unusual explorations now going on throughout the world

ONE OF THE remote and undeveloped areas of the world which offers great promise as a potential oil producing region is the United States Navy's Petroleum Reserve No. 4.

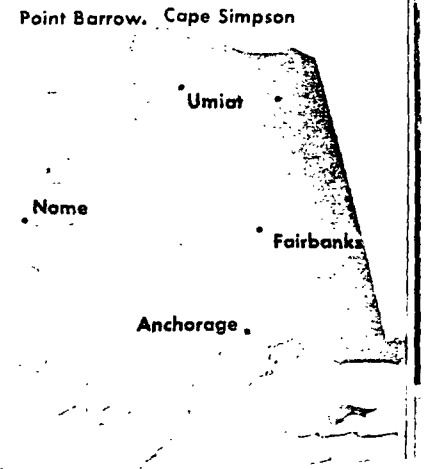
Located in northern Alaska, the "Pet 4" project covers a bleak, desolate wasteland equal to about half the area of Oklahoma. Oil seeps and oozes had been reported there by Eskimos and other natives for many years. Now the Navy is directing a thorough search of the Arctic area, using all the tools and methods commonly employed by the oil industry in explorations elsewhere throughout the world.

The structural makeup of the terrain and other geological features strongly indicate that oil may be present beneath the polar wastes. Though the location and the amount of oil that may be hidden there still remain a mystery, the Navy hopes to locate these reserves, learn more about them, and fully determine their potentialities. In the closing days of the last session of Congress, the Navy was granted $14.6 million to continue its search for oil inside the Arctic Circle.

The Alaskan territory was first set aside as a Naval petroleum reserve by President Harding in 1923, but no serious effort was made to

The test well at Cape Simpson, which was drilled to a depth of more than 7,000 feet

Shown below is the Navy's Petroleum Reserve No. 4 relative to all of Alaska



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explore it until the recent war. Then, in the light of Alaska's strategic importance, the Navy in 1944 sent a battalion of Seabees to Barrow, the northernmost point in Alaska, to establish a base camp for the operation. The Seabees constructed the base, built several landing strips so that equipment and supplies could be flown in, and undertook the preliminary exploratory work. The first test well, which showed small quantities of oil at various levels, was spudded in at Umiat, Alaska, in June, 1945.

Since war's end, the Navy has continued to supervise the search for oil in Alaska, but has contracted with a number of civilian firms to handle various phases of the actual exploratory and drilling operations.

These include Arctic Contractors (composed of the firms of Hoover, Curtice and Ruby, the C. F. Lytle Construction Co., and the Green Construction Co.) and United Geophysical Co. and Degolyer and MacNaughton. In addition, arrangements have been made with a local Alaskan airline to ferry in supplies to the operating base and field exploration parties.

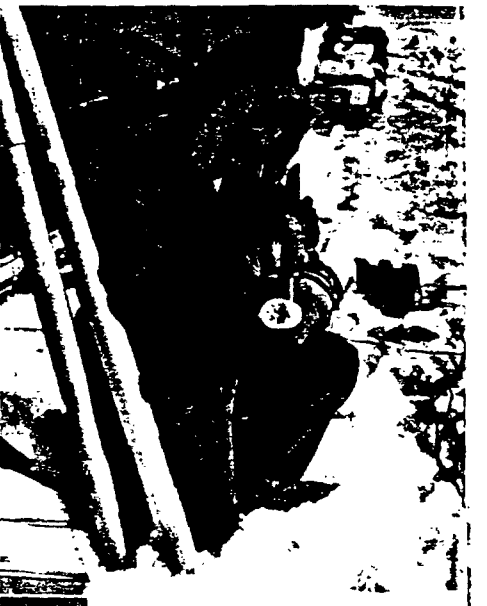
At the same time, a number of Government agencies are cooperating with the Navy in its Arctic oil operation. These include the U. S. Geological Survey, which conducts reconnaissance geology, and identifies and correlates samples of rocks; the U. S. Coast and Geodetic Survey, which is responsible for the hydrographic work and triangulation surveys; the U. S. Air Force, which has mapped most of the 35,000 square miles in the Reserve; and the Office of Naval Research, which studies insulating materials for Arctic clothing and the manifold problems of human existence in the area.

The Pet 4 operation is under the over-all direction of Commodore W. G. Greenman (Ret.), USN, Director of Naval Petroleum Reserves, who frequently flies to Alaska from his headquarters in Washington, D. C. to check on its progress. His deputy at Arctic Contractors' headquarters in Fairbanks is Comdr. George E. Fischer (CEC) USN, officer-in-charge of construction and civil engineer in command. Resident officer-in-charge at Barrow is Lt. Comdr. Larry Frate (CEC) USN. Former Navy captain Bart Gillespie is project manager in charge of field operations for Arctic Contractors.

Most of the terrain in the Reserve is level and uninteresting, covered by tundra and muskeg and thousands of shallow lakes of all sizes. Beyond the lake country, however, small hills break the monotony of the flatness and gradually build up until they join the Brooks range.

Surface geology is difficult to work out, the field men report, because the rock exposures are poor even along the channels of the countless rivers and streams feeding into the Arctic Ocean. It is surprising to learn that it is far easier to traverse this terrain in winter (when everything is frozen over) than in summer when the thaw turns it into a great marsh with knee-deep mud and millions of pesky mosquitoes.

Exploring for oil out of Barrow



Above, preparing a dynamite charge for a seismograph shothole. Left, to navigate at Point Barrow, supplies are carried aboard "cat trains" consisting of tractor-drawn sleds

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is a unique project, most unlike any oil exploration in the world. It is impossible to use wheeled vehicles across the soggy tundra. All types of tractor vehicles are used instead.

United Geophysical Company is conducting the geophysical work this summer with three seismograph parties of 24 men each operating over the terrain aboard "cat-trains." These are ingenious mobile camps composed of several 16x24 foot wanigans (wooden shacks) mounted on skids. They are heated by diesel oil stoves and towed by heavy RD8 tractors.

One wanigan serves as an office, another as a galley, a third as a mess hall and several others as sleeping quarters and storage huts. Aside from the seismograph instruments and drills, most of the equipment has been specially designed or adapted for use in low temperature. Everything is winterized and drills are completely enclosed.

Contrary to popular belief, drilling shot holes is a bit easier in the Arctic than in stateside localities. Since permafrost extends for hundreds of feet below the surface, cave-ins are an impossibility. A 60-foot drill hole can be dug in 30 to 45 minutes. Shooters then fire a charge of dynamite in the hole while a recording unit picks up the shock waves. Each seismologist and his computing staff work up their information in the field and report twice a day when they are contacted by radio-telephone from the camp at Barrow.

During the long winter months the cat trains transport supplies for the summer operations and cache them. One made an 800-mile round trip with equipment for the Army's Station at Barter Island near the Canadian border in 15 days. Seismograph parties travel up to 150 miles from Barrow and move to new locations every two weeks. Each unit carries a 16-millimeter sound projector and a supply of popular films. Bush pilots visit them two or three times a week, bringing fresh supplies, mail and new movies, and furnishing a laundry service by air.

Three test wells have been drilled thus far, two at Umiat and one near Cape Simpson, besides a number of core tests which were made. The first Umiat well, which was started by the Seabees and later drilled to 6,005 feet, was subsequently abandoned and the drill rig disassembled. A shallow core hole at Umiat was drilled to 572 feet and a low viscosity oil was pumped at the rate of 24 barrels a day from sand in the permafrost zone. The latest well, Simpson No. 1 which was drilled below 7,000 feet, yielded information which was considered highly significant.

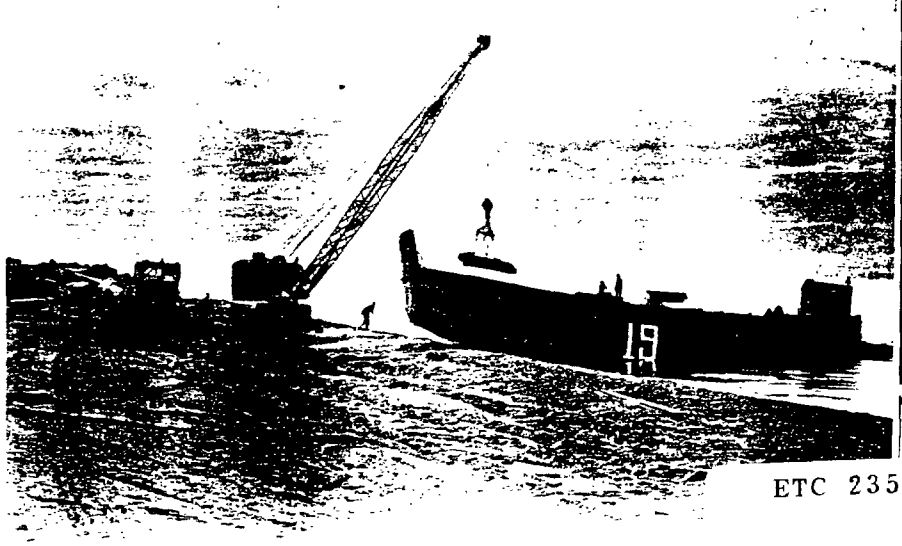
Flying out to the Simpson rig in a Norseman, one could follow the cat train tracks made last fall for the entire distance. They remain visible all winter as snow blows into them and builds them up into excellent navigational leads.

The plane landed on a tiny runway at the side of which a noisy weasel was waiting. We roared and bounced a quarter of a mile to the little isolated camp.

The 122-foot derrick there was covered with a plywood housing and specially-treated insulated canvas. Dravo oil heaters and steam coils furnished ample heat for year-round operation of the National 50 drilling rig. Without the enclosure, men could not work throughout the winter when the mercury dips as low as 55 below zero and the wind blows almost continuously from the

Editor's Note: The author wrote the accompanying story after a personal visit to the Navy's Petroleum Reserve No. 4 in northern Alaska. A former war correspondent, Mr. Sheridan has written extensively for newspapers and magazines, has contributed previous articles to the Ethyl News, and is the author of the book, "Overdue and Presumed Lost — The Story of the U. S. S. Bullhead."

Essential supplies, shown here being unloaded at Point Barrow, must be planned months in advance



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North. Simpson No. 1 was down to 6,400 feet at the time of the writer's visit.

General headquarters of the Navy project are located at Fairbanks, Alaska, and the field operating base is up at Point Barrow. The base at Point Barrow also serves as a center for special research covering amphibious operations, insect control, radio communications, construction, operation of equipment, ordnance, navigation aids and the earth's magnetism. Approximately 400 civilians are working at the field construction base at Barrow under one-year contracts. Their morale is excellent. Liquor is banned at the camps and also in the Eskimo village. The workmen receive a weekly ration of five cans of beer and five bottles of Coca Cola.

Supplies are regularly flown in from Fairbanks to Barrow by a private airline, which also delivers mail and food to the field parties.

Supplies Planned Ahead

A highlight of each year's activities is the summer expedition to Barrow of four Navy cargo ships (AKA's) and an ice breaker with supplies, fuel and heavy equipment for the Navy, Air Force, Army and Alaska Native Service. Planning begins as soon as one expedition arrives at Barrow. Procurement must be started in January so that the supplies can be assembled by mid-June at the Naval Supply Depots in Seattle or Port Hueneme, Calif.

The supply vessels from the States steam through pack ice past Bering Strait – where Alaska is separated by only 58 miles of frigid water (in summer) or ice (in winter) from Siberia. In the strait itself, Russian-owned Big Diomede Island lies a scant two miles from Alaska's Little Diomede.

The expedition must be carefully planned and its schedule rigidly adhered to, for the Arctic Ocean is generally open to navigation only six to seven weeks a year – from the end of July to early September. At no time, though, is the ice completely out of sight. And should the wind veer suddenly to the north or northeast, it could blow the ice pack back to the coast and possibly trap the ships.

The absence of berthing facilities makes it necessary for the AKA's to anchor two miles offshore and ferry in the supplies on pontoon barges and LCMs. The midnight sun is a blessing and permits unloading round-the-clock. Everyone pitches in to speed up the job. Drums of fuel, cases of food, vehicles, pipe, lumber – everything – are dumped hurriedly on the beach in one great jumble. Only after the expedition picks up anchor and moves out are the supplies hauled back from the shore, sorted and checked against the manifests, then stockpiled in the open or stored in warehouses.

Last summer more than 20,000 tons of material, including such heavy equipment as big tractors, bulldozers and drill pipe, were brought in by the ships and unloaded in the brief open period at the advance Arctic base.

Commenting on the Navy's Alaskan oil venture, Commodore Greenman recently declared, "Although progress has been somewhat slower than was expected because of climate and other conditions, there is sufficient confirming evidence at this time to warrant continuing the project." He said it is proposed to complete the geological and geophysical exploration this year and the exploratory drilling in 1949.

Commercial production, of course, has not yet been reached in the wells and core holes which have been drilled. However, several sands containing good oil shows have been penetrated, thus leading to the belief that elsewhere in the Reserve formations more permeable and porous will be found, in which case they may contain oil in commercial quantities.

Says Commodore Greenman: "A potential production of 100,000 barrels a day from a reserve of 400 to 500 million barrels would be required to make Arctic petroleum operations economically self-supporting."

Plans for the Future

If such a reserve is discovered, a pipeline would be built from Barrow south across the rugged Brooks Range to Fairbanks in interior Alaska, where the Air Force's Ladd Field and Eielson Field (for B-36s) are located. These fields require large quantities of fuel which are now being delivered at high cost from Anchorage over the rickety one-track Alaska Railroad. The highest point of the proposed pipeline would be at Anaktuvuk Pass, 2300 feet above sea level.

At present there is no estimate on existing petroleum reserves in Alaska. And the proposed pipeline and highway adjoining it are merely thoughts to the future, depending on a big IF.

The Navy, says Commodore Greenman, has no intention of competing with private petroleum firms. If any large reserves are discovered, he declared, the Navy will permit existing oil companies to develop the fields under arrangements which would assure the Navy and Air Force of a substantial fuel supply for the planes and ships that might, at any time, have to defend Alaska and, indirectly, the entire North American continent. It is to this end that the Navy is pursuing its quest for oil in the Arctic.

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FAIR DAYS AHEAD

By Joseph C. Keeley

If you know what to look for you'll find much more than bingo, pop corn, side shows, and Ferris wheels at the fair

WITHIN THE NEXT FEW WEEKS 60 million people will visit the 2,200 fairs held in the United States and Canada. Many of these people will be curiosity-seekers, attracted by the glitter of the midway, the thrill of the races or the glamor of the "big names" that appear on today's fair programs. But other millions will be farmers, for fairs have a special meaning to the people who produce the things we eat.

Fairs are as old as mankind. For centuries men have held fairs to exhibit and sell the things they make. In the Old Testament the Book of Ezekiel refers to the Fairs of Tyre, where merchants showed their jewels, animals and spices. Jerusalem had a famous fair held during the Passover season. Ninevah, Babylonia, Athens and Rome held fairs, and as civilization spread across continents fairs were established as trading centers.

In this country the farmer instead of the merchant has always predominated at fairs. And that's because of Elkanah Watson, a great friend of Benjamin Franklin. About 150 years ago Watson set out "to show Americans how to farm." His classroom was a fair. He exhibited superior livestock and produce, and farmers traded ideas on how they could get more out of the good earth.

No matter what fair you visit you'll find Elkanah Watson's idea still in operation. And a good idea it has proved itself, too, for because of it you eat better, wear better clothes and live in a better house. Fairs properly take the credit for these things. Since their inception they've fostered a spirit of competition among farmers and have

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served as a clearing house for ideas which have benefited all of us.

To the casual visitor it may seem that farmers go to a lot of fuss and bother just to win a few blue, red or yellow ribbons, and the few dollars that go with them. However, there's more to it than that. The cattle you see at a fairground are usually in a class by themselves. Some of them are worth thousands of dollars, and their value is due in large part to fairs. Two factors enter into the value of dairy cattle. One is pedigree, showing that the animal is a good producer, and the other is show type. If it has these, with blue ribbons to prove it, it's worth real money. Further, possession of such an animal enhances the value of the owner's entire herd.

Is it any wonder then that farmers are willing to invest time and money to bring better cattle to a fair? The same goes for all kinds of livestock and for fruits, vegetables and other farm products. You, as a consumer, obviously benefit from this constant striving for perfection.

Having a natural pride in his achievements, the farmer is delighted when crowds come to see his products on display. In fact, the more the merrier. That's why he's willing to let an increasing number of attractions crowd in on his fairgrounds bailiwick. As a result, at the larger fairs you're likely to find famous dance bands, Broadway entertainers, ice shows, bathing beauties and radio personalities – sharing the spotlight with Holsteins, Percherons, squash and apples.

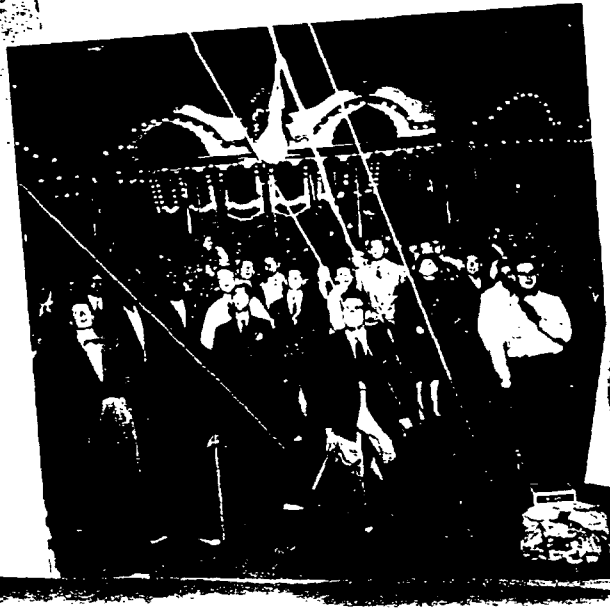
If you plan to visit a fair it's a good idea to learn something in advance about the program. Write to the fair you have in mind, asking for a schedule of events, and plan your visit accordingly. Otherwise, like a small boy at a circus, you may try to see too many things at the same time. Also, attractions change from day to day, so you'll want to be present when you can see something of special interest to you.

Three things you can count on, no matter when you visit a fair – the midway, racing and free acts. The midway, of course, needs little explanation. As in the past, it offers red-hots, hamburgers, candy floss, games of skill, games of chance, death-defying rides, the wonders of nature and girlie shows.

Racing takes different forms. You may happen upon auto races with a field made up of big-time daredevils. You may find motorcycle races on the day's schedule. There may be running races or even steeplechase. But in all likelihood you'll see that old standby of all fairs, harness racing. If so, don't think you're witnessing a yokel sport. Harness racing today is anything but small-time, and if you attend a fair where they run Grand Circuit races you'll see this fine old American sport presented in the grand manner. To give you an idea, as much as $100,000 is spent on purses at some fairs.

The "free acts" are put on between heats of races, and here again you are likely to be surprised at the caliber of the entertainment. You may find such stellar circus attractions as the high-cycling Wallendas, the Manzani troupe of aerialists and Zacchini the Human Cannonball. Since they aren't restricted by canvas their acts are often better than they are under the big top.

In addition to these traditional free acts you'll probably find other



For over 150 years the fair has been the farmers' classroom. Here 4H cattle are being judged to pick a winner

diversions at the track. There may be a baton-twirling contest, a fashion show or a demonstration by a hitch of big brewery horses.

A few years ago at a large eastern fair the people who filled the grandstand on opening day found something in front of them which caused many to rub their eyes. The management had landscaped the infield of the race track and, as part of the decorative scheme, had built two large ponds. Floating on the ponds were – but let's go back to the beginning.

The director of that fair had visited Florida the previous winter, and was much impressed by the flamingoes at Hialeah Park. Flamingoes, he decided, were just the thing for his fair, and on his return he ordered the construction of the two pools to accommodate them. Newspapers throughout the state carried stories about the ponds and the birds that would occupy them.

Unfortunately for the director, he found out too late that the long-legged birds couldn't be obtained. A flock of ducks on his farm gave him an idea. He rounded up several and gave his wife the job of dyeing them pink.

The results were interesting but not sufficiently striking to suit him. Other ducks were dyed brighter colors, and the whole flock was launched in the pools on opening day. The sight of red, blue, green and pink ducks was, to say the least, distracting to the spectators. But there was an even stranger development. Before the spectators' eyes the colors gradually faded, leaving so many plain white ducks floating around.

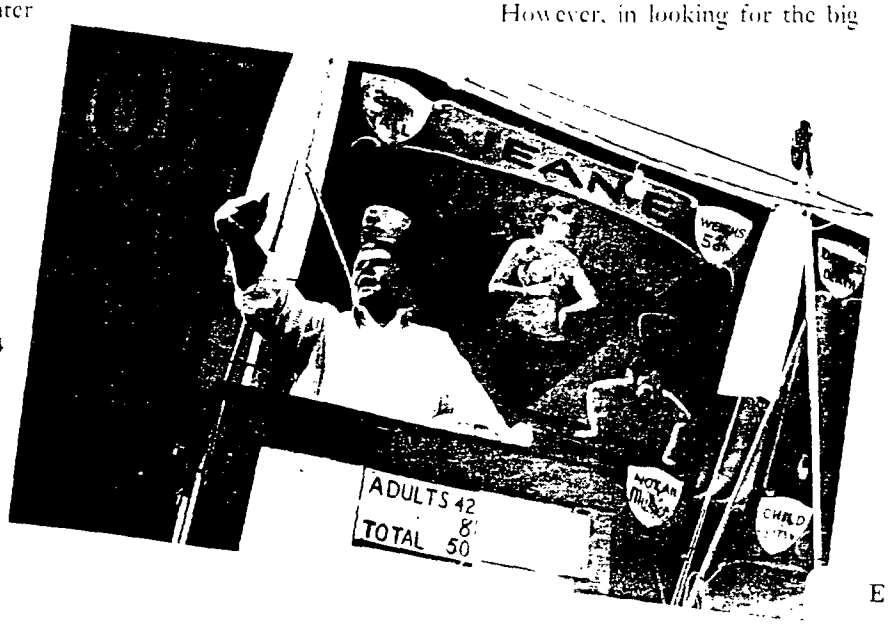
The director later told me what had caused this strange effect.

"To make the dyes color-fast would have meant boiling the ducks. What else could I do?"

To make fairs interesting to the largest possible audience, efforts are made to present features known to the trade as independent attractions.

It's a safe bet that such top performers as Bob Hope, Ingrid Bergman, Bing Crosby and Van Johnson have received at least one invitation to appear at a fair this year. And it's quite possible that President Truman, General Eisenhower, Toscanini, Winston Churchill and the cast of "Brigadoon" have also been sounded out. Whether or not they are accepting is beside the point, but no one can ever accuse fair officials of not trying. As one director put it: "If any innovations under the sun are to be had, we'll have them."

However, in looking for the big



attractions and the thrills at the fair you attend, don't overlook what is after all the most important part of all — the agricultural exhibits. Even if you can't tell a Jersey from a Brown Swiss or a Baldwin from a McIntosh, you may be surprised at how interesting these things can be. Certainly you'll find it interesting if you can be there when the judges are awarding the blue ribbons.

There's a special fascination when the judges get around to the products shown by the boys and girls of the 4-H Club and the Future Farmers of America. The achievements of these youngsters may make you ashamed of your own attempts at raising things but you'll be reassured as to the future of the country when you see what they can do.

Don't overlook another important part of any fair — the exhibits of farm machinery. The significance of these displays is indicated by the fact that at most fairs special buildings are set aside for them. Here you will find the combines, plows, cultivators, harvesters, harrows, threshers and other tools of the farmer's trade, together with the modern, efficient tractors which have made it possible for them to revolutionize farm life.

Today these big machines are more important than ever. This year farmers have planted 9 million more acres than they did last year, a greater acreage than was cultivated even during war-time. This production is urgently needed to meet foreign food requirement as well as our own. Without the three million tractors in use, and the added millions of implements that go with them, this tremendous production would be impossible.

At many fairs demonstrations of this machinery are frequently held. If you can arrange to be present at one of these you'll get a new concept of farming. You'll be interested, too, in studying the farmers present and hearing what they have to say about their machines. As they talk you'll realize how sound Elkanah Watson was in visualizing fairs as places where farmers could swap ideas.

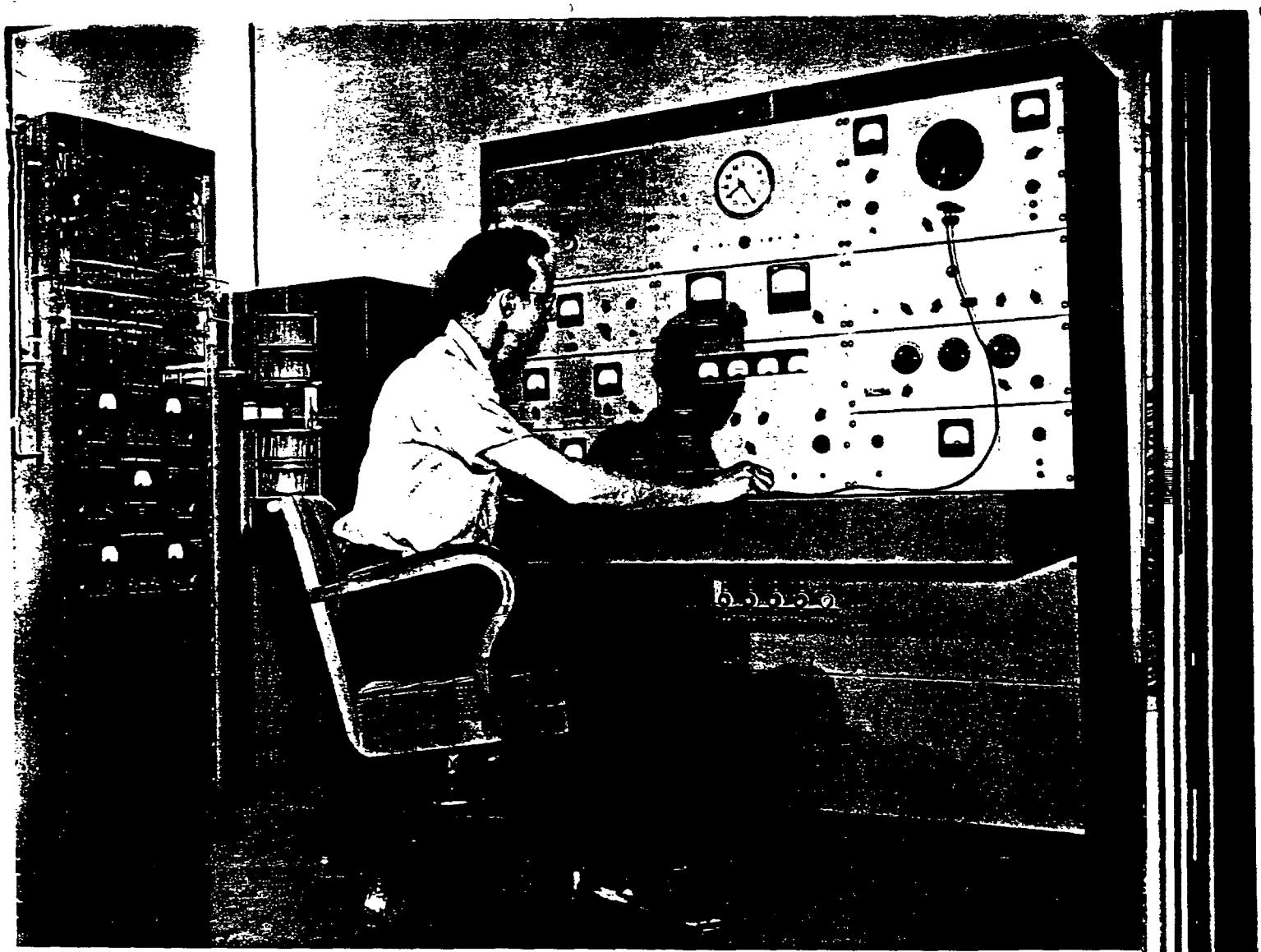
In still another building you'll find industrial exhibits, with emphasis on the products of special importance to that particular state. Usually the leading manufacturers of the state are represented, among them a good representation of oil companies. You may think that their main interest is you, the motorist. That, of course, is one reason, but their primary purpose in being at the fair is what you saw at the farm machinery exhibit. There used to be a saying that "it takes hay to make the mare go," but nowadays it takes efficient fuel, and a lot of it, to move those millions of tractors and farm implements.

That was one thing old Elkanah didn't foresee. But if the father of American fairs could get around to one of today's expositions, you'd probably find him, with a pleased smile, standing in front of an oil company exhibit or inspecting a tractor.

OUR COVER: Shown on the cover is a view of the tetraethyl lead area at Ethyl's manufacturing plant in Baton Rouge, La. Each of the buildings in the center with the twin smoke stacks is a part of a tetraethyl lead manufacturing unit. After the tetraethyl lead has been manufactured (in the larger buildings to the left), it is transferred to these wash houses where it is processed to remove impurities. From the wash houses, the tetraethyl lead is sent to the blender building (not shown) where it is blended with other ingredients to make finished "Ethyl" antiknock compound. The color photograph is by Scott D'Arazien.

OUR PICTURES: Page 3 (top), Press Association, (bottom), International News Photos Pages 4-8, Camera Associates; Pages 10 (top), 11, and 19-22, courtesy Standard Oil Co. (N.J.); Pages 12-13, courtesy The Oliver Corporation; Pages 15-17, through Martin Sheridan.

Fairs give the equipment-minded farmer a chance to see a wide variety of machinery. He can witness demonstrations, compare notes with associates, and buy to suit his needs



FOR ANALYZING SAMPLES OF GASES

Typical of the many pieces of modern research and analytical equipment in use at Ethyl Corporation laboratories is the instrument shown above. It is called a mass spectrometer, and was recently placed in operation by the Development Section at Ethyl's manufacturing plant in Baton Rouge, Louisiana. The instrument, used for investigations of mixed gas streams, is capable of analyzing a sample in 15 minutes as compared with hours by former methods. While the unit is intended primarily for analytical studies of ethyl chloride operations, it can also be used on other hydrocarbon gases as well.

The mass spectrometer analyzes a gas stream by sorting out its gas molecules according to their mass and then measuring the number of molecules of each mass. The gas sample itself is so small that it would take 150 of them to fill one cubic inch. Yet, analysis of that tiny sample involves, among other things, the use of magnets (shown to the left of the technician) which weigh one-and-a-half tons.

As a first step, the instrument splits the gas sample into its component molecules. These molecules are ionized by electron bombardment in a partial vacuum, where pressures are maintained between .00001 to .0000001 of a millimeter of mercury. (How extremely low this pressure is can be appreciated when it is realized that normal atmospheric pressure is equivalent to 760 millimeters of mercury). The partial vacuum is necessary to prevent frequent collisions between ions or between ions and neutral molecules, and also to prevent damage to the tungsten filament inside the instrument, which is the source of the bombarding electrons.

After the particles are ionized, they are accelerated to high velocity by means of high voltage up to 4000 volts. The paths of the rapidly moving ions are then curved by means of a magnetic field. Charges carried by the ions are given up to a collector at the end of the path, amplified, and measured to count the number of ions per second striking the collector. This gives an indirect measurement of the number of molecules of any given mass present in the gas mixture. Results of the analysis are recorded on a graph inside the instrument, which is then automatically photographed for record purposes.

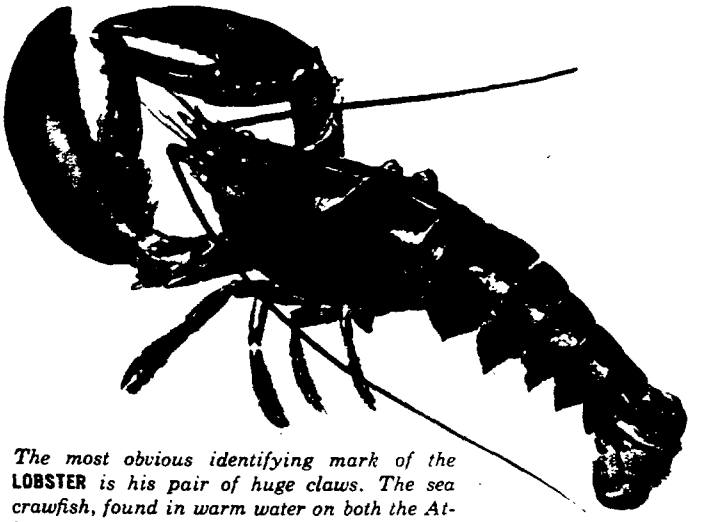
To date, there have been only about 60 Consolidated Engineering Corporation mass spectrometers installed in various laboratories throughout the country. Besides aiding in the development of new oil industry processes, they are also used in biochemistry and metabolism studies, in molecular structure studies, and in purity determinations.

ETC 23534

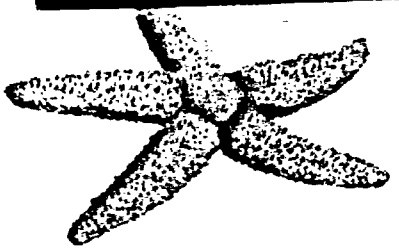
When you're at the beach

THE "TRADE-MARKS" OF NATURE*

identify what you see by the sea

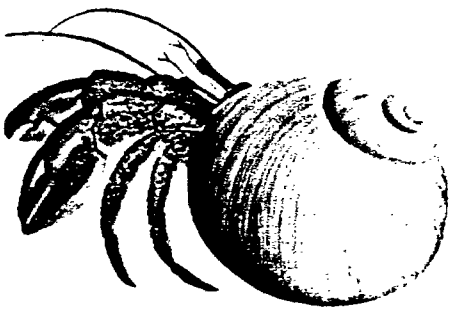


The most obvious identifying mark of the **LOBSTER** *is his pair of huge claws. The sea crawfish, found in warm water on both the Atlantic and Pacific coasts, has only small pincers.*



Nature has so clearly identified this sea animal that you couldn't possibly call it anything but a **STARFISH.**

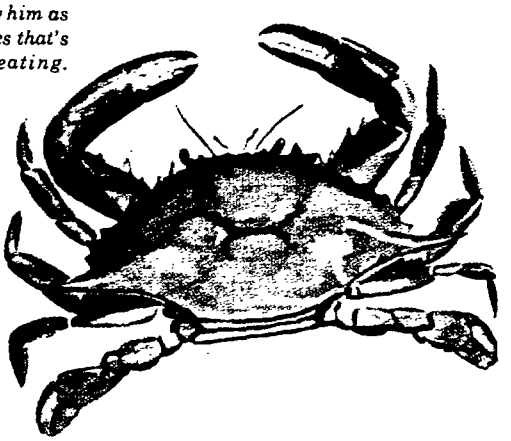
The **VOLUTA MUSICA** *is identified by the "music" that appears to be written on the shell.*



The **HERMIT CRAB** *is identified by his house—usually an empty snail shell.*

Its shell resembles the handle of an old-fashioned straight razor. No wonder it's called the **RAZOR CLAM.**

The blue claws and legs of this shellback identify him as a **BLUE CRAB***—a species that's particularly good eating.*



When you buy gasoline...

THE TRADE-MARK "ETHYL"

identifies gasoline stepped up with "Ethyl" antiknock fluid

To get the best performance from your car, use high quality gasoline improved with "Ethyl" antiknock fluid — the famous ingredient that steps up power and performance.

To show you that their best gasoline contains "Ethyl" fluid, oil companies display "Ethyl" trademarks on their gasoline pumps. "Ethyl" fluid is made by *Ethyl Corporation, Chrysler Building, New York 17, New York.*

Prepared in cooperation with specialists at American Museum of Natural History, N. Y.

ETC 23535

ETHYL NEWS

SEPTEMBER ★ 1948

ETC 23536

IN THE

ETHYL NEWS

SEPTEMBER 1948

Rudy F. Williams, formerly assistant manager of Ethyl's manufacturing operations in Deepwater, New Jersey has been appointed superintendent of terminal plants. In this capacity he will be in charge of the operations of Ethyl's terminal-storage plants, two of which — located at Edge Moor, Delaware and Wilmington, California — are now delivering shipments of "Ethyl" antiknock compound to customers in their respective territories.

Mr. Williams, a native Pennsylvanian, joined Ethyl Corporation in 1934 as a chemist in the manufacturing department at Deepwater shortly after his graduation from the University of Delaware. Five years later he was named assistant resident manager, filling this post until January 1, 1948 when the company's manufacturing operations were concentrated at the plant in Baton Rouge, Louisiana.

As superintendent of terminals, Mr. Williams will have his headquarters at the terminal plant in Edge Moor, Delaware.

Two veteran members of the manufacturing staff at Deepwater, New Jersey have been named as terminal supervisors. They are Charles D. Remsburg, who will be in charge of the plant at Edge Moor, Delaware and Clarence H. Johnson, who has been assigned to supervise operations at the Wilmington, California plant. Mr. Remsburg has been with the company for 17 years and Mr. Johnson has had 22 years of service with Ethyl.

NEW DELIVERY SERVICES FOR CUSTOMERS 3

Ethyl's new field terminals, which were placed in operation earlier this year, have completely modern facilities. They form part of Ethyl's over-all effort to heighten its service to customer companies.

PONY POWER 6

Small gasoline power plants are responsible for many lightweight, portable tools that save countless hours of toil. The result is greater production, better workmanship, and higher efficiency.

ETHYL'S FIRST BIG CUSTOMER 10

This month marks an important anniversary for "Ethyl" gasoline. For it was just 25 years ago — in September 1923 — that Standard Oil Company (Indiana) first put "Ethyl" gasoline on sale at its service stations and paved the way for its eventual success.

A NEW PITCH FOR SOUND 12

Supersound has given scientists a brand new field for extensive research. It has been used to make photographic film better, mix oil and water, salvage gold and silver from smoke, and even increase the yield of corn seeds.

GASOLINE QUALITY ABROAD 15

Improvement in gasoline quality in foreign countries must wait on the solution of many problems involved in postwar reconstruction.

THE LAW AT THE CROSSROADS 18

Their dress and their setting may differ, but traffic cops the world over have the same job: keeping traffic moving at intersections. Here are candid pictures of some of them in action.

PUSH-BUTTON SALES 20

Once upon a time, vending machines dispensed chewing gum and little else. But today, they have opened up a whole new era of merchandising, and sell everything from hot dogs to ice cubes.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N.Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Richard M. Page, secretary

ETC 23537

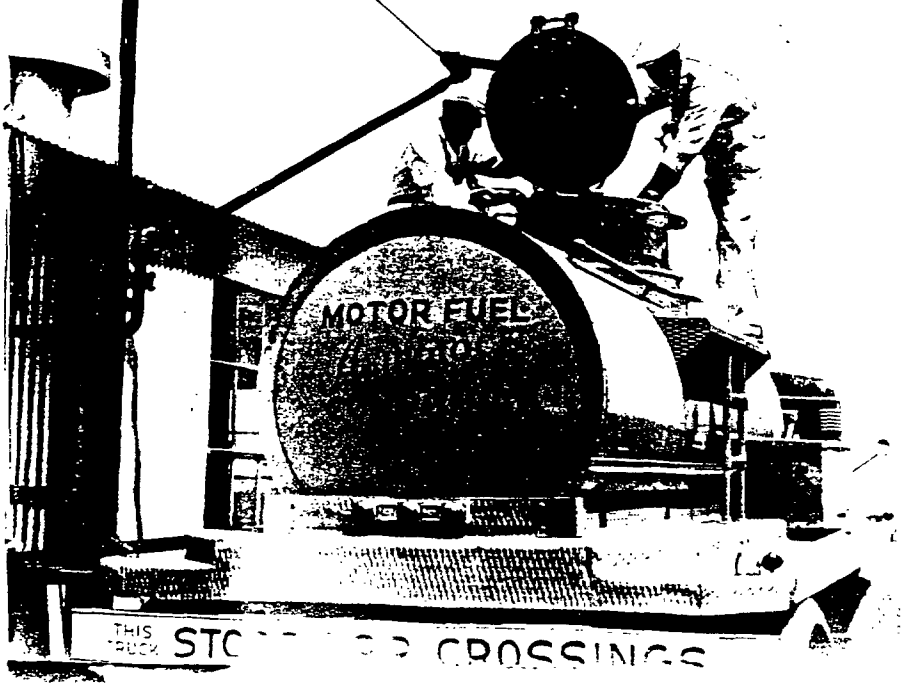
Ethyl's new field terminal at Wilmington, California

New Delivery Services for Customers

Ethyl's new field terminals afford greater flexibility in meeting customer requirements

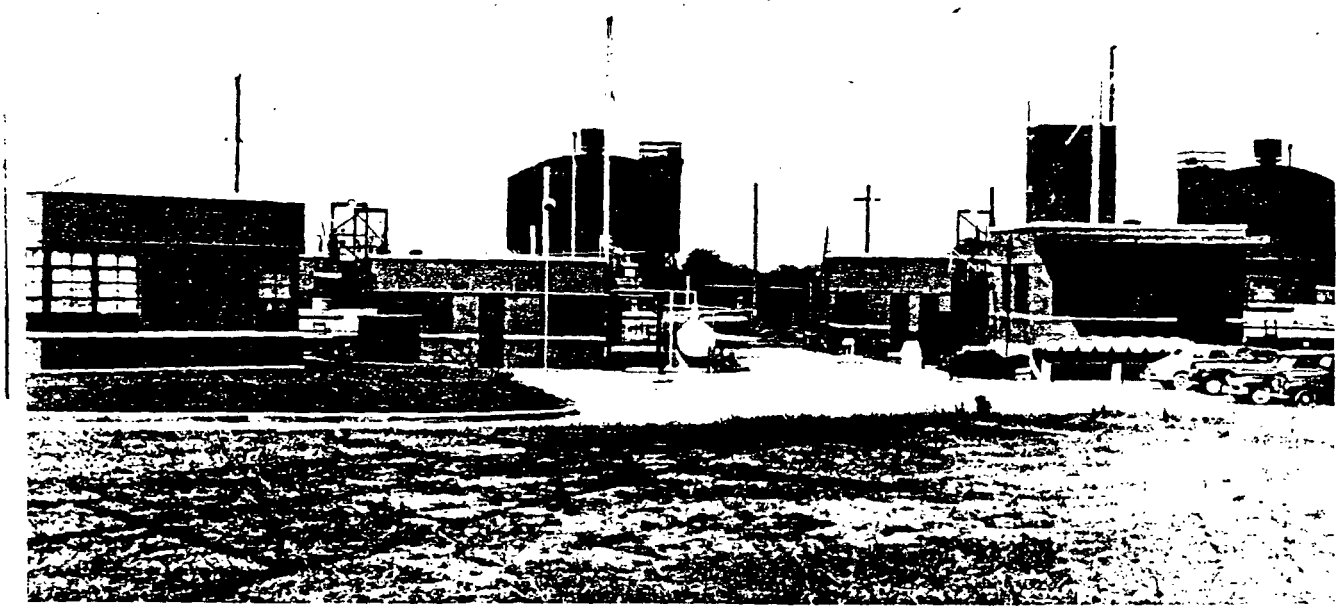
ONE AFTERNOON earlier this year, a tank trunk pulled into the refinery of the McCallen Refining Co. at Huntington Beach, Cal., to make a delivery. It was driven over to the blender building at the refinery and, after the swing line was made fast, it began discharging its contents. A small group of people looked on as the unloading operation proceeded.

To the refinery personnel, the delivery was doubtless an ordinary occurrence. But to the Ethyl field men who were present, the occasion was a very special event. It marked the completion of the first tank truck



The first tank truck shipment from Ethyl's West Coast field terminal, as it was unloaded at the McCallen Refining Co.

ETC 23538



Ethyl's new field terminal at Edge Moor, Del., like its counterpart at Wilmington, Cal., is a self-contained unit with complete loading and unloading facilities

shipment of "Ethyl" antiknock compound from Ethyl Corporation's new storage and distribution terminal at Wilmington, Cal.

The new field terminal is part of a broad program, undertaken last year, in which Ethyl Corporation is increasing its distribution and storage facilities in an effort to heighten its service to customer companies. Besides the West Coast terminal, a second new terminal has been completed and placed in operation at Edge Moor, Del. In addition, a new drumming plant, completed late last year, now handles drum shipments of "Ethyl" antiknock compound from Ethyl's manufacturing plant in Baton Rouge, La.

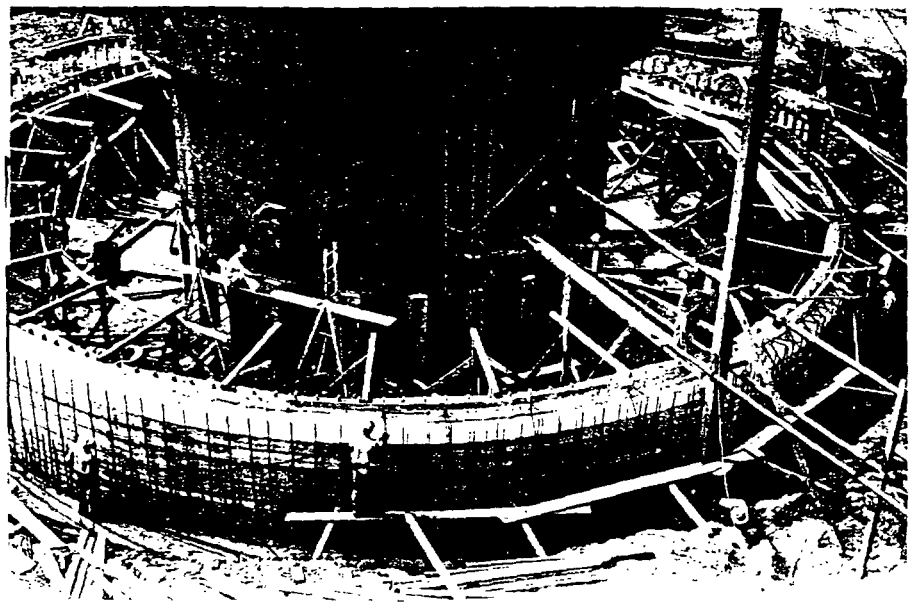
Each of the new field installations is a self-contained unit, with complete facilities for receiving and dispatching shipments of antiknock fluid, for storing large supplies, and for handling deliveries to refineries in its respective area. The terminals are, in effect, second sources of supply for "Ethyl" antiknock compound. While they are primarily designed as tank truck delivery points in their areas, they can also make deliveries in drum or tank car quantities in the event of an emergency.

Except for a few differences related to local conditions, the two terminals are substantially identical in equipment.

At each terminal there is a small but attractive office building, several bulk storage tanks, a drum and dye warehouse, facilities for loading and unloading tank cars and for loading tank trucks, and a building housing pumps, compressors and heating equipment to serve the entire terminal. Also, there are, of course, rail sidings and paved roadways.

Each of the bulk storage tanks is 30 feet in diameter by 27 feet high and will hold 1,700,000 pounds of "Ethyl" fluid.

Transfer of fluid from bulk tanks to tank cars or in the reverse direction takes place at the 8,500 gallon weigh-tank building. The weigh-tank is filled with "Ethyl" antiknock



Each bulk storage tank is 30 feet wide, 27 feet high, and holds 1.7 million pounds of "Ethyl" antiknock compound

Harold A. Beatty

O. Edward Kurt

George W. Beste

THREE RESEARCH AND DEVELOPMENT STAFF APPOINTMENTS ANNOUNCED

Three members of Ethyl's research and development staffs have been named to new posts in a move that involves the creation of a new position in the Ethyl Corporation Research Laboratories in Detroit.

Dr. Harold A. Beatty has been named to the newly created position of Assistant Director of Research at the Ethyl Laboratories. Dr. O. E. Kurt succeeds Dr. Beatty as technical assistant to the General Manager of the Ethyl Laboratories, and Dr. George W. Beste assumes Dr. Kurt's former duties as Manager of the Development Section in Ethyl's manufacturing plant at Baton Rouge, La.

In his new capacity, Dr. Beatty will assist John B. Macauley, Director of Research, in the over-all supervision of research and technical service activities. For the past year, Dr. Beatty has acted as technical assistant to the General Manager of the Research Laboratories, Earl Bartholomew. Prior to that, he served as Assistant Director of Chemical Research for a period of nine years. Dr. Beatty has spent his entire business career with Ethyl Corporation, having joined the company in 1931 upon receiving his doctor's degree from Princeton University.

Dr. Kurt, who has been named to Dr. Beatty's former position, has been with Ethyl since 1936. Like Dr. Beatty, Dr. Kurt began his career with Ethyl as a research chemist in the Research Laboratories. Since 1941, however, he has served as Manager of the Development Section in the Baton Rouge plant until his present transfer. Upon receiving his doctor's degree from the University of Illinois in 1929, Dr. Kurt was associated with the U. S. Rubber Company for seven years as a research chemist, before joining Ethyl Corporation.

Dr. Beste, the new Manager of the Development Section, has been associated with Ethyl Corporation since 1940, and prior to his present promotion was a supervisor in the Development Section. Several years ago, he was a member of the Oil and Chemical Division of the United States Strategic Bombing Survey that studied oil and chemical plant installations in Japan, and he directed the preparation of the final report entitled "Chemicals in Japan's War." He received his doctor's degree from Columbia University.

compound, piped to it from the bulk storage tanks, and the compound is then weighed into an empty tank car on the adjacent siding. Track scale weights on the car when empty and again when loaded provide a second check on the quantity shipped. When loaded tank cars are received for transfer to storage, the operation is, of course, reversed.

Loading of tank trucks is accomplished at a one-story building which houses a 15,000 gallon weigh-tank. The truck is "spotted" outside the building on a platform scale and a double check is thus provided on the weight of fluid shipped since weights are obtained both from the weigh-tank scale and from the platform scale.

As has been seen, each shipment – whether in tank car or tank truck quantities – is weighed twice before leaving the terminal to insure complete accuracy of its weight.

The warehouse, which is served both by a rail siding and by roadway, provides storage for loaded drums of "Ethyl" fluid and for dye. When a customer requires delivery of either drums or dye more rapidly than would be possible by direct shipment from Baton Rouge, the material is trucked to him from the terminal warehouse.

The terminals have been designed to provide the best in safe and efficient operation and prompt service to customers. An adequate fleet of Ethyl-owned trailer tank trucks operates in conjunction with each terminal.

It is 15 years since the first tank truck shipment of "Ethyl" fluid was dispatched, and it is 18 years since the first shipment by tank car was made. Now, through its new field terminals, Ethyl will achieve a greater flexibility of operations than ever before in meeting the requirements of its customer companies.

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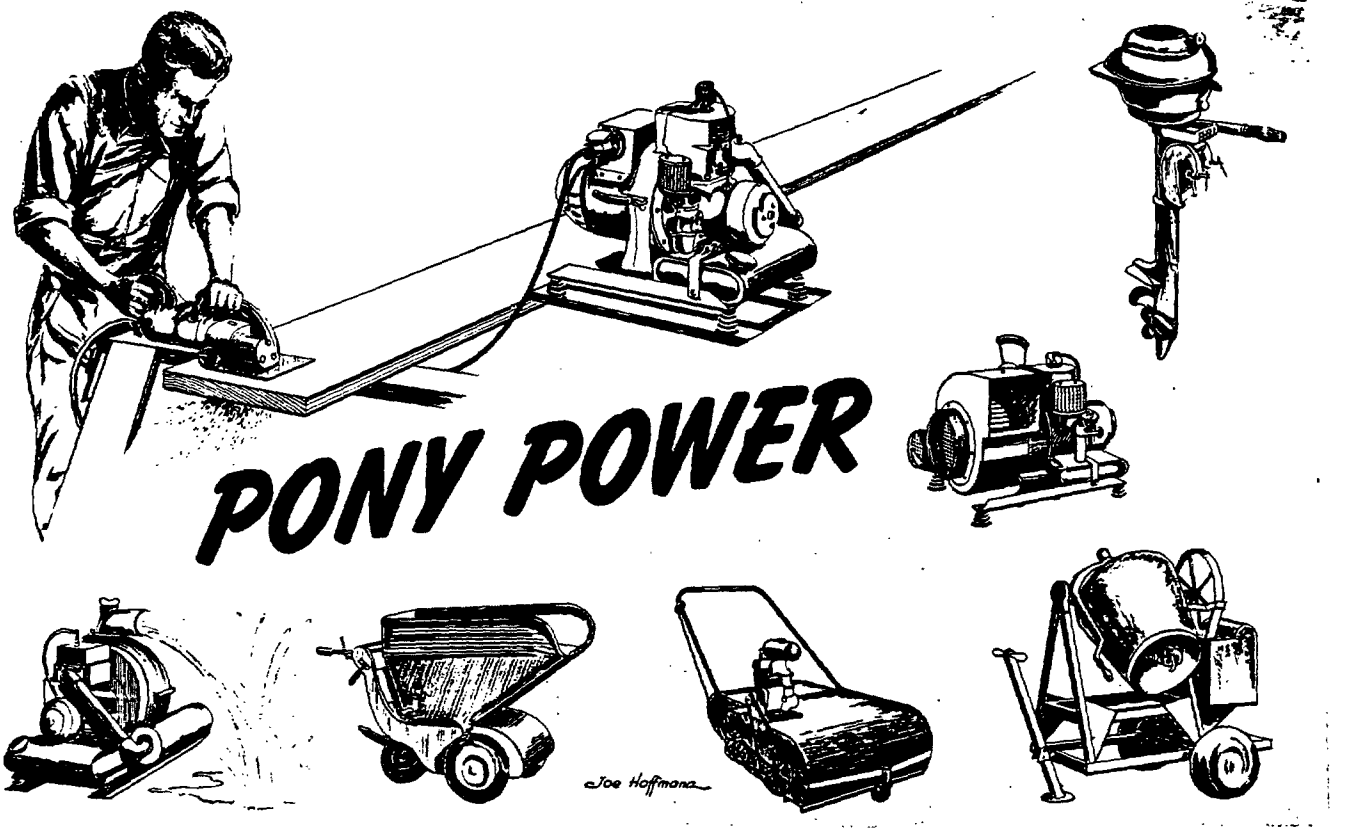


Pint-sized power plants are making many tasks much easier by supplying h.p. where it's needed

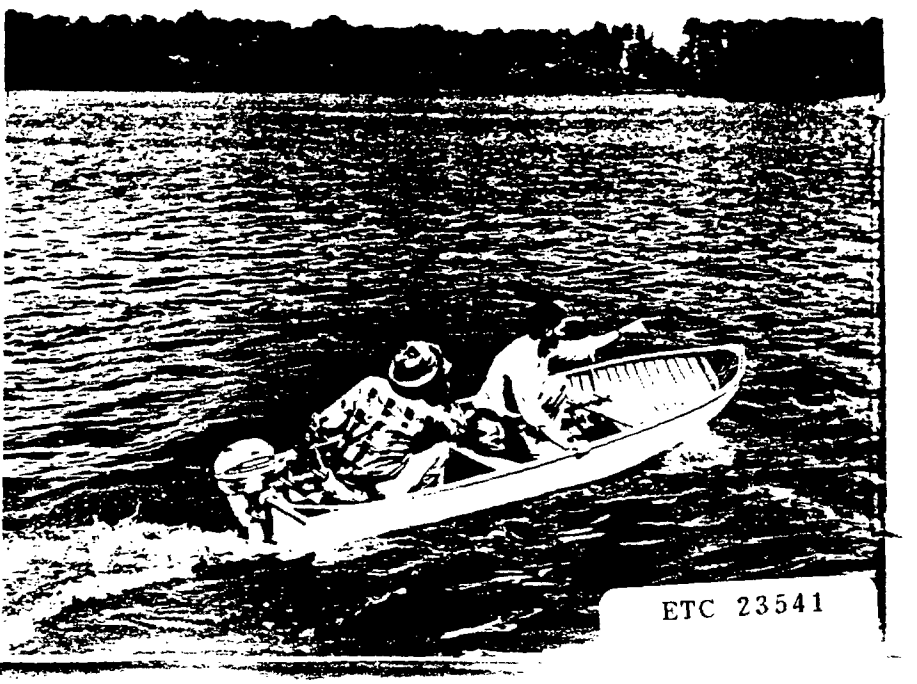
IF WEBSTER had gasoline in mind when he defined *ubiquitous* as "being everywhere at the same time," he sure knew his hydrocarbons.

When it comes to miles traveled, gasoline assuredly does get around. American automobiles use 21 billion gallons of it in 300 billion miles of pleasure and business driving each year. An additional 6 billion gallons gurgle merrily in the fuel tanks of buses and trucks as the nation's fleet vehicles tour the countryside at an annual rate of 70 billion miles. In the airplane and the farm tractor, gasoline even gets a bird's-eye and a worm's-eye view of things.

But what the average person doesn't stop to realize is that gasoline gets around in another sense. Aside from its use as the fuel that propels the family car and the commuter bus, gasoline figures in the life of every American in perhaps a dozen different ways each day.

It helps cut the wood that becomes the newsprint for our daily newspaper. It operates the cement mixer and other equipment that make possible homes and highways. It makes light work of mowing lawns. It keeps vegetables and produce fresh en route to market. And it even aids in fighting fires that threaten homes and places of business. The list goes on and on through countless ways in which gasoline makes our everyday work quicker and easier. From spraying an orchard to removing snow from the front sidewalk, gasoline does the job.

Sportsmen long ago learned to save their muscles for casting and to use an outboard motor to take them around



Left, reading clockwise, a pony power plant generates electricity for a power saw, operates an outboard motor, a blower, lightweight cement mixer, floor and yard sweeper, wheelbarrow, and a hydraulic pump

And the medium through which it does the job is the multi-purpose small commercial engine that serves as a jack-of-all-trades on the farm, in industry, about the home, in the field of sports, and among commercial fishermen and smallboat rivermen. These mighty mites — light, compact, durable, and economical — can do in minutes jobs and chores that take men hours to accomplish. Nobody knows just how many different uses the small engines have, but you'd run out of breath before you got even halfway through the list.

Powered by ubiquitous gasoline, these engines enjoy great versatility. They supply direct power, as on motor scooters and motor bikes. They can be used to power generators and electric power boosters, such as for supplying current to a summer cottage. They can be used to power pumps for, say, removing water from a ship's bilge. And they can be used to power blowers, for ventilation and cooling.

Something like 2½ million of the little workhorses were turned out by the fast-growing commercial engine industry in 1947. By far, the most of these were four cycle industrial engines. Next came the two cycle outboard motors, and finally, there were the two cycle industrial engines. Generally speaking, small commercial engines range from ½ to approximately 12 hp. Some "small" engines in the outboard marine group, however, boast as much as 33 hp.

Despite the mass production efforts of the industry's more than 20 major producers, demand for the engines still outstrips supply. Like other industries, the small engine manufacturers are plagued by the shortage of steel and other vital materials. On the brighter side, the industry has not been concerned with reconversion, as such, since it made the same product in war as it does in peace. It was, in fact, the armed services' wide usage of the small commercial engine that created much of the postwar demand for the little power plants.

During the war, thousands of GIs observed the small engine in action for the first time. They saw the many and varied uses to which the Army and Navy put these units, and now they are applying them to corresponding jobs in civilian life.

Anyone with a large lawn can relieve his muscles at mowing time by using a mower powered with a small gasoline engine

And, exercising good old American ingenuity, they are finding still more uses for the little motors all the time.

No one knows exactly how much gasoline the millions of small engines now in use consume, but some estimates run into the hundreds of millions of gallons annually. Of the total gallonage, whatever it may be, approximately half is required to operate outboard motors and the small commercial engines used by industry and householders. The other half runs the small engines on farms and those employed for general utility work.

Fuel tank capacity of the small engines ranges from one quart to several gallons. In the two cycle industrial engine, a gasoline-oil mixture in the usual ratio of one part of oil to 16 parts of gasoline constitutes the fuel. Modern engines operate for about three hours on a gallon of this mixture. Per gallon operation time for the four cycle engine, which uses gasoline alone, is slightly higher. Boats equipped with outboard motors get 8 to 12 miles to the gallon of gasoline, depending on engine and boat size.

Sportsmen and fishermen don't have to be told about the outboards. Light boats, powered by gasoline instead of muscle, have been standard equipment for the nation's hunters and fishers almost ever since Ole Evinrude patented the first practical outboard motor 39 years ago. Commerical fishermen, too, have come to rely on the "putt-putt" for relief from the former back-breaking job of rowing their heavy, net-tending smallboats.

The small industrial engine also has long been a friend and servant of the farmer.

He employs it as a direct power or electrical generating unit for such operations as bale loading, churning, corn shelling, cream separating, fruit grading, hoisting, windmill boosting, and a host of others. One of the newer jobs which this "farmhand" is being called upon to perform more and more is that of drying corn and other grains before the farmer ships them to market. The lower the moisture content of corn, the better the keeping quality. For that reason, farmers in growing

A compact gasoline engine drives this hammer. Completely self-contained, it can be carried in the trunk compartment of a car and set up for use in a matter of seconds. It needs no air compressor, air hose, battery, or springs

numbers are using the gasoline engine to power fans that dry corn before it is sent to market.

Although farmers and sports enthusiasts long have known and appreciated the little power plants, the widespread usage of commercial engines by industry and in the home is a comparatively recent development.

Among the businesses which are finding the gasoline-powered units a time and labor saver is the lumbering industry. The small engines are used to operate chain saws which can rip through a timber tree in less than a minute. And once the tree is felled, a portable unit enables workmen to saw it into sections in a fraction of the time it would take by hand. One company now manufactures a one-man chain saw that can easily be carried up into a tree, with the gasoline engine power unit remaining on the ground. The lumber industry, as well as public utility companies, tree surgeons, and property owners, find this light saw a work saver for limbing, topping, aerial cutting and flush cutting operations.

Credit the small gasoline engine, too, with a major role in helping to overcome the nation-wide shortage of houses and other dwellings. Portable gasoline engine-driven generator sets are being widely used by builders and contractors to operate such electric construction tools as hand saws, drills, planers, and concrete vibrators. One of the big advantages of the carryable generating unit is that it permits the use of electric tools wherever and whenever they are required without the necessity of waiting for electric power lines to be stretched out over the construction job. Further, the small gasoline engines are employed to turn heating blowers which make it possible for workmen to stay on the job even during extremely cold weather.

Assuring that many of the foods we eat get to market in fresh and attractive condition is one of the most important of all assignments for the small engine. Inside refrigerated trucks — bearing ice cream, frozen foods, produce, milk, dairy products, and other perishable foods — it is constantly at work to prevent those foodstuffs from spoiling. The small engines power the refrigeration plant of many refrigerated vehicles — and in such a way that climatic changes en route can't affect the cargo.

A load of Florida strawberries, for instance, is subjected to a fairly wide range of climates and temperatures on its way to Eastern markets. If the interior of the truck body should

Pictured right is a modern service station of the Seaside Oil Co., of California, which this year is celebrating its fiftieth anniversary. The company came into being not only in an historic year, 1898, but also in an historic spot: Summerland, California. For it was here that the first oil wells in the world were drilled under water. The Summerland field was discovered in 1895, when Smith Cole, drilling for water in the newly established community, struck oil.

Seaside Oil was launched as a pumping company to pump wells in the Summerland field, taking its name from its seashore operations. But the company soon entered the ranks of the producers, and in 1906 acquired a refinery at Summerland, where it produced heavy distillates and asphalt. Fifteen years later, the Summerland refinery was rebuilt to produce gasoline in response to the growing demand for it. Then, in 1923, Seaside built a second refinery at Ventura, to manufacture a full range of refined products, and also erected its first service stations in Santa Barbara and Ventura, California. From there the company has grown to its present position, with a general marketing area in southern California.

become too hot or too cold, a $4,000 load of berries could spoil within a matter of hours.

That's where the little gasoline engine comes in. It provides reliable power for maintaining a steady temperature inside a refrigerated truck, regardless of the atmospheric temperature. If the interior temperature goes above a desired level, the engine operates the truck's refrigerating plant. But if the temperature in the body of the truck falls below the set temperature, the mechanism automatically switches over and the small engine operates a heating unit. Come heat or cold, the little engine helps deliver the goods.

Helps Fight Fires

It might seem paradoxical that an inflammable product like gasoline enjoys extensive success in helping to put out fires. Yet, its use in the small engine actually speeds fire fighting three ways. Fire departments employ the engines to power blowers which blow fresh air into and smoke out of a burning structure; to power generators which create electrical current for night operations; and to power pumps which remove the tons of water that are poured into a building on fire.

In lifting airplanes into the sky and keeping them there, gasoline does double duty. Many air travelers have seen a jeep or handcart dash out to a plane about to "crank" up. In this vehicle are a small gasoline engine-driven generator and several ordinary batteries, all connected together electrically. A cable from this arrangement is plugged into the airplane's electrical system so that the batteries, charged by the small engine through the generator, can give the aircraft's mighty engines an extra "shot" as they start to turn over. Without this complementary power boost, the batteries of most heavy airplanes, particularly the new jet aircraft, would soon prove insufficient to turn over the plane's driving engines.

In many homes and vacation cottages, the small engine has taken its place as an indispensable means of providing living comforts and easing the burden of domestic chores. Power lawn mowers and grass trimmers take virtually all the work out of this wearisome job, and plows equipped with small engines do the same in home snow removal. The engines also can operate washing machines, or pump a water supply into the house. Still other uses for small gasoline engines about homes are for powering garden tractors and for generating electricity for charging fences against intruders. Many householders, too, are familiar with the use of the small engine as a means of moving a belt that conveys coal to the cellar bin from the driveway or other unloading spot.

Put to Specialized Uses

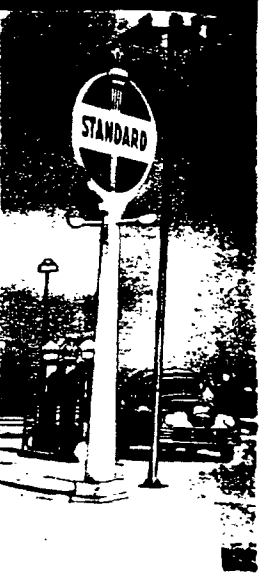
Through the years, some of the small commercial engines have been developed to a high degree of efficiency and workmanship for specialized purposes. An example is a laboratory engine which many research departments use in research on the relative cleanliness of fuel and lubricating oil combinations. These special units cost as much as $600, whereas the more common multipurpose engines may be purchased in department and implement stores for $40 and up, depending on their horsepower and other features.

Like its big brother, the automotive engine, the small engine is bound to attain new design and construction features that will enable it to render even greater and cheaper performance than it already does. Meanwhile, the partnership of gasoline and the small engine remains a formidable one. Within their means, they can perform any job anywhere anytime.

GOLDEN ANNIVERSARY FOR SEASIDE OIL

ETC 23544

Ethyl's First Big Customer



It was a big day in the career of "Ethyl" gasoline when Standard of Indiana began marketing it 25 years ago this month

TWENTY-FIVE YEARS ago this month, a group of men met in the offices of the Standard Oil Co. (Indiana) for the purpose of signing a contract. To the Standard of Indiana executives, the contract meant that their company would market a gasoline improved with an antiknock compound. But to the marketer of that compound, then the General Motors Chemical Co., the contract signified a great deal more. It had gained a new and important customer for its product.

To understand the significance of the event, it must be considered against the backdrop of the times.

"Ethyl" antiknock compound had been publicly introduced on a small scale less than eight months before. Its first customer was the Refiners Oil Co., of Dayton, Ohio, which by mid-summer of 1923 had put "Ethyl" gasoline on sale in all of its 75 service stations. But now, with the Standard of Indiana agreement, "Ethyl" gasoline would be marketed through more than 2,100 stations and would become known throughout the ten states comprising its marketing territory. That was to be a key factor in "Ethyl" gasoline's eventual success.

Representing the Indiana Company, at the signing of the contract, were Allan Jackson and F. O. Clements, then respectively vice president in charge of sales and assistant secretary of the company. Charles F. Kettering affixed his signature as president of the General Motors Chemical Co., the predecessor to Ethyl Corporation. Dr. Robert E. Wilson, then assistant director of research for the Indiana Company and now its chairman of the board, witnessed the document.

To Dr. Wilson and Mr. Kettering, the contract brought the greatest personal satisfaction. Both had followed intimately the long and costly search for a successful antiknock agent; both knew of the trials and disappointments with thousands of different compounds; both were convinced of the superiority of the antiknock properties of tetraethyl lead, which Tom Midgley had finally discovered. "Boss Ket" had directed Midgley's five-year search for something that would overcome the inherent tendency of gasoline to knock. Bob Wilson received first-hand reports from Midgley during the course of the latter's research work — and made a suggestion which ultimately led Midgley to tetraethyl lead.

It was Dr. Wilson who first brought "Ethyl" antiknock compound to the attention of the Indiana Company, and arranged for Midgley to talk with Dr. William M. Burton, then president of the company. Midgley laid his case before Dr. Burton, demonstrated the merits of his discovery, but said he doubted that Standard would be willing to go to the expense, and risk the possible loss of prestige, if "Ethyl" gasoline proved to be a failure. Dr. Burton assured him that Standard was not afraid to pioneer anything if it was technically sound, and immediately assigned Dr. Wilson to determine the soundness of "Ethyl" gasoline. Dr. Wilson spent several weeks, in the laboratory and

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This modern Standard of Indiana station offers a striking contrast to the Richmond, Indiana, station at left, where the company first placed "Ethyl" gasoline on sale

on the road, exploring all phases of the matter.

Meanwhile, Col. R. W. Stewart, who was then Standard's board chairman, requested Mr. Jackson to look into the sales possibilities of the improved fuel. Road demonstrations at Dayton by Mr. Midgley, interviews with motorists who were driving on "Ethyl" gasoline, and discussions with officials of Refiners Oil Co. convinced Mr. Jackson that here was something in which his company should participate.

On the basis of the favorable reports by Dr. Wilson and Mr. Jackson, the Indiana management suggested that Dr. Wilson and Mr. Midgley work out details of a contract. This they did while en route together to Atlantic City to attend an ASTM meeting. The contract was signed a few months later.

Standard of Indiana's management foresaw at that time the promise that "Ethyl" fluid held for automotive progress. As the language of the contract itself declared, the use of the antiknock compound would "make it possible to use higher compression pressures in (internal combustion) engines without producing the detonation commonly known as 'knocking,' and with the further advantage of increasing the power output of said engines with attendant economy in fuel consumption."

Once the formalities were over, Standard lost little time in getting "Ethyl" gasoline on the market. The date of the first sale is not recorded, but it is known that the first Indiana Company service station to dispense the fuel was the one at 11th and Main Streets in Richmond, Indiana. The station is still there, although its face has since been lifted.

Glenn Whitesell, a 33-year veteran with Standard of Indiana and present manager of its bulk station in Richmond, remembers the event well. His brother, Chester, and a man named Harry Bullerdick were the service station attendants. Mr. Midgley and a couple of his associates were also present. However, there was no ceremony at Richmond as Standard's first "Ethyl" gasoline customer drove up. But it was a big milestone in the growth of "Ethyl" gasoline.

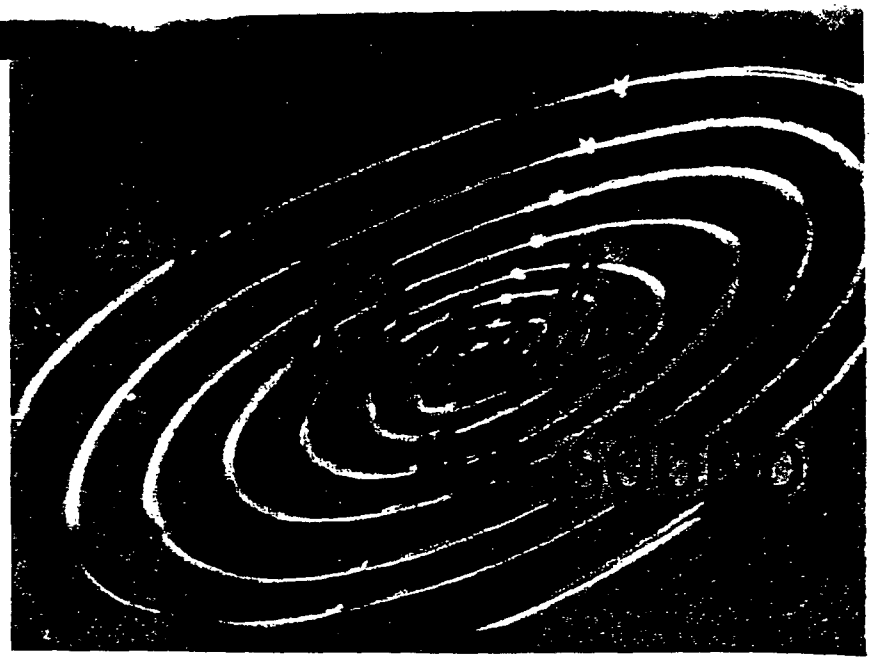
Another long-time Standard of Indiana representative who retains vivid memories of the early marketing of "Ethyl" gasoline is C. C. Inglefield, present manager of Standard's branch in South Bend. Back in 1923, he was service station superintendent in the company's Chicago division. Says Mr. Inglefield:

"Mr. Jackson gave me an assignment that proved to be very fascinating and interesting, although at the time it seemed very obscure. He told me he wanted me to take over the promotion and distribution of 'Ethyl' gasoline. The first thing I tried to do was to get some 'Ethyl' antiknock compound, but there seemed to be a limited supply. I finally got on the train and went down to Dayton to see if I could get shipments of the product that I was supposed to help sell and distribute.

"The problems of putting the product on the market were numerous," Mr. Inglefield remembers, "and we went through all the growing pains that one experiences when marketing a new product." Chief among the obstacles was the fact that the "Ethyl" antiknock compound blending plant which the General Motors Chemical Company had just established in Dayton had a very limited capacity. The plant's daily output probably seemed considerable to those in charge, but Ethyl Corporation's modern manufacturing plant in Baton Rouge today turns out the same amount of "Ethyl" fluid in a matter of seconds. Eventually, more satisfactory production arrangements were made, and by 1926 "Ethyl" gasoline could be purchased at any of Standard of Indiana's by then 4,200 owned or leased stations in ten Midwestern and Western states. Eighteen other oil companies were also distributing "Ethyl" gasoline by then in 14 additional states.

It is with a deep sense of respect and gratitude that the Ethyl organization looks back today upon the pioneering role of Standard Oil Company of Indiana in the sale of "Ethyl" gasoline in the Midwest.

ETC 23546



Supersound has a promising future. It has already been used to age whiskey, stop fog and smoke, and kill insects

TWO WHITE-COATED scientists leaned intently over what appeared to be a tub filled with water. One of the men, a serious, thin-faced man, slowly lowered his finger into the bottom of the tub, toward a small metal plate. Slowly his finger dipped toward the plate in the center of the tub — and just for an instant his finger touched it. With a sudden jerk he withdrew his hand as he let out a cry of pain. Later examination indicated that the scientist had burned his finger.

Next the scientists placed a glass test tube into the deadly tub and it was shattered into a hundred pieces. A live fish was placed in water in the bottom of the tank and it was killed instantly; a frog was first paralyzed and then killed; yet the water still remained cool. Later examination revealed that the fish and frog had literally been torn apart by the vibrations in the tank — vibrations caused by supersound — vibrations which have been known to burn a hole in steel.

Sound waves in the air are like the waves created when a pebble is thrown into water. The pitch of the waves depends on the number of waves formed per second. Fewer waves mean lower frequency and pitch. As the waves per second increase so does the frequency and the pitch. The lowest note on your piano vibrates at 27 waves a second. The highest note zings into your ear at 3,500 waves a second.

Sound frequencies range from a mere fraction of a wave per second up to a theoretical infinity. The human ear, however, can hear only a small proportion of the sound spectrum. The lowest note on a large organ vibrating at 16 waves per second is about as low as you can go, and 18,000 waves per second is about as high. When we go above that we are dealing with ultrasonic sound or supersound. Our hearing ability exceeds that of a pigeon but is less than that of a bat which can pick up 100,000 vibrations a second.

Although experiments with fish and frogs are about 10 years old the progress made by supersound since has been amazing. Dairies have used supersound to homogenize milk. The sound waves shake up the milk so violently that the fat globules blend themselves with the water globules in such a manner that they are not easily separated. Thus you get homogenization.

Sound scientists have discovered that by varying the pitch of supersonic sound, they can kill one kind of germ and leave other germs alive. This operation is valuable because sometimes microbes are used in the manufacture of certain compounds. Kill these "good" microbes and you can't manufacture the compounds.

Experiments on animals indicate that at some future time supersound may lead to a new kind of knifeless surgery

Take, for example, the fermentation process in which yeast cells turn sugar into alcohol. Kill the yeast cell and you get no alcohol.

Long a problem with chemists has been the control of colloids, such as the thick emulsions of oil and water sometimes used in compounding medicines. These colloidal emulsions consist of myriads of tiny drops of oil distributed throughout a quantity of water. In other cases, the separate, distributed droplets are watery and the medium in which they ride is oily. Salad dressing, as an example, can be made either of these ways.

A Good Mixer

Before supersound the only known method of producing colloids was to grind or beat the materials together, splitting both the mixed substances into thousands of tiny drops that seemed to make a perfect mixture. But supersonic sound can now do the mixing. These powerful waves produce an effective mechanical action that mixes both liquids so thoroughly they will never separate.

Recently, DDT, the wonder insect killer, could only be used with an oil which is harmful to dogs and other animals. There was no other solvent until Dr. Raymond Wallace at the University of Connecticut succeeded in mixing DDT and water with supersound. Dr. Wallace and his associate, Dr. R. J. Bushnell, have also used supersound on living things. They produced mutations in fruit flies. And they also increased the yield of some corn seeds by 10 to 15 per cent.

Before the war the Germans used supersound to produce a smoother and better photographic film. By treating the photographic emulsion with supersound they were able to produce a film with less grain for use in minicameras that take pictures which are usually enlarged.

In the battle against smoke over our cities, supersound has been playing an important part. Although smoke looks for all the world like a gas, it is really nothing more than a large mass of small solid particles of soot or ash floating in the air. Tests have shown as many as a million of these tiny particles in one cubic foot. If nothing happened to these particles, a cloud of smoke would last forever. Nature prevents this by having individual smoke particles join up with each other to make twins, triplets, or larger groups. This process is called flocculation, and it's responsible for the fact that city smoke eventually disappears.

Supersound technicians have learned this flocculation process can be speeded up by shooting ultrasound into smoke. This makes the smoke particles gather into clumps and settles them before they leave the chimney. Both gold and silver in the smoke of smelting plants can be salvaged in this manner. By using the proper frequencies supersound can shake dirt loose from clothes; scare away birds, insects, and other pests; ignite and burn a wad of cotton; boil water; and even pop corn.

Whisky makers have tested supersound in order to speed up production. The natural aging of whisky is a long drawn out process of slow oxidation along with the mixing of chemicals which come from the barrels in which the liquor is aged. Ordinarily these reactions take months and years, but they can now be done in a matter of hours with supersound.

Manufacturers and maintenance technicians have found supersound a sure way of checking metal parts. When aimed at a part being tested, the waves bounce back when they hit a flaw which is easily interpreted on the dial of a simple testing machine. Formerly the thickness of gasoline, oil, and chemical storage tanks could be determined only by drilling a hole and actually measuring. Now, thanks to supersound, the thickness can be determined in a few

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Smog (smoke and fog), such as this covering Pittsburgh, may some day be controlled or eliminated by use of supersound

minutes without any of the fuss and bother of drilling and plugging.

In an attempt to battle aircraft's old enemy, fog, the Navy's test station for different types of landing aids near Arcata, California, is trying out a giant sound horn which will jar fog particles into rain drops as a method of clearing fog from around airports. Laboratory tests in this respect have been completely successful.

Still in its infancy is the use of supersound in knifeless surgery. Tests on animals indicate that focused beams of supersound may be of value in certain types of brain surgery.

Two Princeton scientists, Professors E. Newton Harvey, a biologist and William Richards, of the department of chemistry, have found that supersound will actually shake apart the structure of living matter. The essence of blood, the red corpuscle, is so shaken by vibrations that the vital coloring matter is let loose into the liquid part of the blood stream. Living germs are blasted into oblivion by the terrific pounding of the super waves.

Laboratory technicians working with supersound in the Acoustics Laboratory of Pennsylvania State College at State College, Pennsylvania, have suffered burned fingers and hands, loss of equilibrium, and dizziness from exposure to the sound beams. White mice placed in the sound field died one minute after exposure to the ultra-sonic waves. Autopsies showed that heat caused by the waves caused death. Common roaches, yellow fever mosquitoes, blow flies, meal worms, and caterpillars also were killed. Extensive precautions are taken to keep these waves away from the human body, especially the head. Most experiments are conducted in special clothing and with ear plugs in place.

What makes ultra-sound destructive is not definitely known, but one theory deals with vibrating molecules which as they vibrate faster and faster create more and more heat. Another theory states that supersound tries to make everything in its path vibrate at its pitch. Naturally not everything is capable of vibrating in harmony with the sound. Some things are too bulky or too rigid, but a blood vessel might try to vibrate in harmony and tear itself to pieces making the attempt.

Supersounds can be produced either mechanically or electrically. They are produced electrically by running high frequency alternating current through a small quartz crystal. The vibration sensitive crystal (now made synthetically) expands and contracts fast enough to emit ultra-sonic waves. This type of generator can produce supersounds ranging as high at 12,000,000 waves a second. Electro-crystal created sounds, however, are limited in range. The vibrations must be transmitted by actual contact with the material to be treated. Indirect treatment is only possible through an incompressible medium such as water.

In contrast mechanical supersound can be shot through the air so that its effect can be felt at some distance. The frequencies, however, aren't as high. In essence a mechanical supersound is generated by a super siren which hacks the air into thousands of tiny pulses per second. The frequency, of course, depends on the speed of the siren motor. The present top frequency possible with mechanical sound is around 30,000 waves a second, created with a siren turning 20,000 r.p.m. Contrast this with the 12,000,000 waves per second created by electro-crystal sound and you get some idea of the possibilities that are ahead for further research.

Technicians who have been experimenting with supersound are convinced that it has a bright future. For the most part, it is relatively inexpensive to create and is still in the laboratory stage. But in the future it is entirely possible that certain types of cooking and cleaning will be done with supersound and that our homes will be insect free because of a noise we can't hear.

One possibility for supersound is to control such vermin as the mouse and moth. Homes of the future may be equipped with an ultra-sonic device that will keep them free of most pests

ETC 23549

GASOLINE QUALITY ABROAD

By Errol J. Gay*

Postwar problems abroad bar the path to any material improvement in overseas gasoline quality for some time to come

*(*Editor's Note — Mr. Gay is a consultant to several companies on problems relating to engines and motor fuels and lubricants. His views and figures were obtained from responsible sources and were stated to be accurate at the time this issue went to press. The octane values cited are averages and not those of any one source. All octane numbers stated are ASTM Motor method.)*

IN THE THREE YEARS that have elapsed since history's most destructive war came to an end, the worldwide petroleum industry has accomplished much — perhaps even worked a few miracles — in seeing that essential petroleum products are available for overseas countries.

But the industry itself would be the first to admit that the goal of plenty of petroleum products for everybody is not yet in sight.

Supply and production problems resulting from the war are tremendous in themselves. Now plaguing the industry, in addition, is the fact that demand abroad for petroleum products of all kinds, particularly gasoline, heating oils, and industrial oils, is increasing by leaps and bounds.

For these and still other reasons, many observers close to the world gasoline situation do not expect any improvement of note in overseas motor fuel quality until 1952 at the earliest, and perhaps not until 1955.

Countless obstacles bar the path to increased production and better quality.

Everywhere there is a shortage of essential materials for the construction of new refineries, pipelines, tankers, and terminals, and for the rehabilitation of such war-damaged facilities. On top of that, various Government decrees and the general political situation in many lands either do not permit or encourage immediate steps leading to more and better products. Further, there is the consideration that the world oil industry is compelled by the current abnormal call for petroleum

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products of all kinds to concentrate its efforts on quantity rather than quality production.

The only countries outside the United States and Canada where fuel quality can be given any consideration are those in which the economic situation is such as to allow some slight latitude in the matter of foreign exchange. Oil companies in only a few nations enjoy such a latitude.

Because of their shortage of foreign exchange, a number of countries have decided to limit their purchases to lower quality gasoline — in order to obtain the maximum amount of fuel with their available currencies — even though this entails a distinct sacrifice in fuel quality and, hence, engine performance.

Moreover, many countries, particularly those physically hit by the war, are facing serious economic and financial difficulties. As a matter of economic necessity, spokesmen for these nations say they have been forced to introduce stringent regulations restricting to a minimum the use of all but essential products. These regulations naturally involve, among other things, the rationing of gasoline. But for these restrictions, it is reasonable to assume that gasoline demand would be considerably in excess of pre-war. Even so, it is climbing toward and beyond the 1938 peak.

As a result of the emphasis on volume and not quality production, there has been standardization to a large extent on the lowest usable quality of gasoline that will give the maximum volume of petroleum products from the supply of crude available. Accordingly, premium grades of motor fuel are being marketed in only a relatively few countries outside the United States and Canada, while the quality of regular grades in foreign countries

A representative modern service station in South America. Fuel quality in South America ranges from 64 to 80 octane number

ranges all the way from 77 down to the low 60's. Before the recent war, Great Britain and several other countries distributed premium grades of 80-plus and regular grades on the order of 68 octane number.

In Argentina, gasoline has been rationed and has been on the order of 62-63 octane number, compared with our present 80-plus premium and 76-plus regular grade. Recently, gasoline of 70-72 octane number was introduced. It is understood that the 70-72 octane gasoline is to be the new "regular" grade, while the 62-63 octane fuel eventually is to be discontinued.

Of the European nations, Sweden and Norway have the best gasoline, from the standpoint of antiknock quality, with Switzerland not far behind.

Regular grade gasoline in Sweden averages about 75 octane number, and it is leaded. Swedish governmental regulations require that oil companies use alcohol to the extent of 15% of total motor fuel, although this full amount of alcohol is not always available. Depending upon the availability of alcohol, about half of all the gasoline sold in Sweden ordinarily is an alcohol blend called bentyl.

Norway, Finland and Denmark have a 70 octane fuel, largely leaded. In addition, Norway also has a limited quantity of 80 octane leaded premium fuel. Finland's fuel is a 70 octane leaded.

In Switzerland, a 70 octane leaded gasoline with 15-20% alcohol added is distributed in the winter months. This blend results in a fuel approaching 80 octane. The fuel marketed in Switzerland during the summer months is a leaded gasoline of approximately 76 octane number. No alcohol is used in motor fuels between May and October because of the vapor-locking problems created in the warm weather and at high altitudes.

The only grade of gasoline available in Great Britain is a leaded fuel of 70 octane. Gasoline is strictly rationed and until recently was distributed through an organization known as the Petroleum Board. This was a body set up by the oil industry at the request of the British Government to handle the importation and distribution of petroleum products. The Board was dis-

banded in mid-year, but it is unlikely that individual companies will resume marketing gasoline under their own trade name for some time to come. Meanwhile, all gasoline in Britain continues to be known as "Pool" spirit. (Editor's note: Warren Platt's recent articles in the National Petroleum News give a complete report on the commercial situation in Great Britain.)

Gasoline in France is rationed and the quality is variable. Seldom does even the leaded fuel go above 65 octane number. The French, however, can look forward to improved motor fuels, inasmuch as gasoline in the range of 70 octane number is planned for the near future. In Holland, Iceland, Greece, and Turkey, gasoline is of 70 octane number and contains tetraethyl lead. Belgian gasoline ranges from 70 to 75 octane number, and is also leaded. Fuel quality in Spain is in the low 60's and supplies are strictly limited. Italy rations its motor fuels, and the only grade available is a leaded 63-65 octane.

With the European automotive industry slowly but steadily getting on its feet again and turning out vehicles of about the same 6.7 to 1 compression ratio that is average for American 1948 models, it is obvious that automobile operation is suffering in countries where the only fuel available is of less than 70 octane.

While gasoline quality in Europe today dips as low as 63-65 octane number, it can be seen from the following breakdown that the Continent still has some of the best gasoline outside North America:

1. Motor fuel in South America ranges from Uruguay's 80 octane premium to Colombia's 62.

2. Central America and the Caribbean area have 74-76 octane number motor fuel, but Mexico City's premium is only 67 octane.

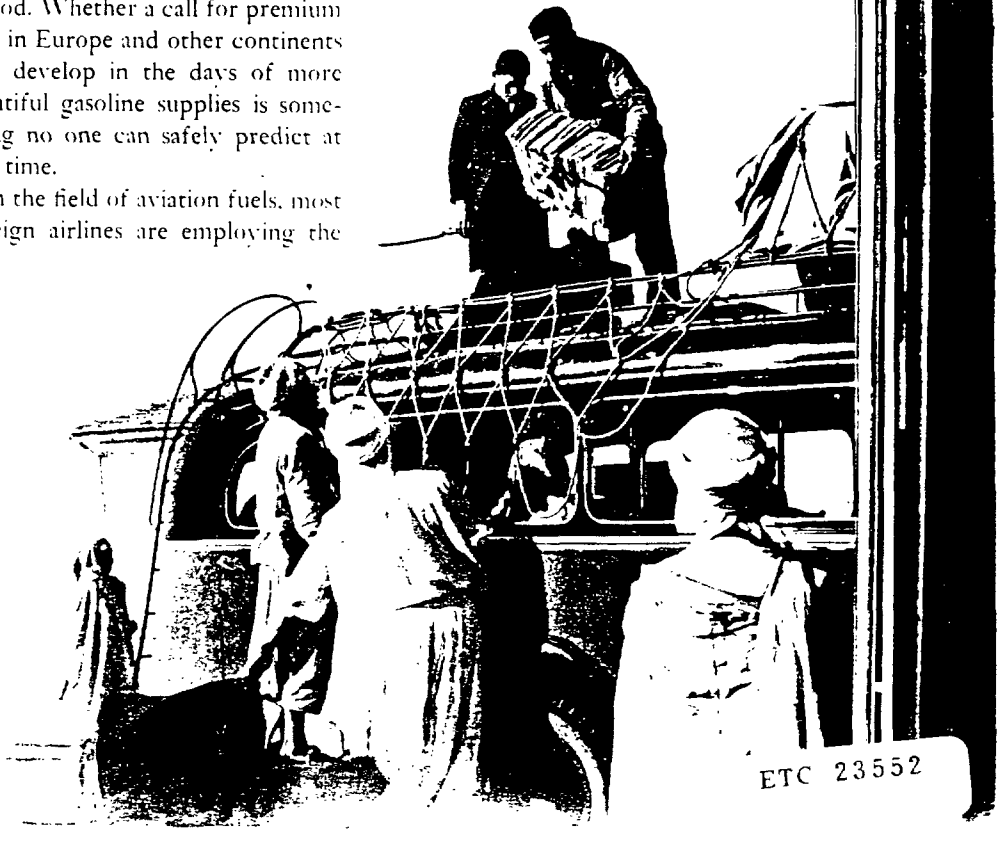
3. Throughout Africa, fuel quality is uniform in most countries at 70 octane number leaded. This is also the average octane number of present fuels in the Middle East, the Far East, and India. Australia and New Zealand market 72 octane leaded gasoline.

Postwar trends regarding the usage of fuels in Europe and the rest of the world remain unchanged from the pre-war years. Virtually all tractors in Europe operate on kerosene and distillates, as they did before the war. Diesel fuel is growing in preference for the operation of heavy duty trucks and buses in Europe and South America, but lighter trucks and automobiles continue to rely on gasoline as their powering force.

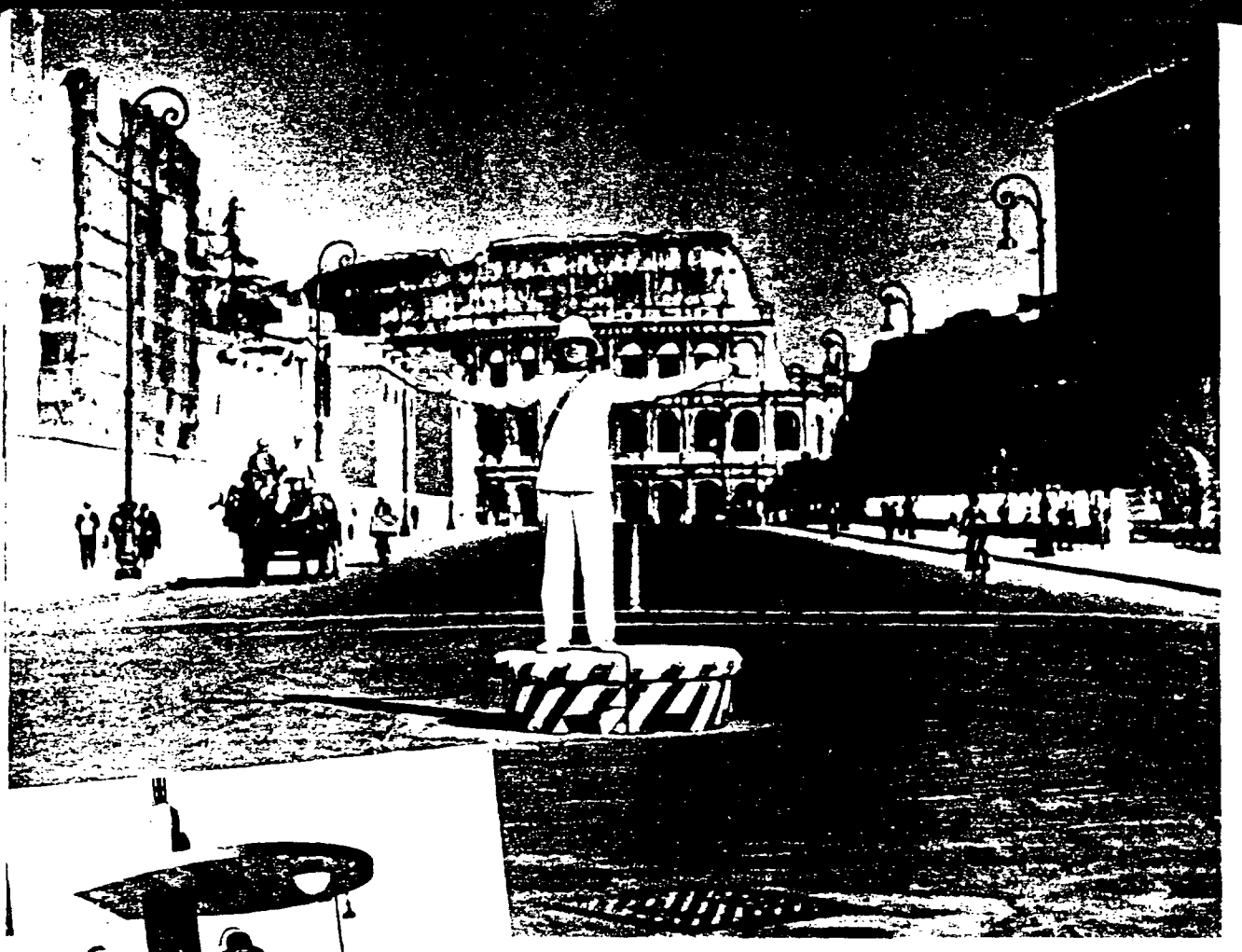
The overseas situation in regard to premium gasoline is not expected to change in any great measure, at least during the present critical period. Whether a call for premium fuel in Europe and other continents will develop in the days of more plentiful gasoline supplies is something no one can safely predict at this time.

In the field of aviation fuels, most foreign airlines are employing the same performance number gasolines that American air companies use. Because of the many new foreign airlines that have come into being since the end of the war, aviation fuel consumption outside the United States is greatly on the rise.

Oil industry economists forecast that the consumption of petroleum products in the world outside the United States will increase from the 2.9 million barrels daily of 1946 to 5.1 million barrels daily in 1956, or a gain of 76%. It is a fair estimate that roughly one-fourth of that volume will be gasoline to propel the motor vehicles of the universe. It is also a fair prediction that once the present unsettled and war-disrupted conditions are past, the world will have the best gasoline it has ever known. This is in keeping with the two basic aims of the world oil industry: to produce an adequate supply of petroleum products, and to make those products of the highest quality that refining conditions will permit.



An Algerian bus travels from oasis to oasis in the Sahara desert. Gasoline in Africa averages around 70 octane



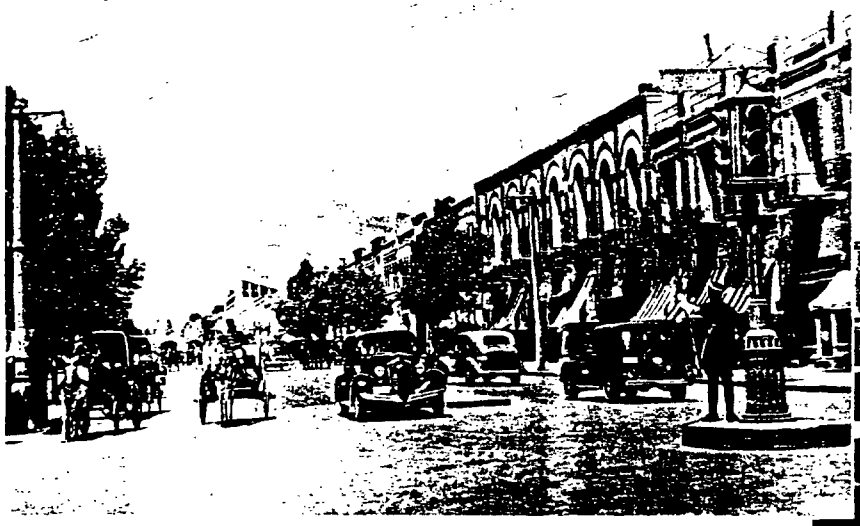
THE Law AT THE

Pare Qendrò ΣΤΑΣΙΣ وقف Дръжъ въ Лтсно CTOJ Allj! 止 Stopp!

Top, an Italian traffic cop performs in froni of the ancient Colosseum in Rome. The Dutch officer, above, handles traffic at Curacao, D.W.I.

Right, this intersection boss is keeping an eye on things down in Buenos Aires

ETC 23553

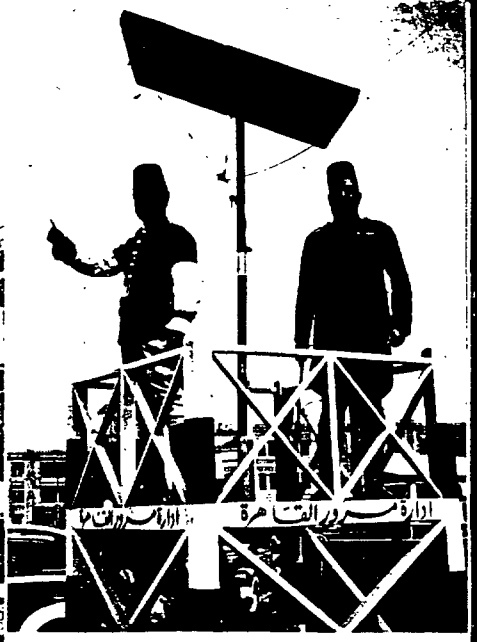


A Teheran patrolman supervises traffic consisting of horse-drawn buggies as well as some American-made cars

CROSSROADS

WHETHER it be gendarme (French), bobby (English), polizist (German), constabulary (Gilbert & Sullivan), or just plain cop, it all adds up to law and order at the crossroads. Here is how they look in eight foreign lands.

You don't need a second look to know what they are doing. Nor do you need a foreign language dictionary to understand the arm-waving gentry. If you should make a mistake, you will quickly learn all about it.



At top, a traffic control tower in Cairo, Egypt. Above, the cops of Gauhati, India, are often umbrella-equipped

Extreme left, beards and turbans are okay for Singapore officers

Left, if lost in Paris, you can always turn to a local gendarme

PUSH-BUTTON SALES!

By Creighton Peet

Today coin machines are selling everything from hot coffee to nylon stockings. Some even say "Thank you" when you make a purchase

For years now, we have been hearing that machines were going to do practically everything, and that pretty soon even people might be unnecessary.

Things haven't quite reached that point yet, but the chances are there may be a lot fewer salesmen in years to come. The vending machine, which used to be a humble contraption quite content to toss out penny gum and chocolate, and tell your weight, has grown up and become fancy — very fancy.

The list of things you can buy by dropping one or more coins in a slot is now as long as your arm, and growing longer by the minute.

Travelers, particularly, whether they go by car, bus, plane, or rail, are due to encounter more and more strange machines whenever they stop. Cigarette, candy, and soft drink machines — and juke boxes — are familiar, of course, but *now* the girls can buy nylon stockings — two shades and several sizes — merely by dropping quarters in a slot. You can also get a toothbrush and a small packet of toothpowder from a vending machine, as well as aspirin, handkerchiefs, and other items.

You can buy frozen foods from one deep-freeze machine, or a package of ice cubes from another, to use when you're having a party and the cubes in your refrigerator run out. Like hot coffee — fresh? A new machine, using powdered coffee, makes a cup fresh for you when you drop a nickel in the slot. And by pushing the proper button, you can get it black, with sugar, with cream, or with both — which should suit anybody.

Another machine pops you a bag of freshly-popped popcorn — and butters it, in 90 seconds, for ten cents. And there is the hot dog machine which delivers really hot, toasted hot dogs, or cheese sandwiches, all in about twenty seconds. And speaking of food, there are machines that sell fresh bakery cookies, fresh apples, custard, ice cream, chilled sandwiches — and even candy machines which say "Thank you" when you make a purchase. What more do you want?

As for services, you can not only get your picture made automatically, but a recording of your voice. You can get your shoes shined for a coin in a slot, and one of the newest devices will press your necktie. And coming along is a coin operated gadget which automatically records your blood pressure.

The coin-in-the-slot laundry machine in apartment houses and stores is of course a resounding success — and the Post Office already has two types of postage vending machines. One sells a large variety of stamps (at cost), and another, the Mailomat, takes up to a dollar in change, and then stamps postage on as many letters as this is good for, in any denominations you select.

As a successor to the old penny arcade which showed "movies" by flipping a series of cards in front of a lighted opening, there are now machines which show 16 mm. movies — two minutes for five cents. And very likely juke boxes will have a television counterpart some day, in which you can drop a coin and watch a game or a program for a small sum.

Some railroads have installed machines which sell tickets to as many as sixteen destinations, and the slot machine which sells life insurance in airports is now a well established device.

Projected are machines to sell men's socks, and shirts, and umbrellas when the proper coins are inserted.

One of the latest developments

ETC 23555

of the vending machine industry is the quiz machine – in which five questions appear for a few seconds, and in which you are given an opportunity to pick one of several answers. When you are done, the machine rates your I.Q., all the way from "genius" to "poor."

Vending machines aren't new – Hero of Alexandria is said to have invented a device which poured out a quantity of holy water when five drachmas were dropped in a slot, about two thousand years ago!

But up to very recently, most of our modern vending machines were penny and nickel affairs, and all the merchandise they handled was of the cheapest sort. There were two reasons for this. Operators were afraid too many slugs, buttons, pieces of wood, leather, etc., would turn up in the counting machines – and they were afraid that machines stocked with more expensive items would attract thieves, who would either break them open, or cart them off, machine and all. Improved design of machines has been important in moving the vending machine industry into the realm of big business; last year it grossed $750 million. A man named John Gottfried who developed a practically infallible gadget for testing coins, is generally considered to be the hero of the industry. His device, made by National Slug Rejectors, Inc., turns out 96% of all such devices now in use.

If you dropped a quarter into a slot recently, and wondered why it took the machine four or five seconds to "digest" it, the answer is that it was going through one of Mr. Gottfried's series of tests. Actually, each coin is tested seven times – for its diameter, thickness, weight, metallic content, bouncing ability, etc. At one point in its travels through the slug rejector, your quarter, for instance, drops down a chute, and if it is genuine, it will bounce up far enough to get over a hurdle, and into the next channel.

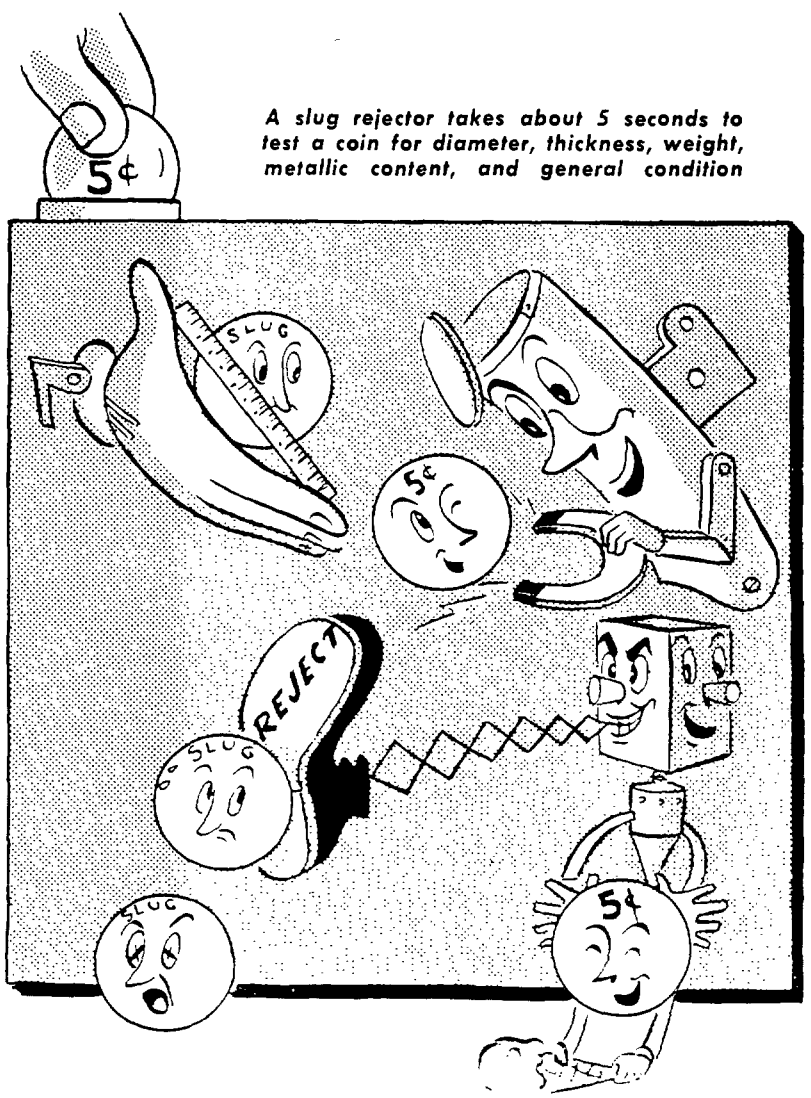
If it is made of lead, for instance, it won't bounce, and will soon fall out into the rejected coin pocket.

Mr. Gottfried's invention was a lifesaver for the vending machine industry which was, at one time, losing around $300,000 a year in slugs and foreign coins of little value.

Incidentally, Slug Rejectors, Inc., makes devices fitted to take coins of 24 other countries, of varying diameters, thicknesses, weights and metallic content.

Other inventors have worked on slug rejecting devices, of course, and one machine, which, for obvious reasons, never went very far, not only rejected phony coins, but rang a gong, flashed a light, and turned on a recording which shouted, "You cheated me!" Few storekeepers wanted to house such an ostentatious, if morally upright, automaton.

The next most urgent problem the coin machine industry has had to solve is a machine which will make change, either in connection with a purchase, or merely as a convenience for potential customers. Already, Gottfried has combined a coin changer with a slug rejector, and other manufacturers



A slug rejector takes about 5 seconds to test a coin for diameter, thickness, weight, metallic content, and general condition

OUR COVER: Color photograph courtesy of the U. S. Soil Conservation Service. **OUR PICTURES:** Page 6 (bottom), courtesy Johnson Motor Co. through Morris Rosenfeld; Pages 6 and 12, art work by Joe Hoffman; Page 7, courtesy Coldwell-Philadelphia Lawn Mower Co.; Page 8, courtesy Syntron Co.; Pages 10 and 11, courtesy Standard Oil Co. (Ind.); Pages 12, 14, 15, 17, 18, and 19, Philip Gendreau; Page 13, Press Association; Page 16, courtesy of The Texas Company; Pages 20 and 21, illustrations by A. Blashko; Page 22, Wide World.

are working on the same problem.

One device, already installed in some New York City subway stations, sells a five cent soft drink, taking either a nickel, a dime or a quarter, and giving correct change. This machine has another refinement: customers have a choice of three flavors, but by pressing one button after another, they can make special combinations of flavors to suit themselves.

The coin machine industry now has about two million people in factories and servicing the machines located in stores, filling stations, Army camps, airports, office buildings, railway stations, and even apartment houses. Machines are cared for by service men, each of whom fills and repairs between 50 and 100 of them, depending on where they are located.

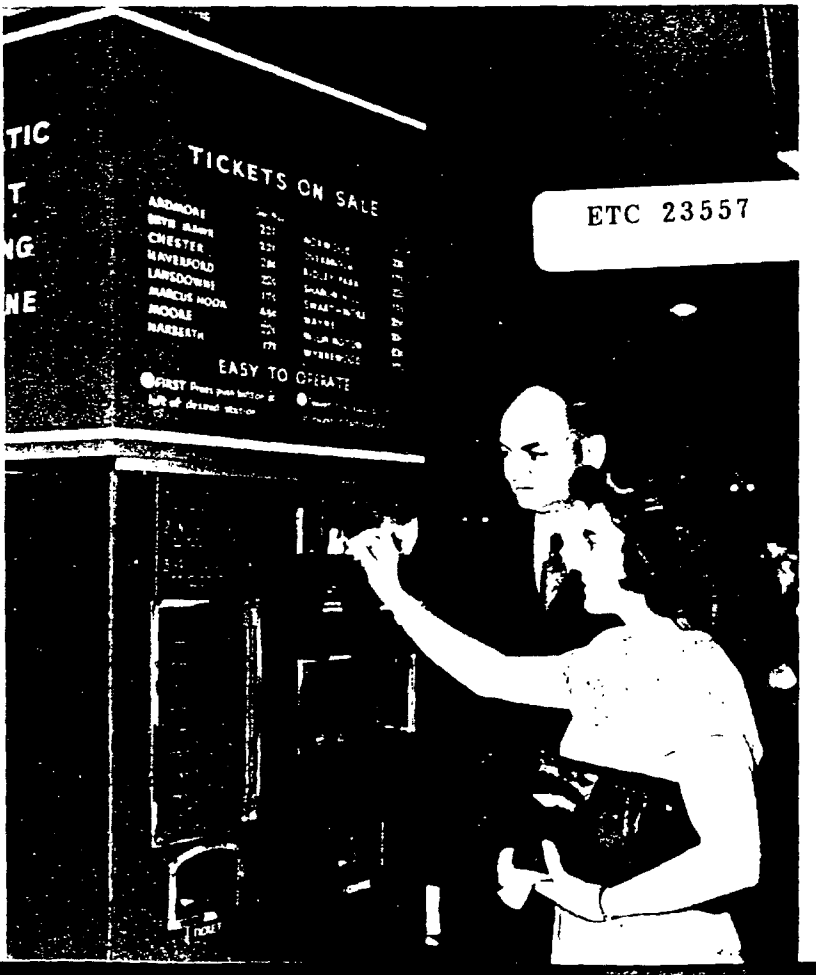
Today about 20% of all cigarette sales are made by vending machines, and the same is true of candy bars. An even larger portion of soft drinks is dispensed automatically.

The story of the successful cigarette machine is as curious as it is phenomenal.

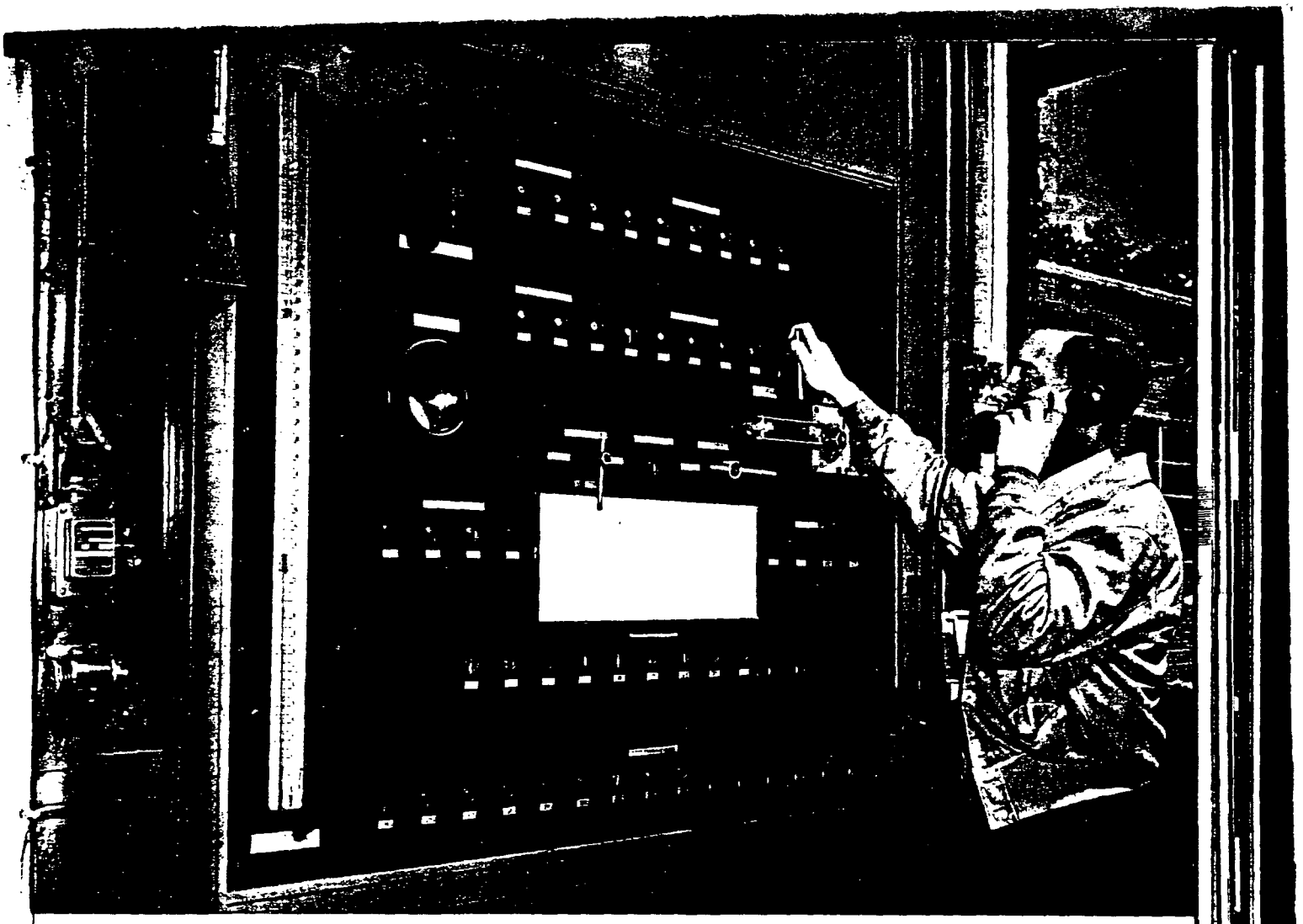
In 1928, William H. Rowe, a Los Angeles police court official, was herding a captive bootlegger through the downtown business section of the city. The streets were crowded, and Mr. Rowe paused at a cigar counter to buy a package of cigarettes. While holding his prisoner with one hand, he picked up his change with the other. While he was doing this, the man twisted away and was soon lost in the crowd.

Rowe not only felt foolish at having lost his prisoner, but indignant at the incident which caused the loss. In the following weeks he got to fooling around with a model of a cigarette vending machine. For a long while the machine was not too successful. At first it responded readily to buttons, washers, cardboard discs – anything. But Rowe kept at the problem, and finally made it work. He also met Robert Greene, a salesman and business manager, who became his partner. Rowe died in 1945. Today the Rowe Company operates well over 20,000 machines in the United States, which sell over 100 million packs of cigarettes a year, and also operates a big factory where still more machines are being turned out.

Yes, there are going to be a lot fewer salesmen in years to come, and if you count in the nickels and dimes dropped in pay phones, trolley, bus and subway turnstiles, and automats where millions of meals are served every year, it is evident that salesmanship may in time be confined to the larger and more expensive products.



Railroad ticket vending machines not only sell you a ticket of your choice but also give you correct change



FUEL STORAGE HELPMATE

Determining how much gasoline remains in storage in an underground tank at any given time once was an inconvenient and often a not-too-accurate procedure. Usually it meant inserting a stick into the tank and then noting the point on the stick where the level of the gasoline had made its mark. In the days before the fuel gauge on the automobile dashboard, motorists did the same thing to find out how much fuel was left in the tank of their cars.

Today, however, fuel-in-storage determination has been simplified to such a degree that it is almost a push-button operation.

At the Ethyl Corporation Research Laboratories in Detroit, this job is performed by an ingenious device known as the Pneumacator. This is a maze of individual copper pipes leading from an inside control board to the outside storage tanks, each line ending at the lowest point within its respective tank. The Pneumacator at the Ethyl Laboratories consists of 52 lines, one for each tank in the underground storage field. These tanks vary from 500- to 10,000-gallon size and have a total capacity of 132,500 gallons. Fuels in the tanks are inventoried each day.

Briefly, the Pneumacator works in this manner: Air is bled through the copper line at both low pressure and low rate. Depending on the gasoline level in the storage tank, the weight of the gasoline offers a specific resistance to the air and thus creates a static air pressure in the line. This pressure is indicated on a manometer. A prepared chart that relates the inch height of fluid in the manometer to the number of gallons of gasoline in the tank makes it possible to determine exactly how much gasoline remains in storage. For a 10,000-gallon tank, for instance, a 13-inch reading on the manometer reveals that 3,295 gallons of fuel remain. If this reading is obtained with a 500-gallon tank, it means that the tank is full. In the photo above the operator is reporting by telephone information on gallonage obtained from readings on the chart in the center of the control board.

Fuel blending specialists at the Ethyl Laboratories have improvised the Pneumacator so that it can perform two other functions besides determining how much fuel remains in a storage tank.

The incorporation of a small pump in the system and the rearrangement of the Pneumacator valving permits samples of newly-received fuels to be drawn off quickly and conveniently for inspection or for "screening" in small single-cylinder engine tests. Also, this arrangement can economically suck out any insoluble contaminant or "water heel" that may have found its way into the fuel.

The blending of fuels, both for the Ethyl Laboratories' own use and that of automotive and oil companies, is a full-time activity at the Ethyl Corporation research plant. By measuring the fuel in storage tanks, withdrawing fuel samples for preliminary inspection, and removing any fuel contaminant, the Pneumacator helps make the fuel blending operation a speedy and accurate one.

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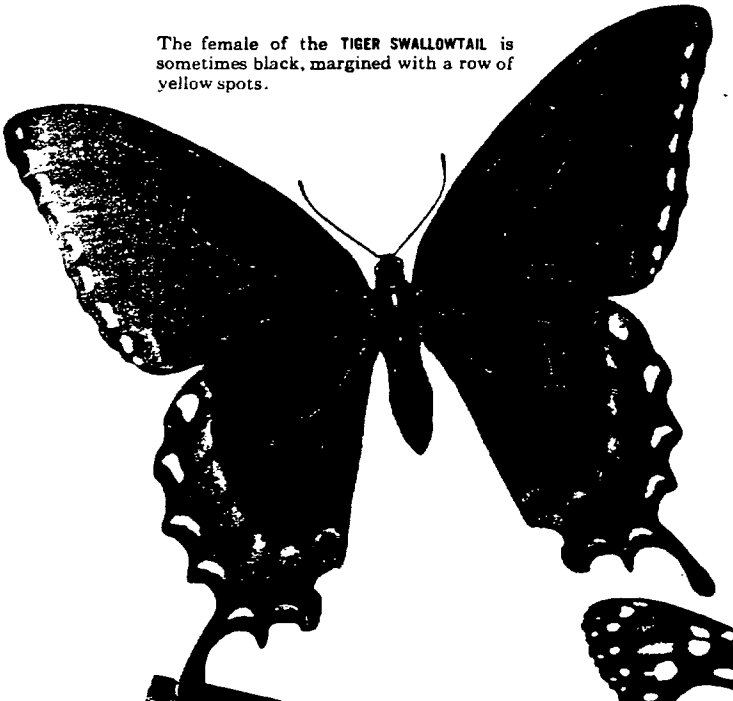
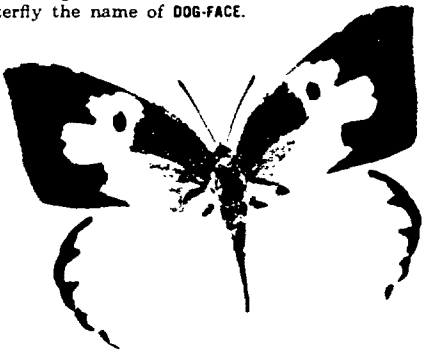
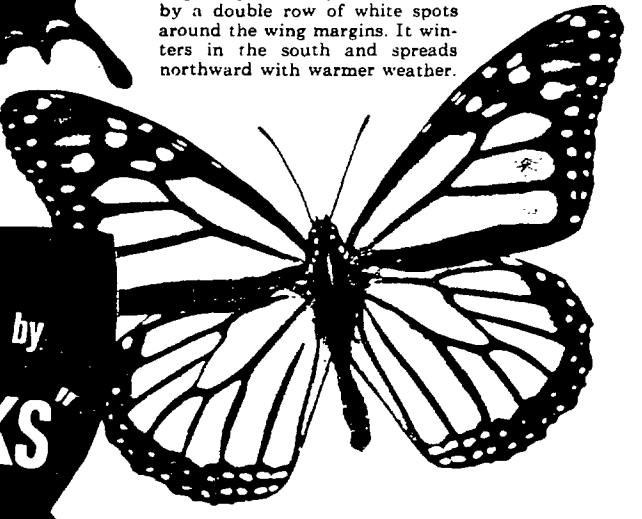
The female of the **TIGER SWALLOWTAIL** is sometimes black, margined with a row of yellow spots.



The characteristic pattern on the forewings has earned for this butterfly the name of **DOG-FACE.**



The **MONARCH**, our only regularly migratory butterfly, is identified by a double row of white spots around the wing margins. It winters in the south and spreads northward with warmer weather.

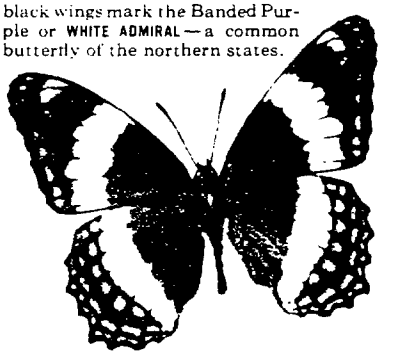


When a butterfly flutters by

THE "TRADE-MARKS" OF NATURE*

identify its species

Broad white bands across blue-black wings mark the Banded Purple or **WHITE ADMIRAL**—a common butterfly of the northern states.



When you buy gasoline

THE TRADE-MARK "ETHYL"

ETHYL ANTIKNOCK COMPOUNDS — ETHYL CORPORATION

identifies gasoline stepped up with "Ethyl" antiknock fluid

To get the best performance from your car, use high quality gasoline improved with "Ethyl" antiknock fluid — the famous ingredient that steps up power and performance.

To show you their best gasoline contains "Ethyl" antiknock compound, oil companies display "Ethyl" trade-marks on their gasoline pumps. "Ethyl" fluid is made by *Ethyl Corporation, Chrysler Building, New York 17, New York.*

*In association with specialists at American Museum [illegible]

ETC 23559

ETHYL NEWS

ETC 23560

OIL PROGRESS DAY...OCTOBER 14, 1948

IN THE

ETHYL NEWS

OCTOBER 1948

Leonard L. Huxtable, sales coordinator in the Southern region for Ethyl Corporation, has been promoted to operations manager of the Central region, which has its headquarters in Chicago. He succeeds Harry Kuhe, who has been transferred to the New York office.

Mr. Huxtable has been with the sales department for 16 years, starting in 1932 as a field representative in Little Rock, Ark. He was transferred to Ethyl's office in Tulsa in 1936 as a safety engineer, and four years later was promoted to assistant manager of the former Tulsa division.

When the sales department was reorganized under a four-regional plan with headquarters in New York, Chicago, Tulsa and Los Angeles, Mr. Huxtable was named senior sales service engineer for the Southern region, and in March of this year was appointed sales coordinator.

A native New Yorker, Mr. Huxtable attended Columbia University and later transferred to Purdue University where he was graduated in 1928 with a B.S. degree in mechanical engineering. Before joining Ethyl he was a research engineer with Martin Motors, Inc. in New York City.

He is a member of Tau Beta Pi and Pi Tau Sigma, both honorary engineering fraternities, and of the Society of Automotive Engineers.

OIL PROGRESS — MEMO TO AMERICA 3

The significance of the oil industry's progress is not something that can be expressed merely in terms of growth in production . . . improvement in quality of products . . . or even heightened service and usefulness to the public — important as these may be. Its significance, instead, lies in the vast social contributions the industry has made to the entire nation — and which have made possible our way of life.

TECHNIQUE IN SERVICE 8

Many people know of Ethyl's Technical Service Division, but not everyone realizes the widespread nature of its activities. In this article, the Director of Technical Service tells how the Division serves the oil and automotive industries at large.

CASE HISTORY 12

It's hard to picture what modern farm equipment means to agriculture unless you can see the crude implements that farmers once had to use. Here are scenes from a colorful pageant recently staged by a leading farm equipment manufacturer, which traced the successive ways in which man learned to master the soil.

HOTELS TAKE TO THE ROAD 14

Back in Revolutionary days, hotels were located along highways to provide food and lodging to overland travellers. Today, hotels are again taking to the road — to attract motorists and tourists.

TEST DRIVER 17

Ethyl's professional drivers travel half a million miles a year through California mountain and desert, rolling up a store of information on fuels and engines with every mile. Come along on a 200-mile trip in a heavily loaded truck with one of these drivers, and learn about his unusual job.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N.Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Richard M. Page, secretary

ETC 23561

Every person in every walk of life has benefited from the oil industry's vast social contributions to America

OF ALL THE MOMENTOUS developments that have crowded the U. S. scene since war's end, none has been more dramatic than industry's struggle to satisfy the public's yawning appetite for everything in sight.

Amid a ceaseless clamor for cars and homes and all the other things that people want and need, plants and factories have roared at wide-open throttle — at a rate unparalleled in peacetime history. Cars and trucks, radios and washing machines, refrigerators and other goods have spewed forth in a surging tide of production. And still the public's demand is far from met in many lines.

Oil Industry Outstanding

For countless industries there have been desperate shortages of materials, crippling strikes, skyrocketing costs, and other tough problems. Yet, despite the grim obstacle course that most industries have had to run, there is one industry that today can point to a crowning record of production. That industry is oil.

Since the war, the oil industry has outstripped the industrial economy as a whole in delivering the goods to the American public. Since prewar 1941 (the previous peacetime peak), it has increased production at a rate more than double that of the average U. S. industry. Today, few industries could claim greater success in meeting the postwar challenge of production than oil. Most industries lag behind oil's spectacular record of accomplishment.

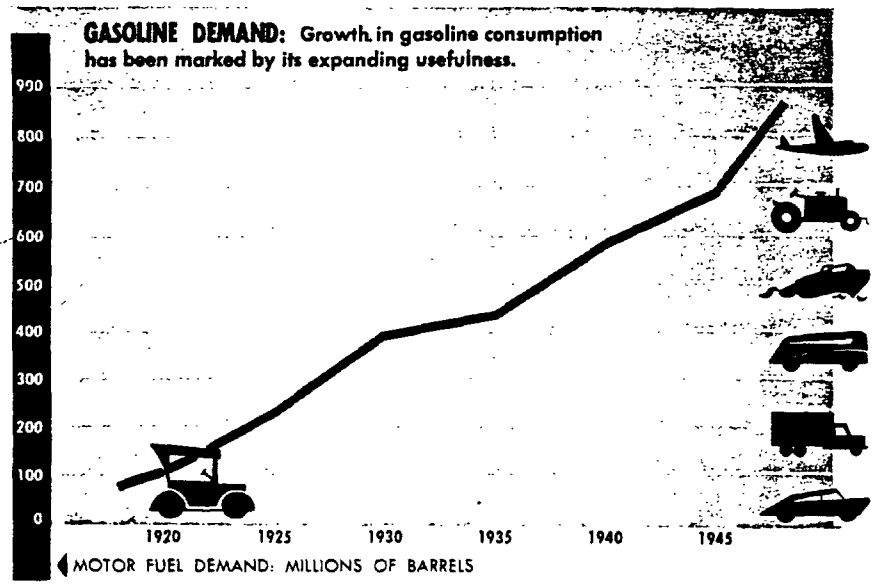
Today, oil faces the stern test of the forthcoming winter with sober confidence. Barring the unforeseen — a sudden rise in military requirements, government restrictions, strikes or delays in obtaining materials, or unusually severe weather — the industry is confident it will meet a demand for heating oil that is destined again to set a new record high.

Everyone knows of the magnificent job the oil industry performed during the war — when shipments of oil products accounted for two-thirds of all the war supplies sent overseas. What many people don't realize is that, since war's end, the industry has been called upon to do an infinitely bigger job.

Today, three years after the war, the industry is meeting a demand for its products 18% above the wartime peak of 1945 and 45% higher than 1941. Demand for petroleum products has been increasing at a pace two and three times as fast as anyone ever imagined possible. Why? The United States today is consuming more oil than did the entire world a decade ago. It is using, on a per capita basis, about 25 times as much oil as the rest of the world combined.

To meet the tremendous problems arising out of this precipitate growth in demand, the industry has shattered all existing records and gone on to perform near-miracles in every branch of its operations.

Crude oil production, at more than 5.5 million barrels daily in a recent week, set a new record that



The growth of gasoline consumption, coupled with its widening usefulness, has meant many things to America

It has enabled millions of families to live in the country . . .

was 44% above 1941. The amount of crude oil processed by refineries scored a corresponding wide gain.

These are simply the surface aspects of what the industry has accomplished – things the public can readily visualize and understand. What the public knows little about are the internal feats performed by all branches of the oil industry, all of which helped make possible oil's epic postwar achievement.

To meet the soaring demands for their products, the oil companies enlarged storage capacity, speeded up delivery schedules, pressed several hundred additional tankers into service, turned to railroad tank cars, an expensive means, to move supplies into critical areas. All these developments contributed to the industry's startling growth in production and deliveries to consumers. Together with the cooperation obtained from various segments of the public in better planning their requirements and more judiciously using their supplies, and with a lessening of exports required to be sent overseas, these things have enabled the oil industry to balance supply and demand and finally turn the tide of the battle.

In meeting the challenge of postwar conditions, the oil companies knew only too well the grim compulsion of the times. Demand for oil is different from the demand for virtually anything else under the sun. The average family will wait patiently – one, two, three years and more – for its new home, philosophically accepting the fact that construction of the house waits upon the availability of lumber and nails and bricks and cement. The average motorist knows that it may take as long as two years before he can readily obtain a new car of his choice; but he is satisfied in the knowledge that the automobile industry is turning out new models as fast as it can. But oil? Whatever the need – for homes, offices, factories, farms, railroads, airlines, cars –

It has helped build up countless suburban communities . . .

It has brought scores of new comforts and conveniences . . .

It has been a great factor in the growth of rural education

ETC 23563

everyone wants his full cut of the barrel, and he wants it now. Small wonder, then, that crude oil and natural gas now produce nearly half of the energy used in the United States.

If oil is in the vanguard of industrial progress today, it is simply continuing a role it has played on the American scene for the last three decades and more. It has been a pacemaker of industrial progress. It has contributed vastly to America's economic welfare and security. And, not the least, it has made widespread social contributions to the benefit of everyone.

Oil's Social Contributions

Were it possible to compress these contributions into a single word, that word might well be movement.

Oil has put movement into the U. S. economy. It has transformed it from a static 19th century society into a dynamic 20th century power whose peak potential has not yet been reached. Oil has literally spread the United States all over the map. As if by magic, it has sent out pipelines of oil in all directions, and lo! there are roads, towns, villages, people, factories, employment, prosperity! People can live anywhere, work anywhere, buy anywhere, sell anywhere, all because oil has given them ready mobility.

Thanks to the modern fuels created from petroleum, Americans today enjoy a greater freedom of movement than ever before known to mankind.

A man can travel to the remotest region, knowing full well he can return home at will . . . A breadwinner can work in the city, live in the country, bringing up his kids in the fresh air and sunshine of the outdoors . . . A farmer can grow more and better crops, obtain higher yields, do his chores quickly and bring his foodstuffs to market, because oil is at his command . . . A housewife can drive her children to school, shop in town, visit her friends, get things done, all because oil is her unseen servant . . . A businessman can run his plant more efficiently, call on customers, travel around the country, all because oil is at his beck and call . . . Doctors can take care of the sick for miles around, mailmen and milkmen and other tradespeople can cover wide areas in their daily rounds, children in isolated communities can attend a central school, plants can be located miles from cities — all because of the perpetual mobility made available by oil.

Serving the communities of America are more than a quarter million service stations. Greater in number than even post offices or drug stores, these service stations are located everywhere from U. S. 17 in Florida to a back country road in Oregon. And ninety-five out of every hundred of them are independently owned or operated. There are, moreover, thousands of competing oil marketers or jobbers who supply the service stations and keep home owners' oil fuel tanks filled.

Between the retail dealers serving the public and the some 400 refineries of the oil industry is a transportation system as intricate as it is vast. Included in that system, which blankets the United States, are some 150,000 miles of pipeline, 400 tankers, 2,400 barges, 100,000 railroad tank cars, and 100,000 highway trucks.

Mere numbers can't do justice to this huge transportation system built by oil.

How can you describe the industry's

Editor's Note

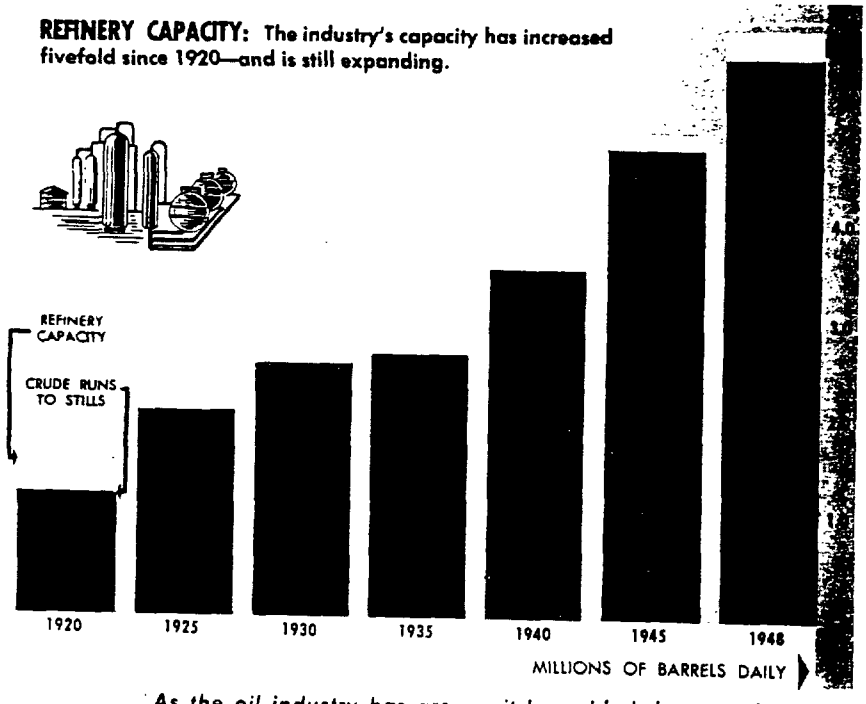
The story of oil's progress, and its meaning to America, is well known to most people in the oil industry. But the Ethyl News, which is distributed throughout the oil industry, also reaches many groups who are not nearly as familiar with oil's accomplishments. It is to those people especially that the accompanying article is addressed, in the hope that it will perhaps increase their knowledge and understanding of the oil industry.

People today enjoy an unparalleled freedom of movement . . .

Thanks to gasoline, they can work, live and travel anywhere

ETC 23564

REFINERY CAPACITY: **The industry's capacity has increased fivefold since 1920—and is still expanding.**



As the oil industry has grown, it has aided the growth and development of countless other American industries

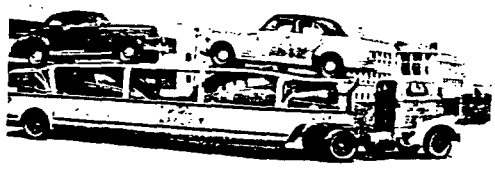
intricate system of pipelines, tankers, barges, tank cars and trucks daily move hundreds of millions of gallons of petroleum products.

The farflung scope of this transport system, which carries oil supplies to every town and hamlet of the country, typifies the progressive nature of the oil industry. More, it demonstrates, in only one of many ways, how the industry has made use of its opportunities to heighten its service and broaden its usefulness to the American public.

Made Possible Our Modern Age

Today, the United States leads the world in this mechanical age — an age whose dominant characteristic is horsepower. In countless thousands of ways, oil has helped bring about America's preponderance of mechanical horsepower, and to keep it moving at top speed.

Automobiles powered by oil have made this a nation on wheels. The giant planes that span oceans and continents in a few hours can do so only because of the concentrated, efficient energy supplied by oil. The three million farm tractors in use, which have helped to increase farm output by more than a third above prewar levels, are all powered by oil.

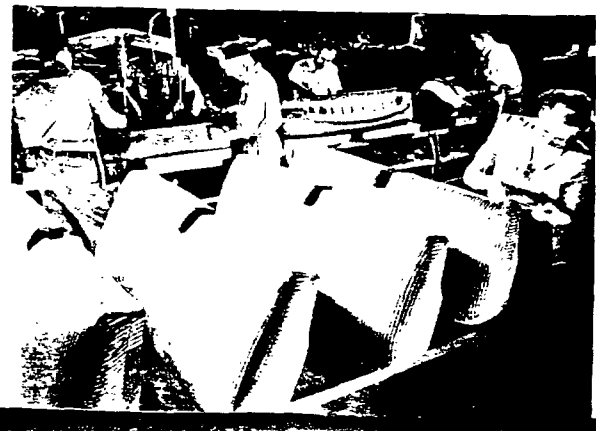


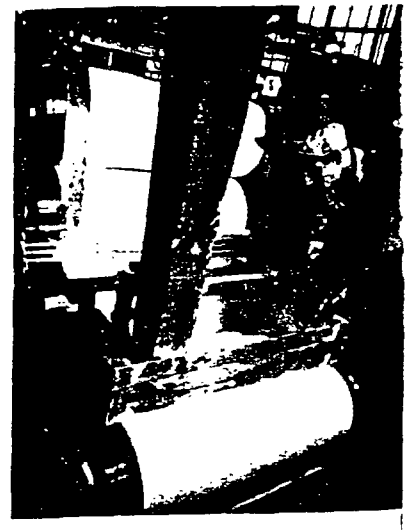
It has helped make the United States a nation on wheels . . .

tankers, which account for nearly half the nation's entire merchant marine, and whose latest models each can carry as much as 240,000 barrels of oil? How can you picture the fleet of inland waterway barges, by means of which modern river towboats, pushing along as many as nine big barges in a single tow, move 270,000 barrels of oil products at one time? How can you picture the highly efficient pipeline systems of the industry, in which as many as 14 separate petroleum products can be pumped through the same line in succession to the same destination, and which collectively account for 13% of all freight transported in the United States? Through this vast,

It has helped broaden the markets for the rubber industry . . .

It has helped create a new demand for the textile industry . . .





It has benefited the paint industry, as well as many more

ETC 23565

In like manner, oil fuels industrial furnaces, heats homes, powers construction machinery, propels ships, drives locomotives, and paves highways, and competes with coal to generate the nation's supply of electricity. And the same elixir that gave America its decisive superiority in the war, has nurtured in peacetime the growth of countless new comforts and conveniences for the American public.

People can readily appreciate the importance of these familiar uses of oil. But how little they know of the other thousands of different and often unique ways in which the industry serves America.

Through lubricants and greases that enable industrial machines to run at amazing speeds and perform the most intricate tasks. Through oil's growing utilization as a major raw material for the chemical industry. Through its use in synthetic rubber, fertilizers, industrial alcohols, commercial solvents. Through its agricultural insecticides, fungicides and weed killers; its uses in plastics, medicines, and cosmetics, right on down the list of the 1,200 separate products that have been developed to date from crude petroleum.

The fact there are so many new uses for petroleum – with additional ones being developed almost daily – comes as no surprise to people in the oil industry. As anyone familiar with its history knows, the oil industry got its start in the 1860's because crude oil then supplied a new and better product for the times. That new product was kerosene, distilled in the crude pots and stills of the day. It provided a far superior illuminant for homes and industry than the coal oil and sperm oil lamps of the day ever could. And from kerosene, the industry progressed to the whole range of fuels and lubricants known today.

Growth Through Competition

Meanwhile, from the handful of pioneering companies that began business in Pennsylvania, the industry has grown to the point where today, as a result of its expanding usefulness to the public, it has become one of the largest industries in the country, employing more than two million people. The capital investment in the oil industry is placed at $20 billion.

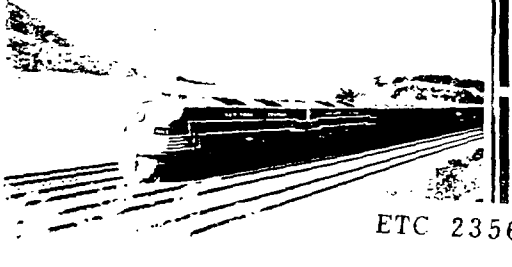
Comprising this highly competitive industry are no less than 34,000 separate firms, of which some 13,000 companies are engaged in producing oil and more than 15,000 are marketers and jobbers. And the competitive growth of the industry is still continuing. During the last four years,

(Continued on Page 21)

Gasoline-powered cars have brought us modern bridges

Modern, swift air travel has been made possible only by oil

Oil powers our modern ships and our fast new locomotives



The construction industries have been doubly aided by oil

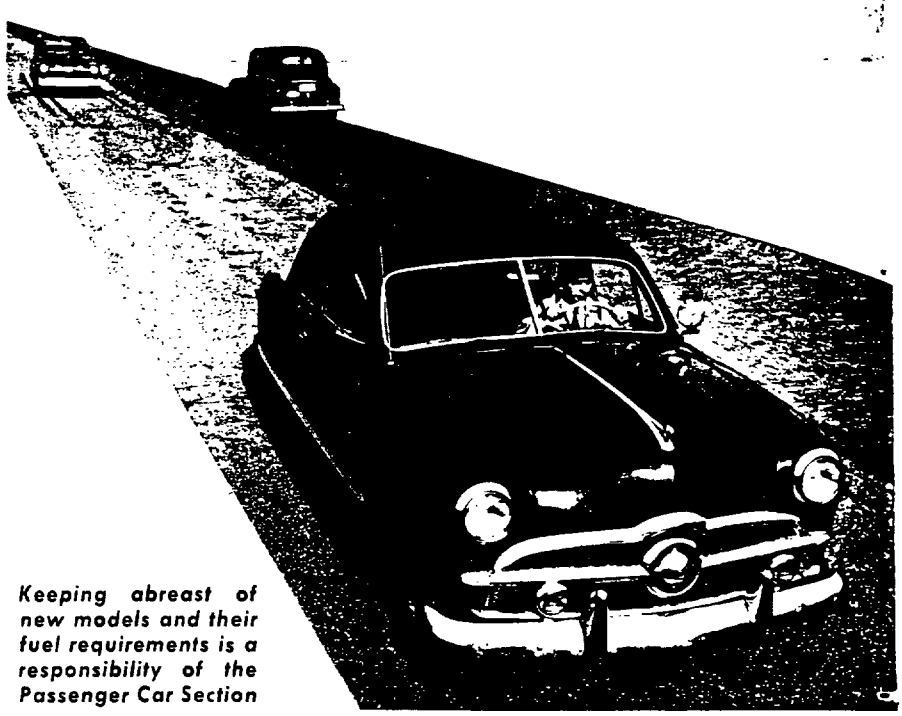
Record farm production is due to modern machinery — and oil

ETC 23566

TECHNIQUE IN SERVICE

By R. K. Scales Director of Ethyl Corporation Research

Gathering and correlating the latest information on fuels and engines, for the benefit of both the oil and automotive industries, is a primary function of Ethyl's Technical Service Division



Keeping abreast of new models and their fuel requirements is a responsibility of the Passenger Car Section

ETHYL CORPORATION has a twofold objective in the field of automotive transportation. In serving the petroleum industry, it has a deep and abiding interest in the development of modern, efficient fuels. But at the same time, because of its close kinship with the automotive industry, it has the companion objective of promoting the best utilization of those fuels in today's engines.

Its efforts toward promoting the best utilization of fuels are not confined to the passenger car field alone. Instead, they extend to all forms of automotive transportation – and even to stationary engines.

To assure that these pieces of gasoline-powered equipment will at all times realize the best results from the fuel used, it is essential that oil refiners and engine manufacturers stay fully informed as to each other's current activities and contemplated future plans.

Gathering and correlating information concerning this relationship, and then passing that data along to interested industries, is the primary responsibility of Ethyl's Technical Service Division. By relaying to the Ethyl Corporation Research Laboratories information regarding field problems associated with engines, fuels, and fuel additives, Technical Service also assists in guiding research programs of special interest to refiners and engine manufacturers. The results of these laboratory programs, as well as field experiences, are made available to the oil and automotive industries through contacts carried out by various sections of the Technical Service Division.

Since the beginning of 1947, Technical Service has functioned as a Division of the Research Laboratories. Previously, it operated for several years as a separate department of the company.

Technical Service is divided into five separate but closely-coordinated sections. These sections are the Passenger Car and Accessory; the Commercial Engine and Fleet; the Agricultural; the Engine Development; and the Laboratory Contact Representatives.

Virtually the entire demand for motor fuels comes from three major markets – passenger car, commercial vehicle, and agricultural. It is because the problems in these markets are to a large extent individual ones that specialized activities of a wide service nature have been established in each of the three fields. In addition, the Engine Development Section carries out cooperative development programs with the manufacturers of gasoline engines, while the Laboratory Contact Representatives advise oil company technical personnel of Ethyl Corporation's research and service activities.

Through personal contacts, cooperative laboratory and field programs, group meetings, and numerous other means, the Technical Service staff is able to keep automotive and farm machinery manufacturers abreast of trends in fuel quality. Similarly, it seeks to keep petroleum refiners up-to-date on fuel problems and engine design and

ETC 23567

Technical Service, boratories, Detroit

material changes that affect fuel requirements. Beyond that, it cooperates with manufacturers and refiners in conducting actual investigations of problems of mutual interest.

As everybody knows, the largest single outlet for petroleum products is the passenger car market. Since more than 65% of all gasoline consumed in the United States annually is used to operate the nation's 30 million passenger vehicles, the fuel requirements of automobiles obviously exert a strong influence on trends in fuel quality. In view of this, the Passenger Car Section maintains close contact with the manufacturers of passenger cars and related accessories. This relationship provides a fund of information, not only in regard to trends in passenger car engine design as they influence the requirements for petroleum products, but also in regard to the problems of passenger car manufacturers as they relate to fuels.

Through this work it has been possible to bring about, on the part of the engineering departments of the manufacturers, a better realization of the vital role that fuel plays in engine design. It also provides a means of assisting the petroleum industry in evaluating the fuel requirements of passenger cars.

The result of these programs is twofold. Manufacturers of passenger cars are able to consider engine design advancements in the light of their influence on fuel requirements. On the other hand, a wider knowledge of the fuel needs of future engines helps the petroleum industry plan for these requirements.

Except that its activities are carried out with the manufacturers of bus, truck, and commercial engines, the work of the Commercial Engine and Fleet Section is quite similar to that of the Passenger Car Section. As do all sections of Technical Service, the fleet section works in close cooperation with Ethyl Corporation field engineers, and arranges for cooperative programs in the field and in the laboratory. Many of these programs are undertaken to investigate performance complaints in heavy duty engines which may involve the characteristics of the fuel being used. In addition, scores of requests from oil companies for miscellaneous and unusual technical assistance are fulfilled each year.

Latest information concerning problems and trends in the commercial transportation field is obtained through contacts established by Ethyl Corporation field engineers.

A bus used by the Engine Development Section in a recent cooperative test program with a large manufacturer of coaches

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Liaison with oil company research and technical personnel is carried on by the group of Laboratory Contact Representatives at the left. Below, the parts of a truck engine are being inspected during a chassis dynamometer test at the Ethyl laboratories, as part of an investigation by the Fleet Section

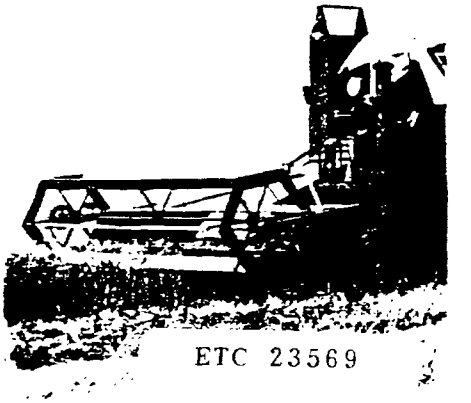
These contacts are made frequently and regularly with a number of large operators of heavy duty equipment of all representative makes and models. Located in many parts of the country, these operators represent a true cross-section of fleet industry operation. The field reports are analyzed and reviewed, and the information thus obtained is made available to the oil and automotive industries.

Considerable attention also is devoted to the expanding small engine market. Recently, laboratory projects were carried out with three manufacturers of small engines to aid them in developing engines designed to operate to the greatest advantage on available fuels.

Considering that the farm market is perhaps the fastest growing of all petroleum products outlets, the work of the Agricultural Section is particularly significant. Whereas this market was relatively small only 15 years ago, farmers today use upwards of 20% of all gasoline produced and sold in this country.

Since Ethyl Corporation engineers were intimately associated with the development of the modern high compression gasoline tractor, the company's interest in the use of gasoline-powered equipment on the farm is a natural one.

In carrying out the obligation it assumed by playing a leading role in the introduction of the high compression gasoline tractor, Ethyl Corporation maintains a program of close liaison with the manufacturers of farm equipment. The Agricultural Section regularly confers with



ETC 23569

farm machinery manufacturers on fuel quality trends so that the industry may be guided in the production of engines to best utilize the fuels that are available, and in the design of engines to fully utilize possible future fuels. This Section also engages in joint laboratory and field investigations with manufacturers and refiners to assure top performance from gasoline-powered farm machinery already in use.

Within the Technical Service Division is a group of specially trained and experienced engineers who work directly with individual engine manufacturers in carrying out, in the manufacturers' laboratories and in the field, studies of the fuel requirements of new or modified engines.

This group, the Engine Development Section, also cooperates with the manufacturers in studying the durability characteristics of engines and various engine parts. For example, an extensive study is presently being made of the improvement to be expected in exhaust valve life through the use of valve rotators. This program, initiated in 1943, already has covered 15 engine models of seven different manufacturers and has involved more than 6 million miles of vehicle operation.

This Section also carries out investigations of fleet maintenance practices aimed at reducing operating costs. Illustrative of such activities is a program, recently completed, designed to evaluate the use of a chassis dynamometer as a maintenance tool in fleet operation.

Typical of other projects undertaken by the Engine Development Section is a recent cooperative road test program with a manufacturer of city buses. In filling an Eastern city's large order for buses, the manufacturer requested the aid of the Technical Service Division in establishing carburetor calibration and ignition timing requirements so that the transit company could realize peak economy and performance from the gasoline it intended to use to power the new buses.

Laboratory Contact Group

Technical Service employs various methods of communicating to the petroleum industry the findings and experiences of its specialized sections and of the Ethyl Corporation Research Laboratories as a whole. The most direct means is by personal contact on the part of the Division's group known as Laboratory Contact Representatives. Presently there are four representatives, all of them experienced automotive engineers. They are headquartered at the Ethyl Laboratories in Detroit and San Bernardino, Cal., and their liaison with oil company research and technical personnel is coordinated through the Ethyl Corporation regional sales offices in New York, Chicago, Tulsa, and Los Angeles.

In addition to keeping oil companies advised of the research and service work performed on their behalf by Ethyl Corporation, the Laboratory Contact Representatives, in turn, receive much valuable technical information from many of Ethyl Corporation's customer companies. This exchange of data serves both to assist the Corporation in guiding its research and service programs along the lines of major interest to oil companies, and also to familiarize those companies with the work of the Ethyl Laboratories. As part of the reciprocity program, the Laboratory Contact Representatives initiate joint group meetings between technical personnel of the Ethyl Laboratories and those of customer companies which maintain research and development laboratories.

Through its many and varied activities, the Technical Service Division strives to be of service to the petroleum, automotive, and farm machinery industries by helping to improve the compatibility of engines and fuels. Just as it is an objective of the entire Ethyl Corporation Research Laboratories, so, too, it is the goal of Technical Service to contribute in every way to the solution of the mutual problems of these industries.

Aiding the farm equipment industry in developing continually improved power plants is the Agricultural Section's aim

ETC 23570

The pageant offered a striking contrast in old and new farm machinery

A colorful pageant staged by a leading farm equipment company portrays agricultural progress

CASE HISTORY

AMERICANS ENJOY so many blessings of our modern industrial civilization that they're often inclined to take them for granted. The automobile, the airplane, the farm tractor — how many people appreciate fully the long, painful process of evolution they went through until they reached their present state of perfection? Only on rare occasions does the average citizen get a chance to see and understand the tremendous progress that has been made.

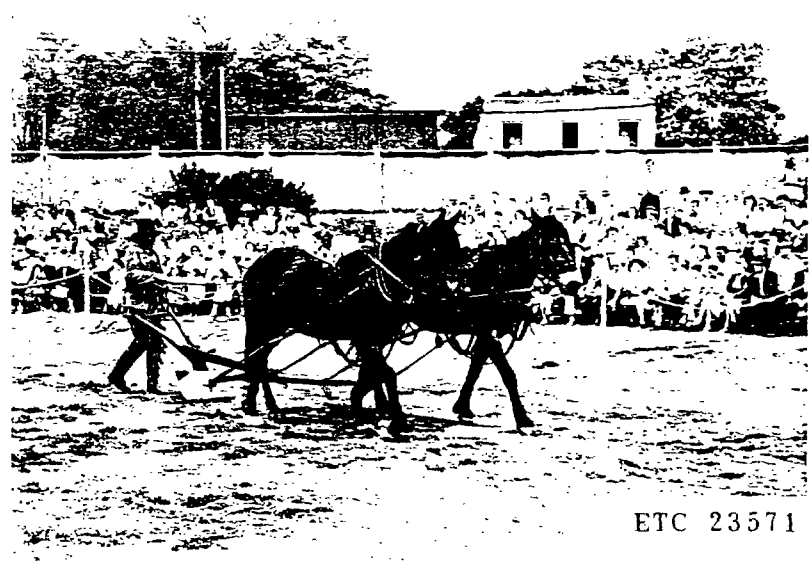
One such occasion was the recent Wisconsin Centennial Exposition, held in Milwaukee. There, the J. I. Case Company, one of the nation's leading farm equipment manufacturers, staged a colorful pageant that traced the march of progress in agriculture from Biblical times down to the present. History came to life as actors and actresses demonstrated the successive ways in which man learned to master the soil.

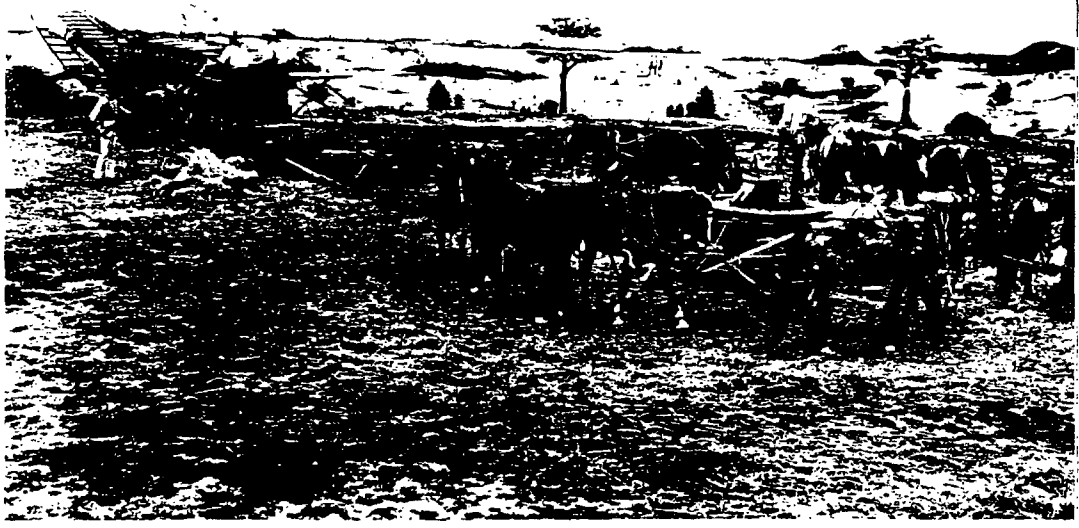
Large audiences attended each day's showing of the pageant, which was presented for an entire week. And of the entire panorama of agriculture, the rapid progress of the last century, to which the Case Company has made many notable contributions, was doubtless the most graphic to them.

In plowing, they were told of the advent of the steel plow, learned of the broad improvements when riding plows came along, and saw how the use of tractors, coupled with continuing advances in plow design, contributed to the great gains in farm output in recent decades.

The audiences learned, too, of the

One of the early advances in plowing came with Major Leonard Andrus's invention of a steel plow back in 1837

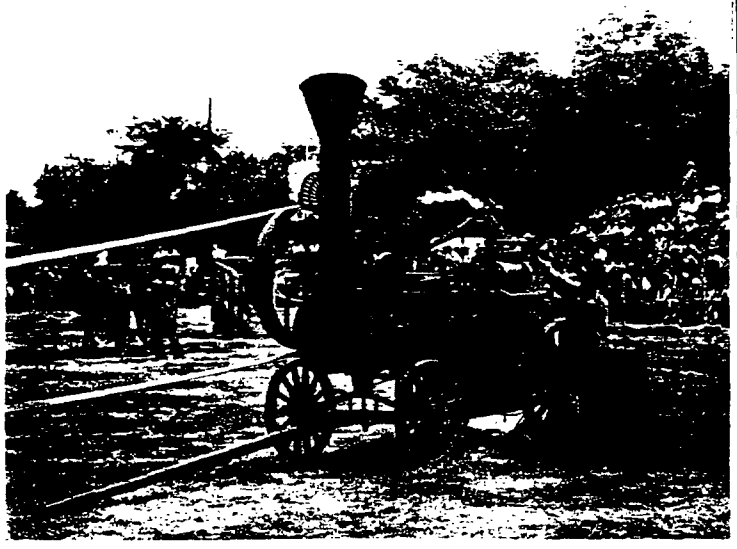




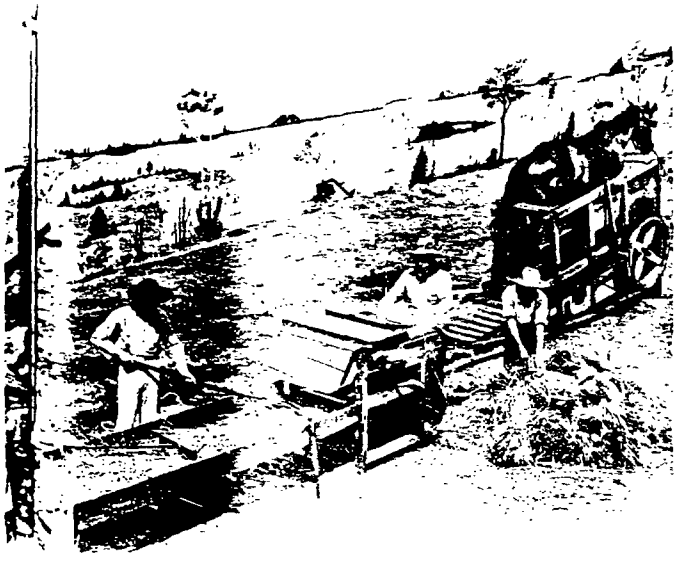
Two of Case's contributions to better farming, during the last century, are seen here. In the foreground, six teams of horses are powering a thresher of 1855, while in the rear stands an Agitator thresher of 1880, which introduced a new principle in threshing

parallel progress in threshing. Beginning with the groundhog thresher of 1842, they saw how horses powered it with a treadmill, learned of subsequent improvements in threshing, and saw how the modern combine (doing the work of both binder and thresher) finally evolved. Meanwhile, they saw how mechanical power was applied to threshers and other equipment – first, by the huge steam engines of the last century; then by the gas tractor; and finally by today's modern and efficient lightweight tractor.

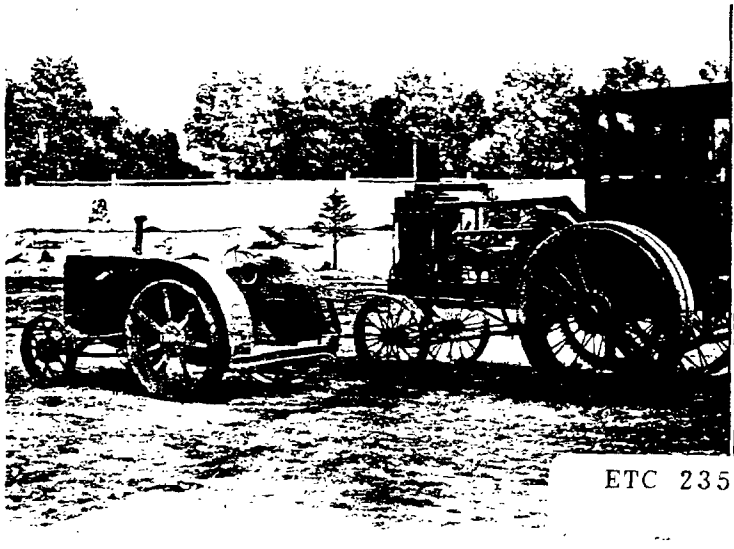
Some of the scenes of the Case pageant are shown on these pages.



Power farming began with steam engines like Case's No. 1 of 1869. Below, the trend to small tractors is seen in these 1912 and 1929 models



This "groundhog" thresher of the 1840's ended the drudgery of threshing by hand



ETC 23572

Hotels are bidding for the patronage of motorists through all sorts of innovations. They are offering special entrances, lots of parking space, and other conveniences — and plan to build new out post inns for tourists

HOTELS TAKE TO THE ROAD

By Creighton Peet

SUPPOSE you have been driving all day, and are looking for good dinners and comfortable beds for yourself and your family. You would like to stop at the big hotel in the town ahead — but as you think it over, you decide against it. Likely as not, this hotel has a fancy lobby, with a lot of smartly-dressed people standing about. You and your wife are in shorts, and the children are naturally a little untidy. Just at the moment you don't quite feel up to hotel life. So you turn in — at the next motel.

Perhaps you think your decision was of little importance — but it *was* important to the hotel people. It's no secret they have been much concerned by the growth of motels and tourist courts. In some areas these tourist havens have cost them a great deal of business, despite the fact that the rates in motels may be just as high or higher than those in hotels.

So great has been this concern, that right now, the American Hotel Association reports $2 billion is being spent to improve and polish up the comforts with which the hotels will welcome you the next time you take to the road.

Part of this handsome sum is going for repairs, improvements, and new furnishings which have been hard to get in recent years, but a good deal of it will be to attract guests arriving by car. Several specific things are being planned to draw and interest motorists.

Foremost among these is a special motor entrance, quite separate from the main entrance. This special entrance will have its own registration desk and elevators to upper floors. It is designed specifically to allow those arriving by car to go directly to their rooms where they can wash and change, before going down to the lobby, and the city streets. This motor lobby was suggested by motorists themselves, in a survey made by the hotel industry.

About a dozen hotels already have such motor entrances, and a great many more are about to install them. In some cases a hostess brings registration cards to the guests in their cars, while in others the registration desk is but a few steps away. In any event, an attendant takes the car

This special auto entrance at the St. Anthony Hotel in San Antonio, Texas, is a convenience to the motorist. He can register at the window in the rear and go directly to the room assigned him

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and parks it either in a garage or a nearby parking lot. In many cases, of course, hotels have their own garages, and in the Netherlands Plaza in Cincinnati, you lock your car after taking all you need from it, and it is rolled onto the elevator of an automatic parking machine.

A feature of many of the special motor lobbies is a large detailed map of the surrounding country, and in many cases there are information booths to advise tourists on local sights and trips.

In the case of the Hotel Utah in Salt Lake City, the garage is underground. While guests use the main registration desk, they do not have to pass through the lobby. In the Hotel Senator in Salem, Oregon, a tunnel connects the motor entrance with elevators to upper floors.

The Last Frontier, in Las Vegas, Nevada, another hotel with special accommodations for motorists, also has a drive-in web which allows guests to go almost up to their rooms. As an extra attraction for tourists motoring through this part of the world, the Last Frontier is now building an old-time frontier village. Abandoned stores, saloons, houses and hotels from nearby ghost towns are being moved in and rebuilt to produce an authentic picture of the Old West as it was in 1850.

Other hotels with special entrances are the Terrace Plaza in Cincinnati, the Mission Inn in Riverside, California, the St. Anthony in San Antonio, Texas, and the Adams in Phoenix, Arizona.

Another important advantage of the special motor entrance is that it makes it unnecessary for travelers to try to park on a busy street in the center of town, right in front of the hotel, while one of the party goes inside to inquire if rooms are available.

Hotels are bidding for the motorists' patronage through another major innovation — Out Post Inns — which are small branch hotels located along the main roads leading to a city. These will take the name of the parent hotel, as "The Hotel Blank's Out Post Inn." In many ways, these will resemble motels of the best type, but in addition, they will offer the same standards of service, the same food, and the same telephone switchboard as the parent hotel in the city.

Thus, although a guest may be staying at an Out Post Inn, he can use the name and telephone number of the hotel in town, for business or social purposes. From plans now being considered by several national hotel chains, the new Out Post Inns will have central buildings housing offices, restaurants, shops, and possibly recreation rooms, surrounded by a number of smaller units, like small apartment houses, with accommodations for guests. Each of these one and two story buildings will have several rooms or suites.

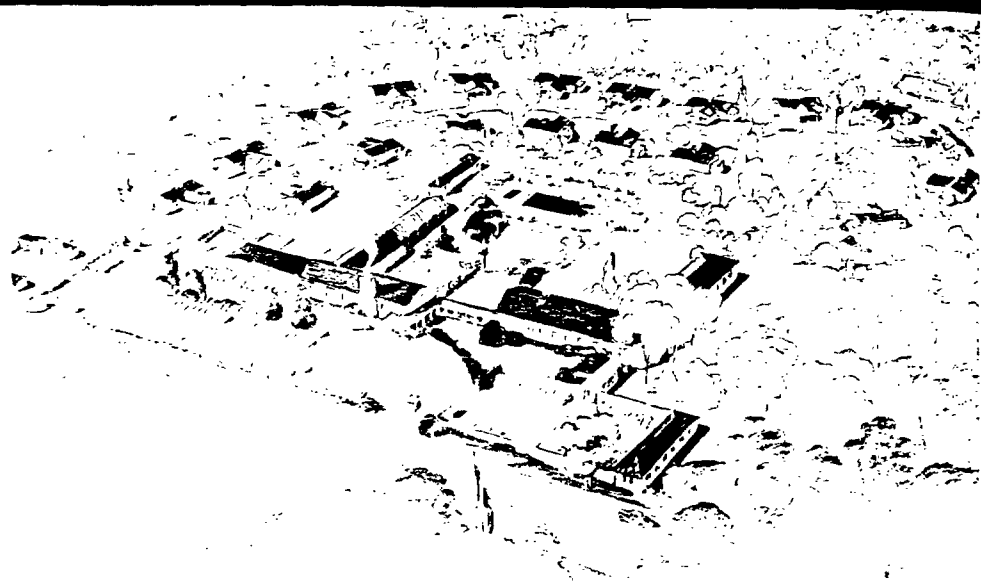
It has also been proposed that each Out Post Inn have regular bus service to and from the city hotel, so that guests can make trips into town for business or shopping, while making the Inn their headquarters. And of course the hotel would use the Inn to handle the overflow of guests whenever all its rooms were filled.

In selecting sites for Out Post Inns, some hotels are also thinking of nearby land, which might eventually be converted into landing strips in the future, when private planes come into more general use.

A sort of test for the Out Post Inn idea has been the Jack Tar Court Hotel at the end of Federal Highway 75, in Galveston, Texas. Operated by the National Hotels chain, this waterfront hotel with its dozen or more two-story brick units, has been successful enough to encourage the hotel industry to plan many more such groups.

Below left, motorists entering or leaving the Hotel Adams in Phoenix, Arizona, pass through this swank auto lobby. Below, some hotels even provide special elevators for their motoring guests

ETC 23574



This architect's drawing of a proposed Out Post Inn shows the kind of highway establishment that is planned by hotel people

To help motorists debating where to spend the night, hotels in many parts of the country are now taking radio time for spot announcements during the "zero hour," the period from four to six in the afternoon when motorists are beginning to think about a good dinner and a night's rest. However, these radio announcements don't merely try to sell hotel rooms; they provide real service by informing motorists when there are no more rooms available, and further by telling them what other hotels are still likely to have space.

Plenty of safe – and nearby – garage space, or parking space, depending on the climate and time of year, are also essential if a hotel is going to attract motorists in any quantities. On this point, the Hotel Association's survey showed that 78% of all hotels in the country either have, or are installing special facilities for motorists.

Another advantage some travelers find in the motel is that it is more receptive to children than the hotel. However, hotel owners are aware of this, and many hotels are now offering children's menus at reduced prices – and baby-sitting services as a special inducement for parents who would like to go out for the evening. Rates run from 35 cents to a dollar an hour. In some hotels there have even been discreet hints to headwaiters to drop that shocked expression when children appear – and be a little snappier in producing a high chair when it is needed.

Other special services include hot snacks served late at night for motorists coming in at odd hours, and free overnight kits for those who have come unprepared to spend the night. A kit consits of pajamas, washcloth, toothbrush, etc. This is now a specialty of the Statler hotels.

In adapting itself to the convenience of the motorist, the hotel is completing a cycle which Francis Keally, architect for the American Hotel Association calls "horses to horsepower."

Back in Revolutionary days, the roadside inn was the only hotel, offering shelter, food and drink, and all its patrons arrived by stagecoach or on horseback.

After the railroads came, the old inns were abandoned, and hotels came to be built near the stations. Although noise and dirt soon drove the hotels further and further away, the railroad station continued to be the entrance to the city for the majority of visitors. Even when the hotels had to send uniformed attendants and elaborate horse-drawn omnibuses emblazoned with the hotel's name down to meet the trains, in an attempt to lure guests, the railroad station was all important.

And now that more and more travelers are using their own cars, the hotels are finding that once more they must become roadside inns, and they're out to accommodate travelers and their horsepower, instead of their horses.

OUR PICTURES: Cover designed by Anton Kurka. Pages 3 and 14, illustrations by Harold Newman; Pages 4, 6, 21 and 22, charts by Graphics Institute; Pages 4 (except bottom right), 5, and 7 (except bottom left and right and second from top), Philip Gendreau; Page 4, bottom right, U. S. Office of Education; Page 6, center left, courtesy General Motors Corp.; bottom left, courtesy U. S. Rubber Co.; bottom center, courtesy Fisher Body Division, General Motors Corp.; bottom right, courtesy Sherwin-Williams Co.; Page 7, bottom left, courtesy Standard Oil Co. (N. J.); bottom right, Wide World; second from top, courtesy United Air Lines; Page 8, courtesy Ford News Bureau; Page 9, courtesy ACF-Brill Motors Co.; Page 11, courtesy Massey-Harris Co.; Pages 12 and 13, courtesy J. I. Case Co.; Pages 14-16, pictures and drawing courtesy American Hotel Association and Francis Keally, consulting architect.

ETC 23575

Stopping for an imaginary "red light" is all part of the effort to simulate actual cross-country operation

TEST DRIVER

Heavy-duty trucks as well as passenger cars figure in Ethyl's road test programs. Here's the fascinating story of one of their drivers — and his unusual job

(Editor's Note: An "Ethyl News" writer, who had never been to California before, recently visited San Bernardino to report on the activities of test drivers at the Ethyl Laboratory there. His impressions are contained in this article.)

By Thom Yates

EVERY WORKING DAY you can count seven million trucks on the highways and streets of America. From the handy pickup to the husky steel-sided giants that move 40 tons of ore in a single load, these vehicles are engaged in transporting the things we need for daily living. No load is too large or too small.

But getting life's necessities to us is not accomplished by waving a magic wand. For one thing, this enormous task requires men to guide the trucks to their destinations. Particularly men who recognize the vital importance of riding lonely mile after mile through all kinds of weather and terrain day in and day out. Also, it demands sturdy, dependable vehicles and sturdy, dependable fuels that can deliver the goods in a minimum of time and a maximum of economy.

To help assure that the vehicle and fuel do their part at all times, an "unseen passenger" rides beside every truck driver, especially over-the-road operators. The invisible companion is himself a driver who knows what it means to shepherd as much as 13 tons of truck-tractor and semi-trailer load over every type of highway, in every type of weather, and at all hours of the clock.

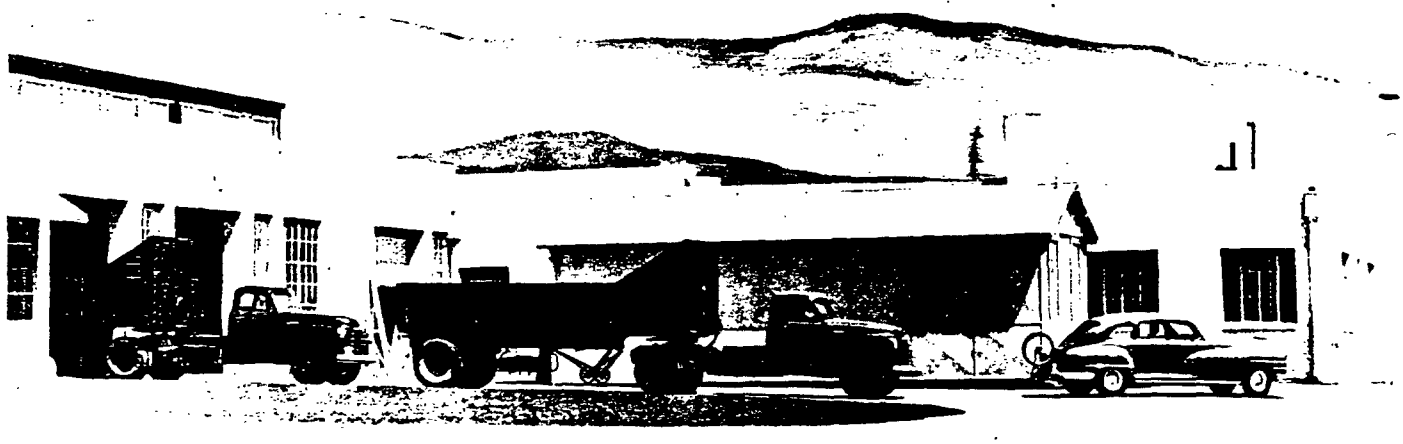
This "unseen passenger" is the professional test driver of the Ethyl Laboratory in San Bernardino. He drives no cargo van, but indirectly he plays a big part in seeing that the produce of California, the cotton of Louisiana, and the lumber of Maine are where you need them, and when. For, by stockpiling miles on his truck, the Ethyl driver enables laboratory engineers to gain new knowledge in regard to engine durability and the behavior of present and experimental fuel blends and antiknock additives.

Unlike those Ethyl test passenger cars which are used to road-rate fuels and to make scores of other on-the-spot determinations associated with the engine-fuel relationship, his heavy duty vehicle is bare of road research equipment. No engineer, he makes no special acceleration or other tests in his daily driving. He rides merely to accumulate the mileage that is so necessary in laboratory studies.

Test driving out of the Ethyl Laboratory is a job full of ups and downs — you're riding almost a mile above the world one hour and near sea level the next. It's a job, too, that blows hot and then cold — first you're sweltering in 115 degree desert heat in mid-afternoon and then rolling up the cab windows to close out the chilly night air not too many hours later. It's a monotonous, boring, lonely job and anything else like that you want to call it. But it's an important — even vital — job from the standpoint of continuing automotive progress.

In the 13 years that the Ethyl Laboratory at San Bernardino has been in operation, company drivers in both trucks and passenger cars have piled up the staggering total of 6.5 million miles of test driving. That's equivalent to 260 trips around the world at the Equator. One test truck driver at San Berdu alone has more than 600,000 miles of Ethyl

ETC 23576



The day shift starts to roll, above, as test vehicles leave the Ethyl Laboratory garage. The Cajon Pass service station, at right, is a favorite stopping place. Lower right, this odd rocky formation is seen along the run

driving behind him — and virtually every inch of it over the same route.

Incidentally, that's not as confining as it might sound. Its 20,157 square miles make San Bernardino County the largest county in the United States. The states of Delaware, Massachusetts, New Jersey, and Rhode Island could rest within its boundaries, and there still would be a corner of the county sticking out around the edges here and there. So, when you go out driving in the San Berdu countryside, it could be a week-long outing. In the case of Ethyl test drivers, however, travels are limited to a 214-mile daily round trip between the Ethyl Laboratory and the thriving desert community of Mojave.

Back and forth over this route go the Ethyl trucks 24 hours a day, five days a week. That means 1,070 miles a week for each of the nine drivers, or 9,630 miles weekly for the Laboratory's fleet of six truck-tractor and semi-trailer units. That is maximum mileage, and not that many miles are driven every week, of course. Even so, the San Bernardino fleet will travel not less than 400,000 miles this year, exclusive of passenger car test miles driven.

Ray, the driver with more than 600,000 Ethyl miles to his credit, was the pilot of the truck-tractor the day I made my "dry run." Like every other good driver, he was master of his motorized ship of the desert every second. Before we embarked on our run, Ray handed me a schedule of eating, rest, and maintenance stops. He didn't miss any of them by more than three minutes. When he said "lunch at Mojave at noon sharp," he wasn't kidding. Both hands of my watch were nosed squarely to 12 when we arrived at that simmering turn-around town.

The first leg of the test run is the 22.5 mile creep up U. S. Route 66

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from the Laboratory to Cajon Pass summit. In negotiating this winding grade, which varies up to six percent, the speed of the vehicle drops to 10 mph and the inexperienced rider secretly wonders if the truck-tractor with its heavy load will make it. Ray isn't bothered at all. He's more concerned with pointing out the sights along the way.

"Those power lines you see are carrying electric current to Los Angeles from Hoover Dam, and over there are the Santa Fe tracks through the mountains." Ray suggested, too, that if I looked to my left I'd spot Old Baldy. I had never seen this famous mountain peak before, but it was no stranger to me nevertheless. It seems that every postcard I ever got from a friend visiting southern California showed "Orange grove with Old Baldy in background."

Ray interrupted his momentary role of tour guide to elbow me and point to a highway marker. It read: "Summit Cajon Pass Elev. 4301 Ft." In a little more than an hour, including a 10-minute rest stop, we had climbed to within four-fifths of a mile above sea level. If nothing else, your ears would have told you that you were a lot nearer the clouds than when you started.

We got out and stretched at the summit. Ray didn't need to, but I was learning the hard way that jogging along in the cab of a heavy vehicle is not the same as riding in the richly upholstered seat of a passenger car. As we prepared to get in the cab again, Ray spotted a discarded pop bottle along the roadside and began to chuckle. Made him think, he said, of a chap who used to drive for the Ethyl Laboratory.

It seems this fellow – Jack, we'll call him – hadn't been on the job long when he began to notice that there were many empty bottles along the side of the roads that Ethyl test drivers follow. Motorists would buy the soda or beer at a cafe, pay a deposit on the bottle, and then drink the contents while driving. Then, out the car window would go the empty bottle.

Jack began to collect the empties he saw at each of his scheduled stops, and turn them in to the same restaurant. It wasn't long before he had enough credit on the redeemed bottles to pay for a month of lunches. But, as Ray pointed out, it wasn't the money so much. It was the fact that collecting empty bottles helped relieve the monotony and loneliness of traveling the same road, night after night and day after day.

Just as he was putting the finishing touches on this story, Ray gave the wheel of the truck-tractor a tug to the left and we veered off Route 66 onto U. S. 395. This highway runs from border to border, Mexico to Canada, and would be one of the major arteries for transporting troops in the event of a national emergency. Right then, however, you could scan the landscape for miles around, and the only living objects you'd see were the Joshua trees, mesquite, cacti, and the other wild growth that flourish in the desert.

Once you get on Route 395, you're really in the desert. Almost automatically, the heat becomes far more intense, and you don't ride too many miles before wind-blown sand and dust has planted itself in a layer on your face and hands. There is nothing to break the long spell of flat wasteland and blistering heat but an occasional passing car, scattered combination service station-general stores, and a few tiny villages, none of which consist of more than a dozen buildings. Typical of these desert communities is Adelanto.

An eating place in Adelanto, which was to have been a rest and maintenance stop on the way back to the Laboratory, became an unscheduled halt for us on the trip out. Even in San Bernardino city this day, the thermometer had flicked its red tongue past the 100-degree mark, and to say I was thirsty was putting it mildly. Ray and the other Ethyl test drivers have learned to curb their desire for liquid refreshments and to space their stops for water and soft drinks. But me, I just had to swallow something more palatable than clumps of desert air and sand.

On our way again, we weren't too far beyond Adelanto when Ray brought the truck-tractor to a dead stop. He waited for a few seconds and then sent the vehicle through its four gears forward. But we didn't resume our former 40-50 mph speed. In fact, we stopped again. Ray put the vehicle, successively, into first,

The city of Mojave is the halfway point on the day's run — and a welcome sight after driving through miles of desert

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second, third, and fourth gears. Now we'd get rolling again, I figured. But we didn't. Another complete stop and another round of gear shifting. Then another and still another procedure just like that.

My "how come?" seemed like a logical question. Ray's answer didn't sound so logical, however. He said we had just passed through a town and that every last one of five traffic lights was red when he got to it.

Stop Lights in the Desert?

This was it, I reckoned. The heat and the desolate countryside has gotten one of us, and I was pretty sure it wasn't me. If we *had* gone through a town, I would have given Ray the benefit of the doubt that we had encountered a traffic signal or two – yes, even three, four, or five of them. But the map showed no community of any size between Adelanto and Beechers. And Beechers was still a good distance away.

Half an hour later the same thing happened again. Five halts, a momentary pause after each, and then the shifting into all gears.

I told Ray I supposed we had just gone through another town and that we didn't get a single traffic light in our favor.

His was a "well, yes and no" reply.

It turned out this way. The Ethyl test drivers make these "traffic light" stops at the 54-, 80-, and 92-mile posts on the trip to Mojave and at the 54-mile post on the way back. The county has marked each mile from the County Courthouse in San Bernardino, and at the three milestones just mentioned the Ethyl drivers have mentally constructed the imaginary towns of Ethylville, Ethylburg, and Ethyltown. The purpose of the five stops and starts in each "town" is to simulate actual commercial vehicle operation. It's seldom that a truck in cross-country service can travel for hours on end – as you can in the desert – without encountering a stoplight or sign. So, to make the test runs as realistic as possible, Ethyl has "erected" traffic signals at properly-spaced distances.

Ray wasn't seeing a mirage after all, as I had feared, but visions are not uncommon among the men who ride the desert alone at all hours of the day and night. One Ethyl driver still contends that he saw a trolley car on Muroc Dry Lake, which is partially visible from that part of the test route that is Route 466 from Beechers westward to Mojave. And virtually all of them admit to more than once jamming on the brakes because they thought they saw another truck or a passenger car loom up in the darkness directly ahead.

Almost every mile of the test route holds some sort of memory, pleasant or otherwise, for the Ethyl drivers.

It wasn't far from the intersection of Routes 466 and 395 at Beechers, for instance, that Ray encountered a car full of stranded migrants during the storied Okie exodus out of the Dust Bowl to California. The car was battered and worn, yet it was the only shelter the Okies had from the broiling daytime sun and the near-cold night.

Ray paid no heed to the vehicle the first time he saw it, because experience has taught him that motorists often swing off the road and wait for nightfall before continuing their journey through the desert country. But when the dilapidated car was still in the same place on his next day's run, Ray investigated. He found an old man and woman, their son and his wife, and three of the young couple's children munching slices of a loaf of bread. They had no other food, no milk – and hadn't had for more than 24 hours.

On a run like Ray's, the various professional drivers get to know one another quite well. Ray sought out the milkman he passed at the same spot every day and arranged with him to leave the Okies a supply of milk. The milkman, in turn, solicited contributions from grocers on his route for a basket of food to give the family. A service station dealer oiled and fueled the broken-down car at no charge. When Ray last saw the Okies they were off to Bakersfield amid profuse thanks and handshaking. Ray often wonders what happened to that family.

It's incidents like that which make up the daily life of an Ethyl test driver. But there's more to those 214 miles a day than can be told in incidents and anecdotes.

Miles — of Information

It is those 214 miles, plus all the others like them, that establish just how durable an engine or any specific one of its parts is, and that tells the laboratory engineer what effect experimental gasolines and antiknock compounds have on engine durability. Mileage accumulated also aids in determining such other variables as engine wear, engine cleanliness, the effect of combustion chamber deposits on fuel antiknock requirements, and many other factors that contribute to – or against – the successful and economical operation of a gasoline powered vehicle.

Knowing these things, you come down from the desert and the mountains after a day's run feeling that you've done something concrete to further the compatability of gasoline and the modern internal combustion engine. You feel good for not only having conquered nature's most varied terrain, but for making the desert and mountains yield valuable mileage in addition.

You feel like somebody special. And, in a way, maybe you are.

OIL PROGRESS — MEMO TO AMERICA

(Continued from Page 7)

more than 2,200 new companies have started up as oil producers, while another 1,300 firms have entered the marketing end of the business within the past year alone.

And while growing in stature under the stimulus of competition, the oil industry has been a substantial factor in the growth of nearly all American industries. It has made the mechanical age possible.

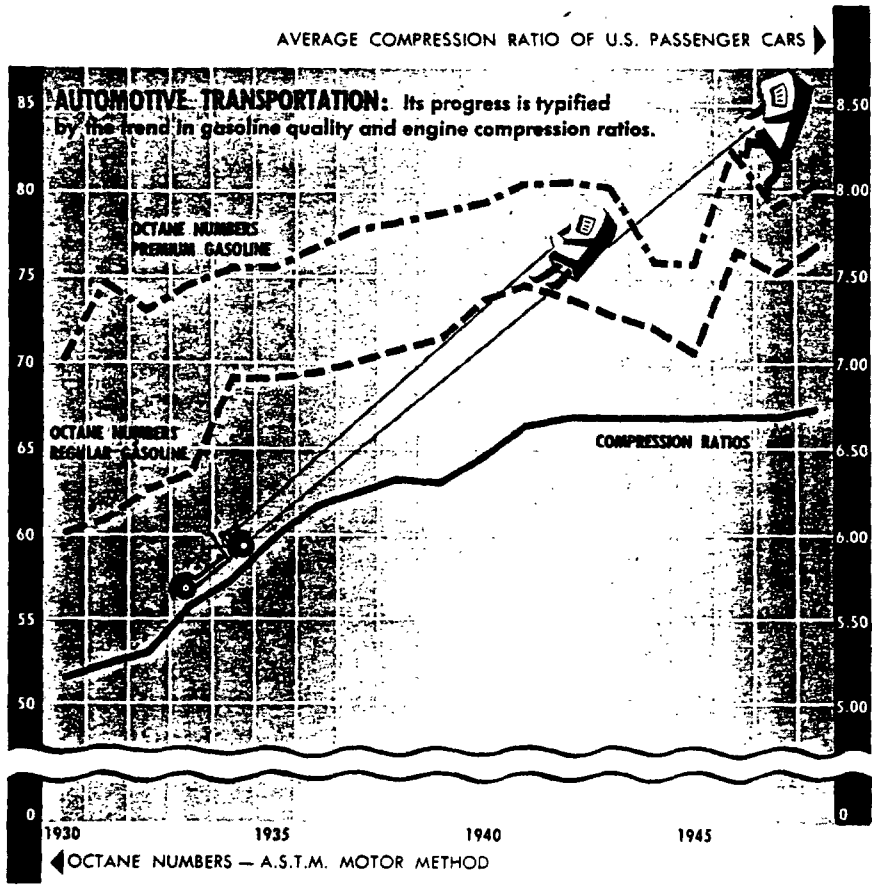
Greatly Aided Their Growth

The steel and construction industries not only supply materials to the oil industry, but are called upon, as are all other industries, to serve the automobile, aviation and farm equipment industries — industries whose products have been made possible by oil. And in turn, numerous other industries — such as rubber, glass, paint, battery, shipbuilding, railroad equipment, highway construction, food processing, and textiles — owe their development and present size, in large measure, to oil.

Moreover, in a very real sense, oil has aided the growth of hotels, tourist courts, and restaurants; of vacation resorts and amusement areas. It has helped create automotive accessory stores. It has paved the way for countless highway businesses to grow and prosper.

In sum, oil has created a new way of life, provided the nation with new livelihood and income, made possible the existence of more jobs and better living standards for literally millions of American families.

Meanwhile, the industry has provided its own employees with good working conditions, paid them among the highest wages in U. S. industry, and undertaken broad programs of social security in their behalf.



The industry has made far-reaching social contributions in the form of vacations with pay, sickness and death benefits, insurance, retirement plans, and many other programs looking toward the comfort, happiness and security of its employees.

Today, the average oil industry employee enjoys a host of benefits. He has stable employment in a progressive industry that contributes to the welfare of the country. He earns a high rate of pay. And he can look forward to a far greater measure of happiness and contentment than his forefathers ever enjoyed.

Meanwhile, the industry, through the years, has consistently sold its products at reasonable prices. Today, amid the deep concern over the high cost of living and the trend of prices generally, it is important to look at the record.

And oil's record is excellent! Reflecting the keenly competitive nature of the industry, the prices of petroleum products have lagged far behind the upward climb of the general level of commodity prices. Today's dollar, as compared with 1926, will buy more petroleum products than practically any other group of commodities entering into the general level of prices.

Quantity AND Quality

And not only more products, but infinitely higher quality products.

In gasoline, for example, the gallon a motorist buys today is far and away superior to the gallon he could purchase two decades ago. His motor fuel today gives him more power, better engine performance and greater fuel economy than he has ever known before.

Considering only one characteristic of gasoline, its antiknock quality, regular grade gasoline has increased from 60 to 76 octane number

since 1930, while the average octane number of premium gasoline has increased from 70 to 80 octane number. The average motorist today, benefiting from the technological progress of the oil industry, has a better grade of fuel to power his car than Lindbergh had to fly the Atlantic. And when price comparisons are made with previous years, it must be remembered that regular gasoline today is far superior to the premium gasoline of 25 years ago.

Great Technological Strides

Looking back over the last few decades, the oil industry can point to technological progress of immense magnitude. For every discovery that's been made, it has learned greatly to increase the recovery of the oil known to be underground. For every barrel of oil that's been produced, it has learned to increase the yield of desired products, to develop hundreds of new products, and all the while to improve the quality of its finished products.

In exploration, the industry has scored tremendous advances.

Despite the steady increase in the consumption of petroleum products, the industry has nevertheless been able to widen the frontiers of known supply.

Reserves Highest on Record

Today, known reserves of liquid hydrocarbons are estimated at more than 24 billion barrels, the highest in history. And still the search for oil goes on. This year, in the course of drilling some 40,000 wells in the United States, the industry will go as deep as three-and-a-half miles into the earth, and more than twenty miles out to sea, in its unending efforts to uncover more and more oil. And in addition to mapping out new oil supplies underground, the industry has already spent millions of dollars in investigations of other sources for fuels and lubricants, and has established the technical ability required to bring them to fruition. These alternate sources, should the need for them ever arise, extend almost infinitely the nation's resources of liquid fuels.

In like manner, recent decades have witnessed unexampled gains in the art of refining. Since the development of thermal cracking, the first notable advance, the succeeding years have seen the introduction of such newer methods as polymerization, hydrogenation, alkylation, isomerization and catalytic cracking.

Gasoline Yield Doubled

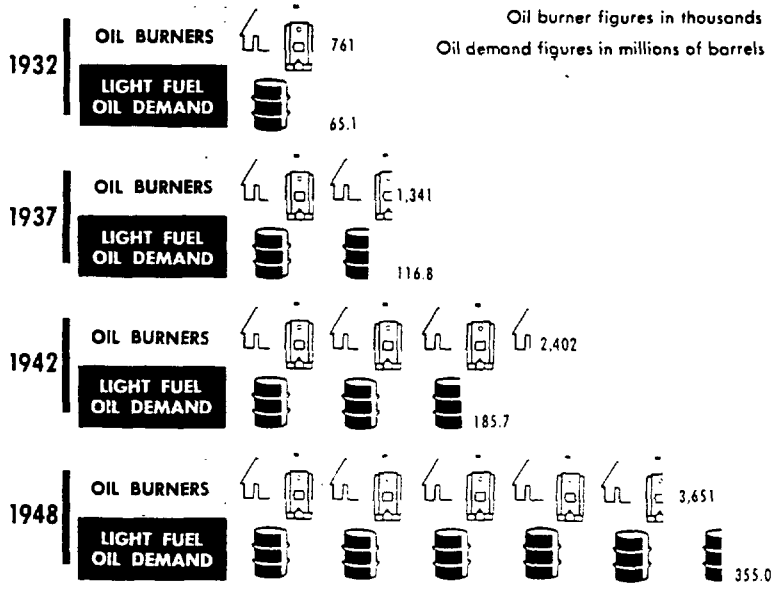
Through these advances, not only were better quality products obtained, but the yield of desired products was greatly increased. In gasoline, for example, the average yield from a barrel of crude has been increased from around 22% in 1918 to 40% and more in recent years, and with a potential yield considerably higher.

As it pauses, briefly, this month to observe "Oil Progress Day," the oil industry can point to an enviable record. It has provided an ever-broadening stream of useful products to the American public. It has made many significant social contributions. And in no small measure it has made possible our unparalleled standards of living.

But the oil companies are not stopping there. Currently, they are spending four billion dollars — an amount equal to one-fifth their entire present capital investment — on new facilities and equipment. They are widening the horizons of oil and of known oil-bearing resources. And they are developing countless new products for the benefit of all.

Under the American system of competitive enterprise, the oil industry has demonstrated what can be accomplished for the betterment of mankind. Today, as we look to the future, it is not hard to visualize the even greater opportunities and rewards that lie ahead.

LIGHT FUEL OIL: Demand of nearly a million barrels a day is due mainly to the spectacular growth in home oil burners.



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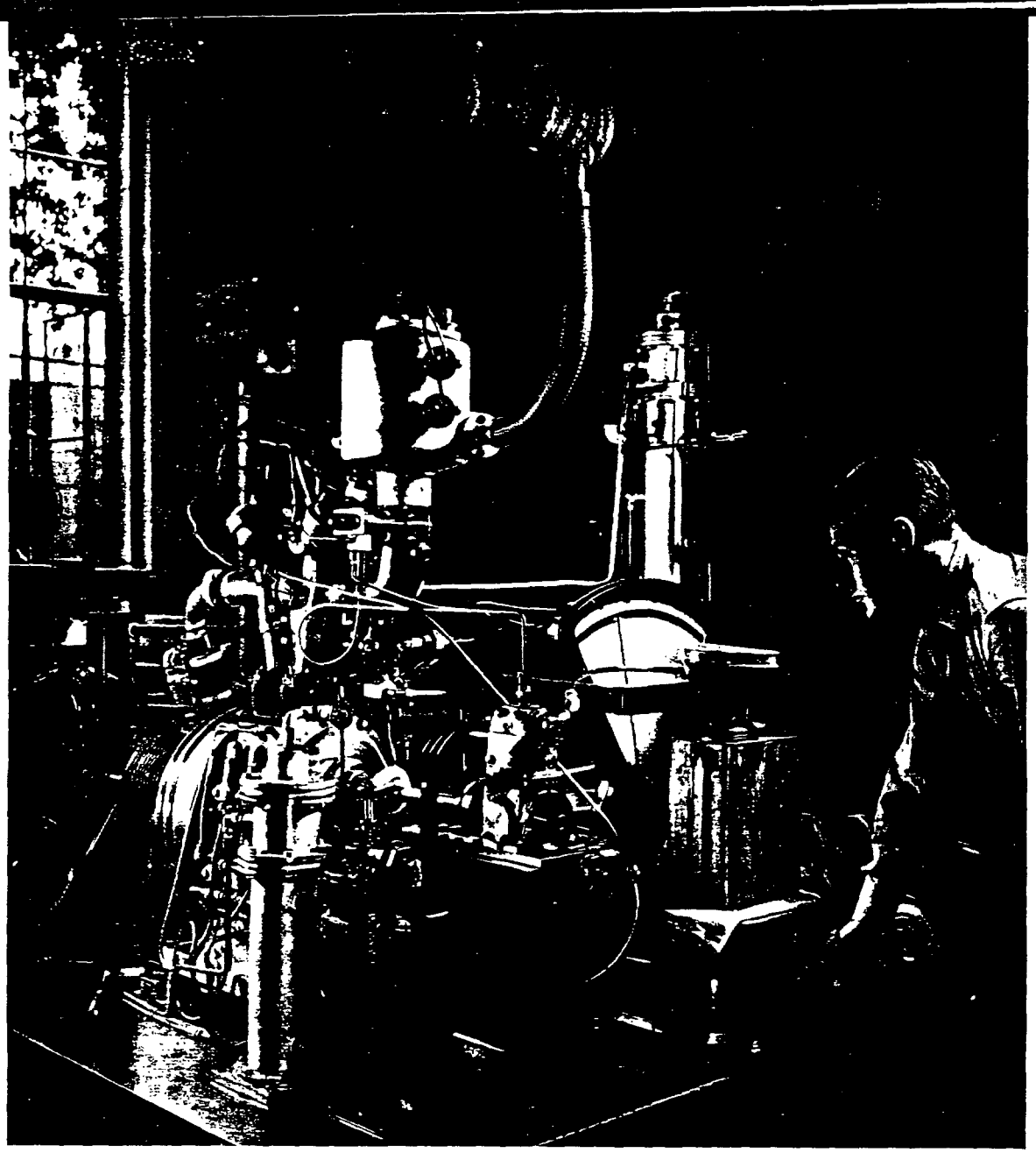


SEVENTEEN POINT SIX

In many of the nation's research laboratories, particularly those of the aircraft industry devoted to studies of fuels and spark plugs, the assemblage of metal parts pictured above is known simply as the "17.6 engine." It's a name which stems from the engine's cubic inch displacement.

The "17.6" is a single-cylinder supercharged test engine which ordinarily is coupled to an alternating current dynamometer. During the war years, it built up a reputation as a laboratory test engine highly suitable for general aircraft fuel and ignition investigations. Today, it is used in more than 20 laboratories in which such work is done. It is of special value for the routine preignition rating of spark plugs in aircraft spark plug development, for fundamental studies of the preignition characteristics of fuels, and for investigations of the relative changes in fuel ratings with changes in engine severity.

The 17.6 engine is another example of the creativeness of Ethyl Corporation research personnel. Engineers responsible for research on aviation products at the Ethyl Laboratories in Detroit designed and developed the engine ten years ago as an aid to aviation fuel and engine research.

Four of the high-output engines are in use at the Ethyl Laboratories. Each is capable of 18 different operational speeds, ranging from 200 to 3,600 rpm. Each can be operated with any selected value of boost up to a pressure of 90 pounds per square inch absolute, which is the top pressure of the compressed air supply system. During supercharge operation, outputs up to 750 pounds per square inch indicated mean effective pressure have been obtained. Even so, the upper limit of the engine's power output has not been reached, and is not known, since this presently is limited by the maximum supercharging pressure available.

ETC 23582

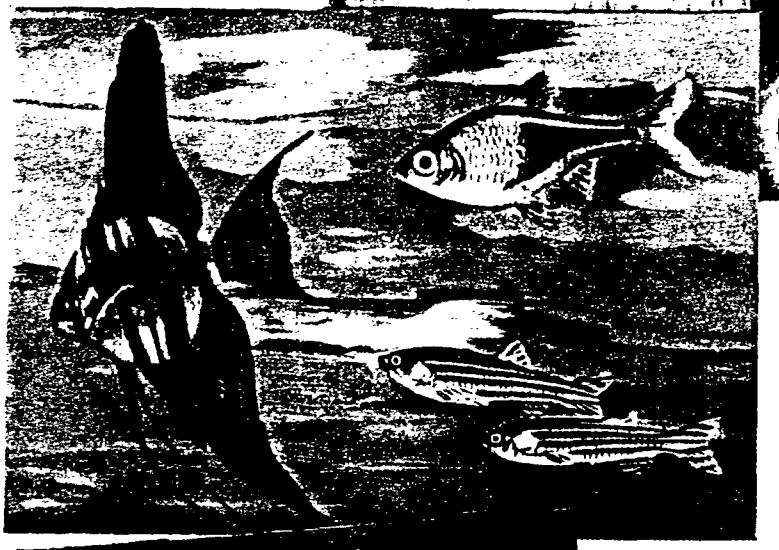
When shopping for a pet

THE "TRADE-MARKS" OF NATURE*

distinguish these favorites

The **AFGHAN HOUND** is distinguished by his long, aristocratic nose and a unique "hair do" that flows down over his neck and ears.

If you see a dog that looks like a lamb, you can be sure it's a **BEDLINGTON TERRIER.**



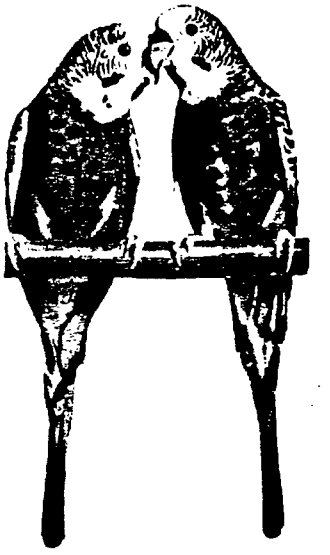
Three aquarium favorites:

ANGEL FISH — marked by large, crescent-shaped fins that suggest the wings of an angel.

RASBORA — characterized by a funnel-shaped spot that covers rear half of body.

ZEBRA FISH — identified by dark stripes running from gills to tail.

The crest of feathers on his head identifies this saucy little songster as a **TOP-KNOT** canary.



LOVE BIRDS are known for their habit of perching in pairs and cuddling up to each other.

When you buy gasoline...

THE TRADE-MARK "ETHYL"

ETHYL CORPORATION

identifies gasoline stepped up with "Ethyl" antiknock fluid

October 14 is Oil Progress Day, and thousands of oil companies, proud of their record of public service, are holding open house for you throughout the country. Competition among these companies to give you better service and better products has resulted in better transportation for everyone. For example, modern gasoline made by improved refining methods and stepped up with "Ethyl" antiknock compound is one of today's best values. "Ethyl" fluid is made by *Ethyl Corporation, New York 17, N. Y.*

ETC 23583

Prepared in cooperation with specialists at American Museum of Natural History, N. Y.

NOVEMBER ★ 1948

ETC 23584

IN THE

ETHYL NEWS

NOVEMBER 1948

Raymond R. Faller, former manager of employee relations in the Detroit research laboratories, has been appointed to coordinate the employee training activities of Ethyl's Industrial Relations Department. He has transferred his headquarters to New York City where he will supervise the training activities for the entire Company.

As a member of the staff in Detroit, he has directed and organized numerous training programs for engineers and chemists in Ethyl's graduate training school. This school consists of an intensified program designed to familiarize future field and research men with all phases of Ethyl's operations before assignment to various departments of the Company.

Mr. Faller came to Ethyl in 1931 as an automotive engineer in the former Dayton division and five years later was named assistant division manager. In 1939 he was transferred to Detroit to become director of training. After a three-year tour of duty in the Navy he returned to the Detroit laboratories in 1945 to become manager of personnel and employee relations in the Detroit laboratories.

Mr. Faller was born in New York and graduated from New York University with a B.S. in mechanical engineering. He was an instructor at New York University and later at Yale University, where he studied for his M.S. Before coming to Ethyl, he was a fuels engineer with the U. S. Bureau of Mines.

STEAM-HEATED REFRIGERATION 3

Providing cool water for its operations is a big task at Ethyl's manufacturing plant in Baton Rouge. Now 25 million gallons of water a day will be chilled by a new installation that uses steam to do the job.

HEARING AIDS FOR CONGRESS 6

Congressional committees filled more than 128,000 pages with their testimony so far this year. Here's an informative story on what has become a major activity in Washington, D. C.

SAMPLE SERVICE 9

Ethyl Corporation's gasoline testing laboratories have tested some half million samples since they were established 20 years ago. This picture story tells how this typical Ethyl service functions today.

CANADA UNLIMITED 12

Postwar trends are rapidly changing Canada's economic complexion. New explorations and development work in oil, iron and uranium promise to give the Dominion a new status in the eyes of the rest of the world.

RUGGED RECIPES 16

The backwoods boys are no sissies when it comes to preparing dishes a la outdoor. Everything from bear to squirrel is considered good eating by these chefs.

A SAFETY PLAN THAT WORKS 18

Detroit has made itself the nation's safest big city. How? By using large doses of common sense in its battle against traffic accidents.

In order to widen the fields of reader interest in Ethyl News, we frequently publish articles contributed by writers not associated with Ethyl Corporation. Opinions expressed in signed articles are the authors'. The editors of the News welcome articles of timely interest submitted from outside sources.

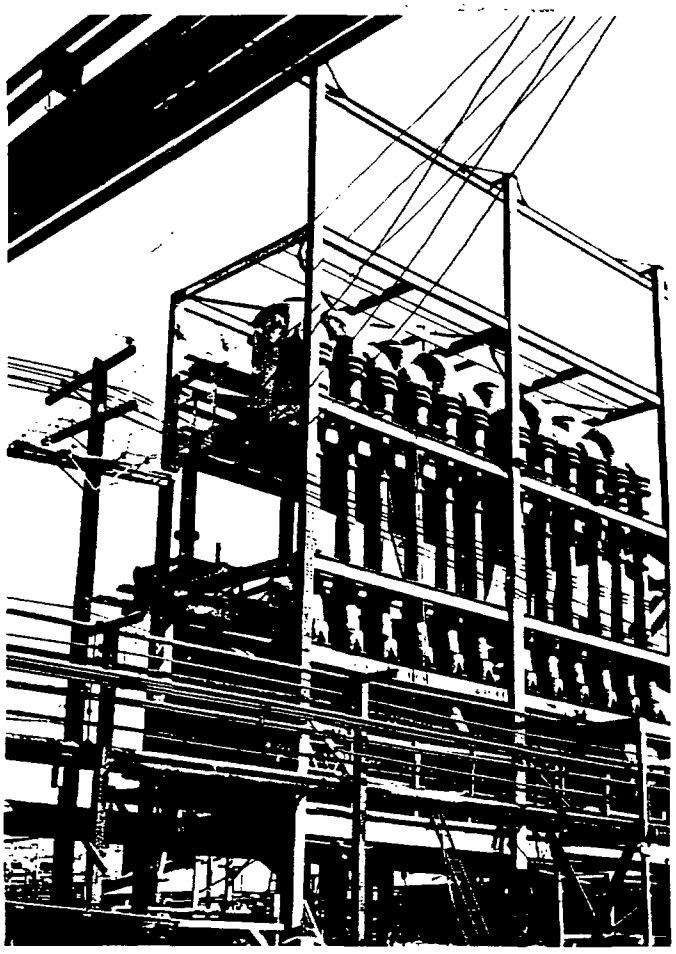
Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N.Y.

Manufacturer of "Ethyl" antiknock compound, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer; Richard M. Page, secretary

ETC 23585

Steam-heated Refrigeration



The new jet refrigerating unit, shown here as it was nearing completion, is believed to be one of the largest of its kind ever built

A new refrigerating unit, installed at Ethyl's plant in Baton Rouge, uses steam to cool 25 million gallons of water daily

THE COOLING OF water through the use of steam is the novel method employed in a new refrigerating system which was recently installed at Ethyl's manufacturing plant in Baton Rouge, La.

That new system is called steam jet refrigeration.

Using water as its own cooling agent, the unit will deliver some 25 million gallons of refrigerated water daily for use in Ethyl's manufacturing operations. It represents another step in the comprehensive expansion program now in progress at Baton Rouge, whereby Ethyl's manufacturing capacity is being substantially increased through major additions to existing facilities.

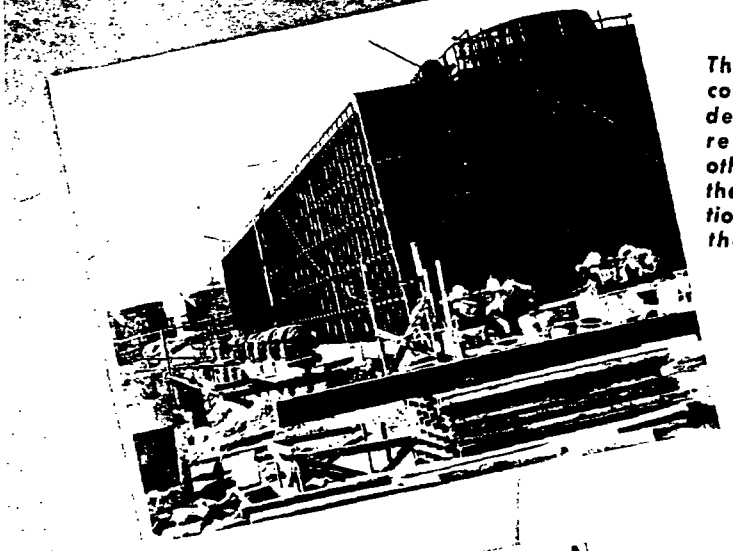
As everyone knows, the lower the atmospheric pressure, the lower the temperature at which water will boil. That's why, of course, a kettle of water will boil at a lower temperature on top of a mountain than it will at ordinary sea level.

How the Unit Works

Operating on that principle, the jet refrigeration unit "boils" (evaporates) a small portion of the water at an artificially low pressure. In so doing, the evaporated water carries away with it heat from the remaining unevaporated water, with the result that the latter is quickly cooled. About a hundred times as much heat is required to convert a pound of water into steam as is given up by a pound of water in being cooled ten degrees. For that reason, only a very small fraction of the "warm" water entering the evaporator can, by flashing into steam, provide the refrigerating effect for cooling the remainder.

In actual operation, the water to be cooled is pumped into a vessel called the flash chamber, which is maintained under a vacuum. Part of the water is instantly evaporated due to the low pressure, and the vapor is swept out of the vessel by high velocity steam jets. The immediate removal of the vapor maintains the vacuum and allows more water to evaporate. Thus, cold water can be constantly drawn off as warm water is added. The vacuum is produced by a combination of the steam ejectors and condensers with (barometric) water legs which exert a hydraulic "pull" on the system.

The jet unit at Ethyl's plant con-



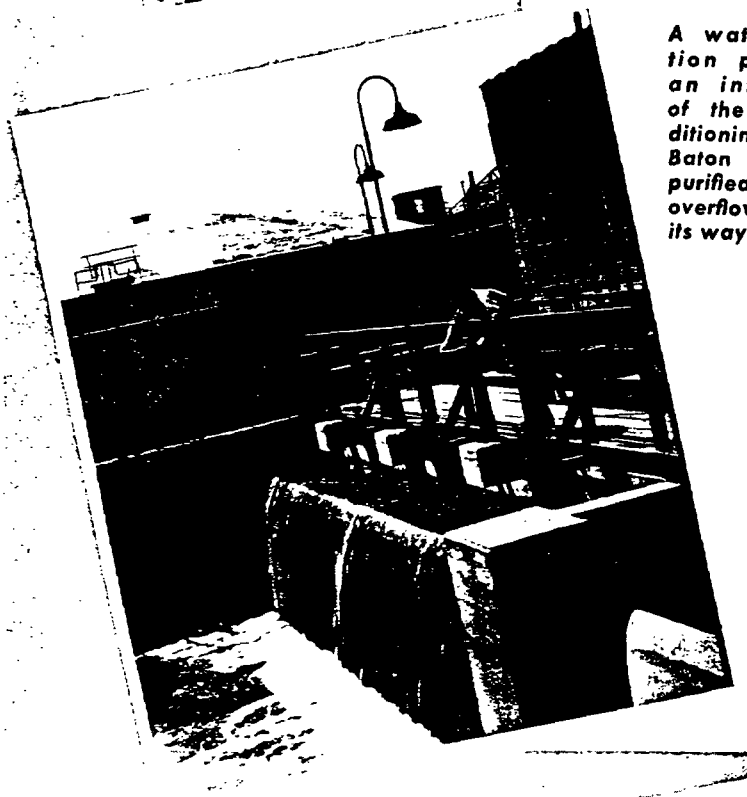
This new water cooling tower under construction represents another addition to the water conditioning system of the Ethyl plant

sists of a cylindrical flash chamber 50 feet long and 12 feet in diameter. The 25 million gallons of water that pass through it daily are chilled by the flow of 2.5 million pounds of steam through the ejectors. Heat is removed from the water at a rate which would freeze eight million pounds of ice daily. The entire operation is accomplished by a simple, automatic refrigerator which has no moving parts.

Finding Wide Application

Steam jet refrigeration, while not a new development, has comes into prominence only in recent years. It is finding wide application in industries where large quantities of refrigerated water are required in plant operations. Unlike refrigerating systems using chemical cooling agents, however, jet refrigeration is intended to supply water that is cool and yet somewhere above its freezing point of 32° Fahrenheit.

The new unit at the Ethyl plant, which together with its auxiliary equipment represents an investment of more than half a million dollars, is believed to be one of the largest of its kind ever built. It represents



A water purification plant forms an integral part of the water conditioning system at Baton Rouge. Here, purified river water overflows a weir on its way to a reservoir

Besides Mississippi river water, the Ethyl plant also uses water drawn from wells on the plant site and shown here pouring into one of the plant reservoirs

an important adjunct to the plant both for present and future operations.

The Baton Rouge plant, like other large industrial facilities, uses a great deal of water in its operations. The Ethyl plant, in fact, requires a flow of water large enough to satisfy the needs of a city of 100,000 people.

To supply that water, the plant makes use of two sources — wells drilled on its site and water from the nearby Mississippi River. An elaborate and complicated system, however, is required to make the river water suitable for plant use and to provide sufficient quantities of cold water at all times. The system contains its own water purification plant, several cooling towers and two reservoirs.

One of the most interesting parts of the system is the water purification plant. Built during the war, it takes in more than 28 million gallons of Mississippi river water daily, removes its mud and other impurities, and pumps the treated water to reservoirs where it is stored for plant use.

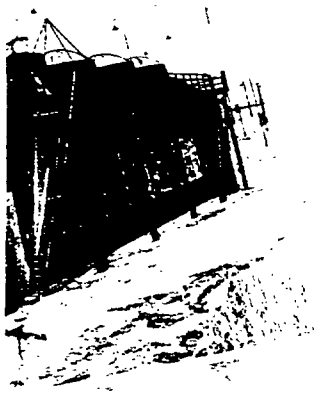
The incoming river water is taken in through a massive 42-inch pipe which feeds it into the bottom of four parallel settling basins. The water, meanwhile, goes through a closely-controlled process of treatment. The chemicals, lime and iron sulphate, are fed into the water and form a thick floc bed below the surface of the water in the basins. Incoming water is fed below this floc layer, and in rising through it accomplishes an upward filtration, scrubbing out silt, sediment and the floc. The treated water, now clear, overflows a weir at the end of the basin, and is then pumped to the plant reservoirs.

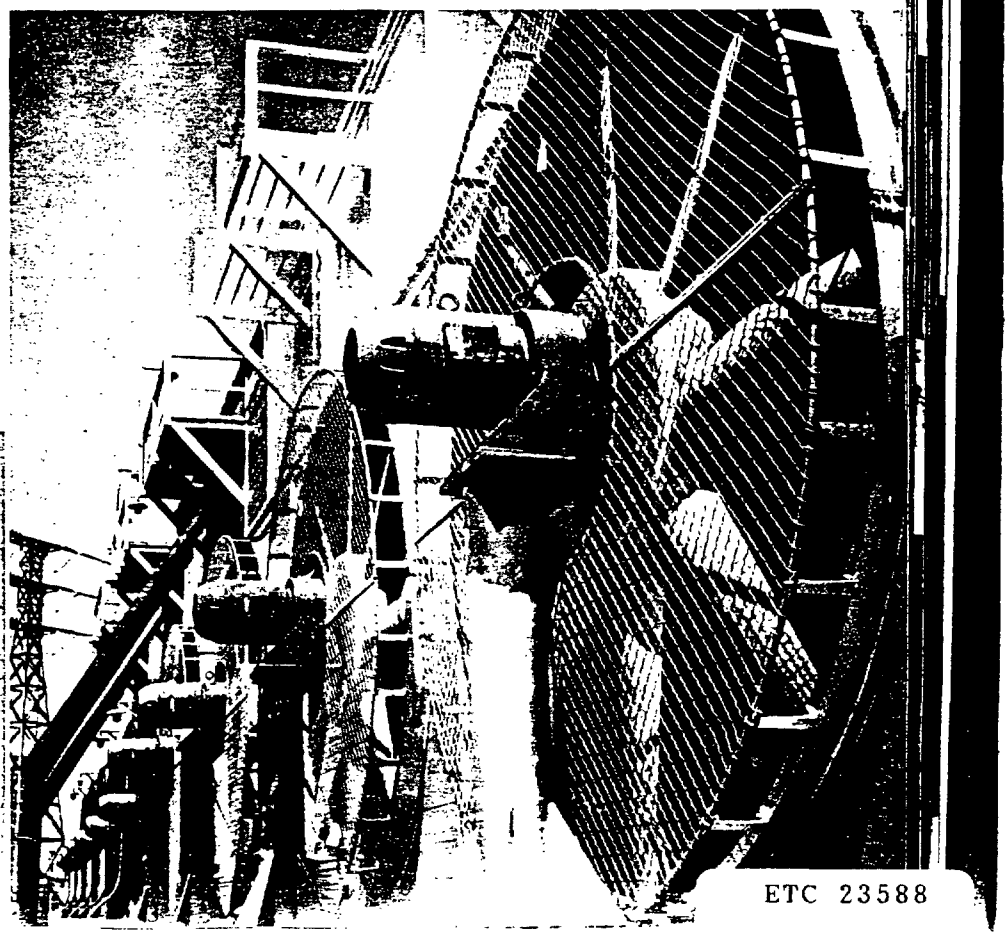
Serves Another Purpose

Interestingly enough, the plant's usefulness doesn't end with purifying the water. The sediment in the river water, which may have been carried down by the Mississippi all the way from Missouri and Indiana, has been used to fill in a nearby bayou. Some 45 tons of sediment are collected from the settling basins each day.

The Ethyl plant not only makes use of fresh river water and well water, but it also reuses water that has already served various operating areas. The heat load is removed by circulating the water through cooling towers. These towers, each equipped with a series of giant fans, direct a draft of air which evaporates a part of the water and thereby cools the remainder. Three of these cooling towers are in operation; a fourth is nearing completion and a fifth will be constructed late this year.

The new jet refrigeration system, which supplements existing facilities, works on much the same principle as the cooling towers. Simply by evaporating a small quantity of the water, it quickly cools the remainder. Its principal difference is that it uses steam, instead of a blast of air, to do the job.





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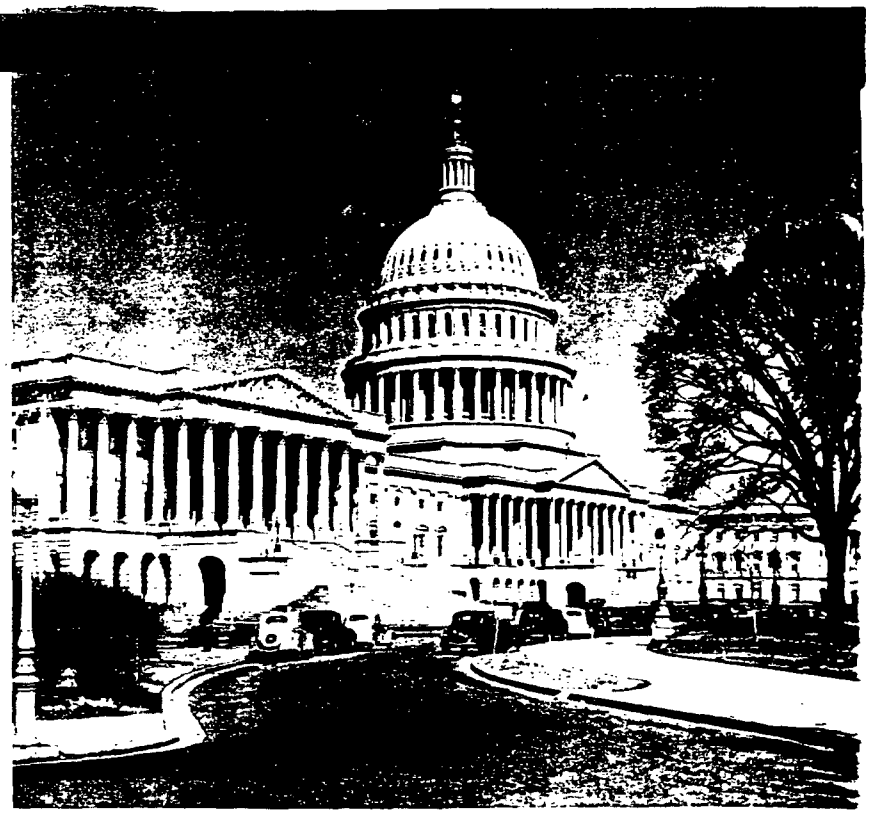
Shown at the left and right are two of the water cooling towers in use at the Ethyl plant



Hearing Aids

This behind the scenes story on Congressional hearings will give you a new insight into a little understood activity

By Shirley H. Scheibla

IF YOU CAN find time to read the some 128,000 printed pages of testimony given before Congressional committees so far this year, you probably will become one of the nation's best informed people on current problems.

Committees of the Senate and House have explored every subject of interest in this country from atomic science to postage rates. They cull their information from corporation presidents and housewives, professional propagandists and staid statisticians, and almost anybody else the legislators think might supply them with useful facts or viewpoints.

The first really spectacular Congressional hearing took place in 1861 when a committee representing both houses investigated the conduct of the Civil War. Since that time the device of the Congressional hearing has been called more and more into play as the complexity of the nation's economic and political problems has increased.

The 80th Congress established a new record for time and money devoted to hearings.

To have 128,249 pages of the hearings printed, it paid the Government Printing Office $1,497,743.54. No one knows how many other hearings were held but not printed. In contrast with these figures for the first nine months of this year, Congressional committees spent $1,062,377.98 for prints of 106,738 pages of hearings conducted during all of fiscal 1947.

Congressional hearings have become truly a big-time activity in the nation's capital and have established themselves as perhaps one of the most important phases of lawmaking. They provide detailed information, probably not otherwise obtainable, on the host of complex subjects on which Congress considers legislation. They also are used as a means of checking to see that Congressional intent is carried out in the administration of laws.

When properly handled, they can reflect the viewpoint of every group of the citizenry that would be affected by a given piece of legislation. Since they are not hedged in by the rules of a trial court, they can ferret out the secrets of people who might escape the courts through technicalities. When all other devices have been exhausted, they can place cases before the bar of public opinion.

But when improperly handled, they can serve the selfish motives of a committee chairman who may suppress the other side of a question. They also can deny witnesses the same rules of fair play they would enjoy in a courtroom.

The public seems to have several misconceptions about Congressional hearings. Here are the facts:

1. They are not conducted by the whole Congress. Any committee chairman can call a hearing. He usually seeks the sanction of other committee members but can proceed without it.

2. Congress cannot interfere with a chairman's conduct of a hearing short of impeaching him or removing him from the chairmanship of the committee.

3. Most of the rules governing

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the conduct of hearings are made up by each committee chairman. Some committees require witnesses to submit written statements 24 to 48 hours in advance of their appearance. Others, however, do not permit witnesses to submit any statements. Committees generally do not allow a witness's attorney to intervene in the proceedings. Usually one witness is permitted to question another only if he submits his questions in written form to committee members who then may ask them orally. Some committees encourage photography and radio broadcasting at their hearings, but others have rules flatly banning such activities.

Margaret C. Smith of Maine, the first woman elected to a full term in the Senate, was a member of the House Armed Services Committee

4. Witnesses and Congressmen may not be sued for anything they say at a hearing. There are only two exceptions to this. A witness may be prosecuted for perjury committed in giving testimony. Any person who refuses to answer a question may be punished by a fine up to $1,000 and up to one year in jail. The only constitutional limitation on questioning a witness is contained in the fifth amendment which protects witnesses from answering questions which might involve self-incrimination.

5. Witnesses must pay their own expenses of testifying, including travelling costs to and from Washington, unless they are subpoenaed. Even then, most committees don't pay enough to cover all expenses.

for Congress

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Congressional hearings are not conducted by the whole Congress. Any committee chairman can call a hearing and Congress cannot interfere without impeachment or recall from the chairmanship. This committee permitted publicity. Some do not

The Senate Armed Services Committee, for instance, pays only $6 a day for hotel and meals in Washington.

6. All hearings don't make the newspapers. Some are conducted behind closed doors solely for the information of the committee members.

7. A printed record is not kept of all hearings. For those without general significance, interested parties only have the privilege of looking at the typed record in the committee room on Capitol Hill.

The casual reader of newspaper headlines gets only a slight glimpse of the amount of work involved in a hearing. Preparation for these events often starts months in advance.

Case History of a Law

Take, for example, the hearings on the Taft-Hartley labor law.

The ball started rolling for some kind of legislation right after the war. Voters started writing to their Congressmen and said they were tired of strikes and other actions by unions. On some days Senator Taft of Ohio, for one, received as many as 700 letters.

During 1946, hearings were conducted for seven weeks on the Case labor bill. Some 2,000 pages of testimony were taken. Though the Case bill was defeated, the hearings did not serve for naught, for some of the information developed during these hearings later served when the Taft-Hartley bill came along.

Hearings on the Taft-Hartley bill lasted for three solid months, with both morning and afternoon sessions. About 364 witnesses filled 6,356 pages of testimony, enough to make approximately 16 average-size novels.

After passage of the labor law, the Joint Labor Management Committee heard 97 witnesses talk for three weeks on the operation of the act. The hearing job on the statute still is not over. The sessions are expected to begin again sometime in March.

The joint committee's staff of eight lawyers, two assistants and several secretaries has been working all summer in preparation for the Spring hearings. Before the sessions open, they will have written statements from the witnesses and a detailed list of questions for the committee members to ask.

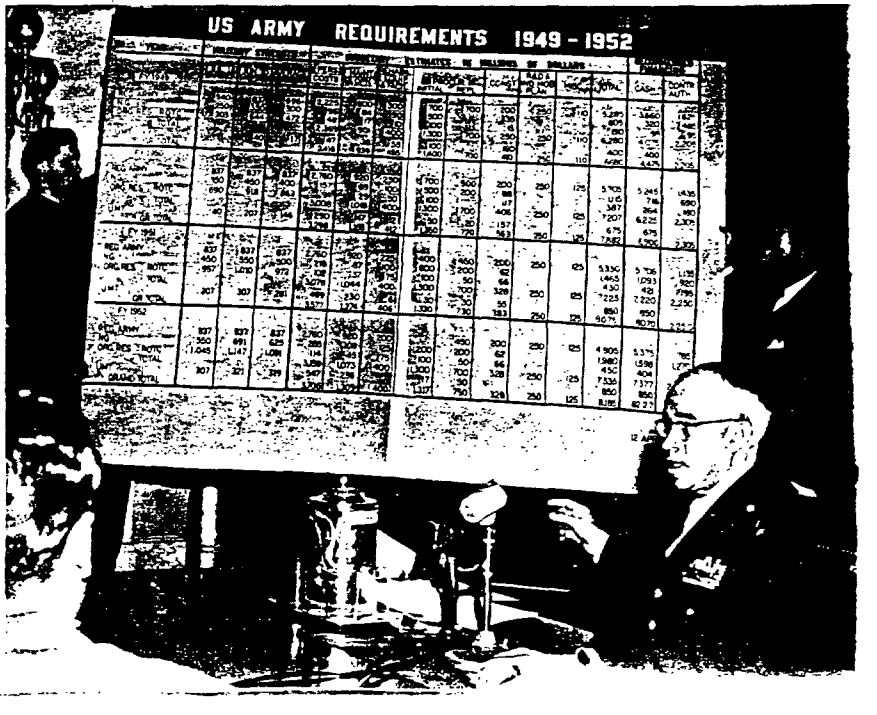
Management and labor representatives also are preparing now for their appearance before the committee and have their top experts keeping a constant check on day-to-day developments under the law.

At times, witnesses must feel that they have virtually a full time job of testifying at the capital. During the late Winter and early Spring of this year, 25 representatives of oil firms testified before 12 different committees. Here's the list of the committees and the subjects of their investigations: Oil Sub-Committee of the House Armed Services Committee, oil supply; House Banking and Currency Committee, oil price controls; House Interstate and Foreign Commerce, oil supply; House Judiciary, tidelands and oil; House Merchant Marine and Fisheries, tanker shortage; House Public Lands, oil leasing on the public domain; House Small Business Committee, relation of oil shortage to small business; House Select Committee on Foreign Aid, impact of Marshall plan on oil supply; Senate Banking and Currency, price controls on oil; Senate Interstate Commerce, oil supply; Senate Judiciary, tidelands; Senate War Investigating Committee, Middle East oil situation and Senate Small Business, small businessmen and oil.

Just to determine when it is to the interest of an industry to request representation at a hearing is a mammoth job in itself. For instance, the legal staff of the National Federation of American Shipping checked and examined more than 4,000 separate bills during the second session of the 80th Congress to determine whether the

(Continued on page 22)

General Omar Bradley, army chief of staff, testifies on selective service before the house armed services committee



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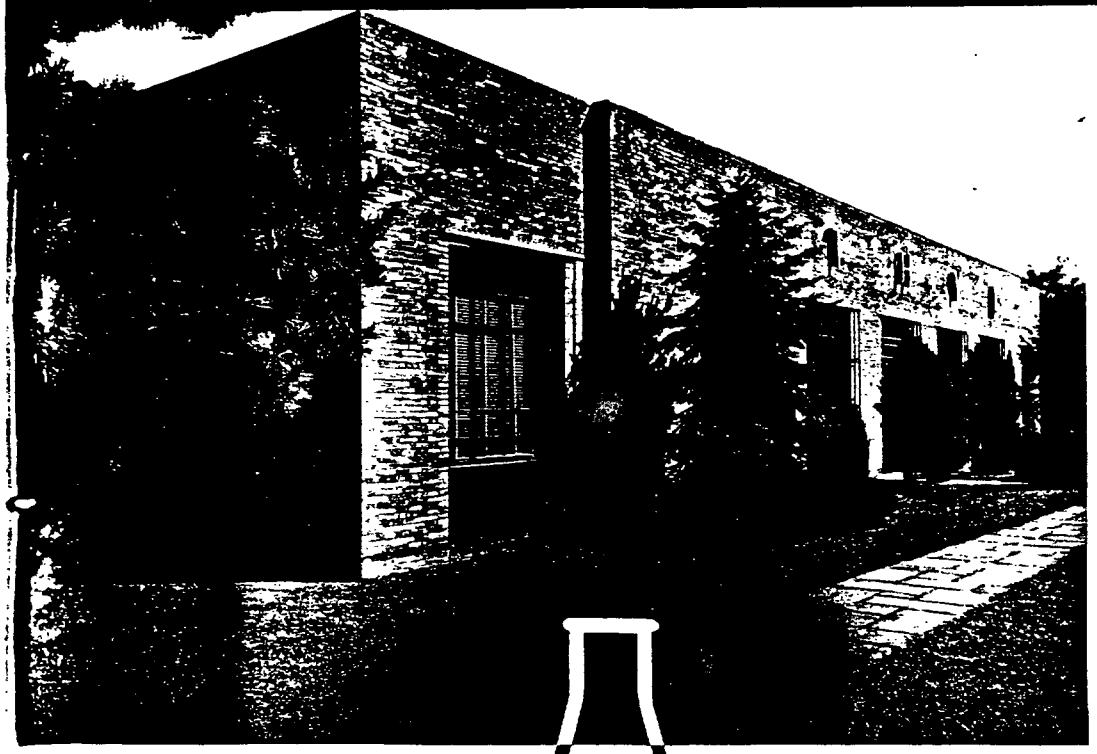

Ethyl's modern gasoline testing laboratory at Yonkers, N. Y., is the Testing Division's headquarters

SAMPLE SERVICE

The motoring public, as well as the oil and auto industries, benefits from the work of Ethyl's five gasoline testing laboratories

TIME WAS WHEN testing the quality of gasoline was pretty much a crude and cumbersome affair. Antiknock performance, for example, was determined by running a gasoline sample through a single cylinder farm lighting engine that had been adapted for the purpose. Veterans in Ethyl Corporation know this well. For they used these very engines in their exploratory research on knocking and knock measurement, which ultimately led to the development of the octane scale.

Today, gasoline testing has become a highly exact and comprehensive procedure that employs modern standardized test engines and universally accepted test methods. Every important characteristic of gasoline can be tested under controlled laboratory conditions. And the motoring public, as well as the oil and automotive industries, has derived immeasurable benefit from this progress.

Paralleling the development of gasoline testing methods has been the growth of Ethyl's gasoline testing service. Since their establishment in 1928, Ethyl's gasoline testing laboratories have examined some half million samples of various brands, grades and blends of motor and aviation fuel on behalf of the oil industry, the motoring public, and the armed forces. Today, there are five of these gasoline testing laboratories in operation, strategically located in Yonkers, N. Y.; Baton Rouge, La.; Tulsa, Okla.; Kansas City, Mo.; and in San Bernardino, Calif., testing as many as 25,000 gasoline samples a year.

The samples come from two main sources – refineries and service station pumps. Many oil companies, particularly those which do not operate gasoline testing laboratories, regularly ask Ethyl Corporation to analyze fuel blend samples and to establish how much "Ethyl" antiknock compound should be added to enable the gasoline to attain a specific octane number. All customer oil companies, including those with gasoline testing facilities of their own, furnish a refinery sample periodically so that the Ethyl laboratories may provide an independent check on the quality of the fuel. The samples obtained from service stations serve as a spot-check against any spoilage or contamination after the gasoline has left the refinery.

Each gasoline sample submitted

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Left, an Ethyl field man picks up a sample in a tagged can. The sample then goes to the laboratory, lower left, where it is immediately stored in a refrigerator so it will be at the correct temperature for accurate analysis

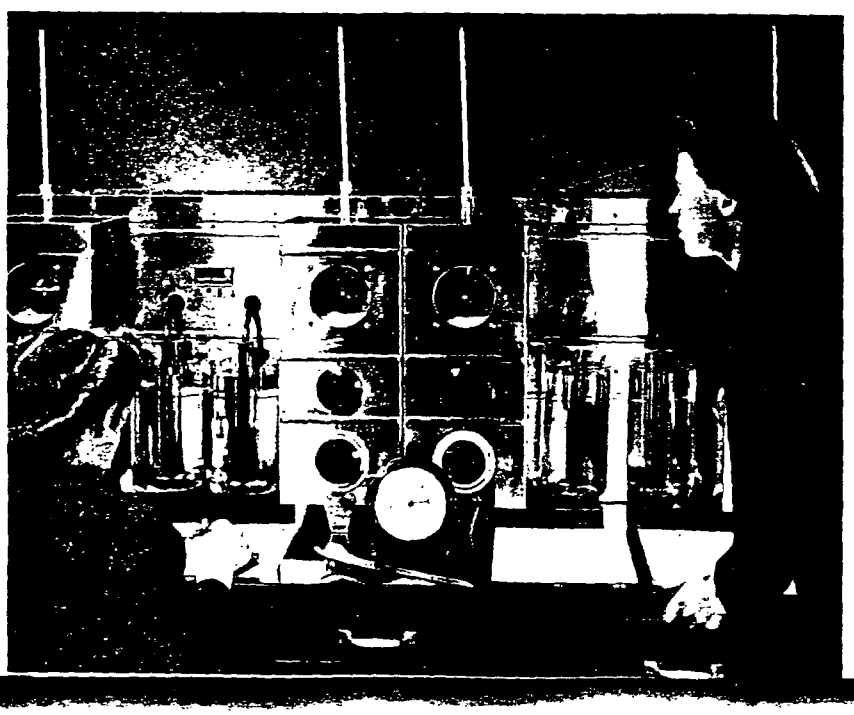
Two of the most important motor fuel tests are for volatility and octane number. Below, a technician is testing a sample for volatility and, below right, a fuel's octane number is determined with a standard CFR engine

to the Ethyl Corporation testing laboratories undergoes at least three, and sometimes as many as eleven, different tests. These tests take in determination of Motor and Research method octane numbers, tetraethyl lead content, color, gravity, gum content, oxidation stability, sulfur content, corrosion, vapor pressure, and distillation.

From the standpoint of performance in an engine – be it an automotive, farm machinery, or commercial engine – those tests covering octane number and distillation are the most important. They provide an index of the gasoline's rated power and its relative volatility.

This month's cover picture, and the photograph below, illustrate the test for octane number. Using the standard single cylinder test engine, the knock intensity of the fuel sample is first measured. As a next step, various mixtures of iso-octane and normal heptane are used as reference fuels in the engine until a mixture is found which will produce the same knock intensity as the gasoline sample. From readings obtained of the performance of all fuels, the octane number of the test sample is finally determined.

As a further part of its gasoline



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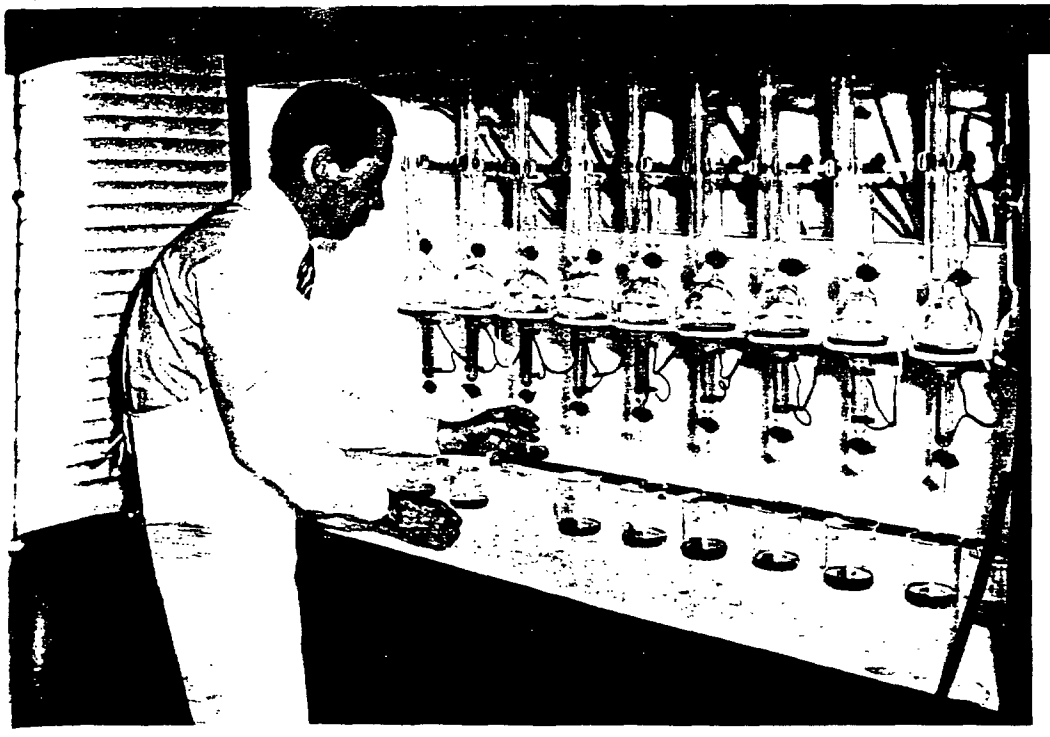


Left, this apparatus is used to determine the tetraethyl lead content of a sample. The analysis is so accurate that it detects as little as one part of tetraethyl lead in 190,000 parts of fuel

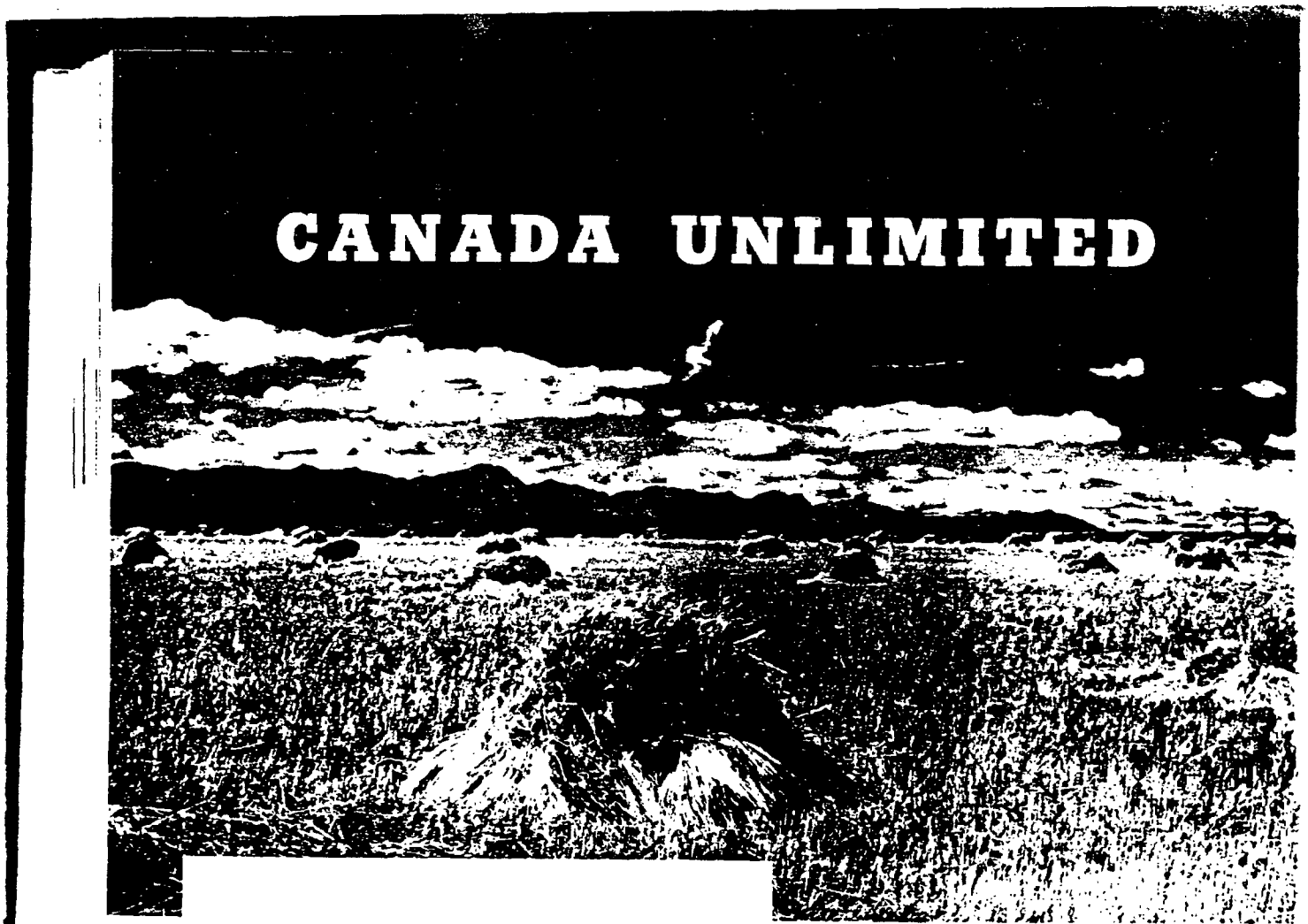
testing service, Ethyl Corporation compiles and furnishes to the petroleum industry and other interested industries monthly and quarterly surveys of gasoline quality throughout the United States. Based on samples received from all sections of the country, these frequent surveys are an up-to-the-minute report not only on prevailing gasoline quality but on trends in quality as well. The surveys are compiled for the nation as a whole and for geographical regions, and cover both regular and premium motor fuels.

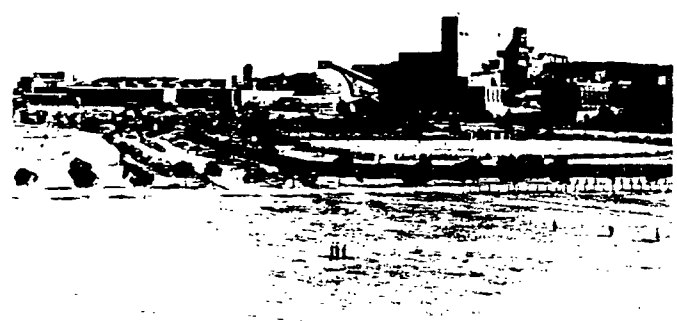
The automotive, as well as the petroleum, industry finds the prompt and accurate reports of benefit. Automotive engineers refer to the quarterly surveys as a convenient means of keeping posted on fuel quality trends to aid them in determining certain features of future engine design.

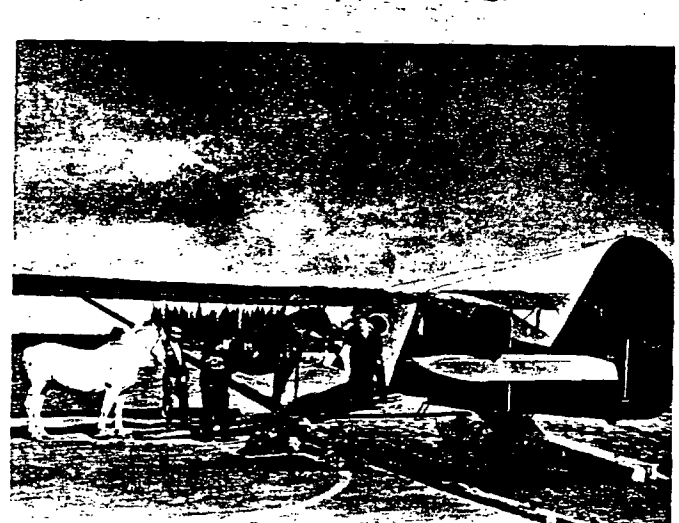
The operator, below, is preparing a sample to test it for gum content. This is just one of eleven tests Ethyl technicians perform

Usually the results of a test are known on the same day the sample is received. This information is then often phoned or teletyped to customer oil companies

CANADA UNLIMITED







Postwar developments — in petroleum, uranium, and iron — are widening the industrial horizons of the Dominion

By John E. Kelly

THE FRENCH WRITER Voltaire made one of history's worst guesses. Canada, he told King Louis XV, was a "patch of snow" not worth fighting for. History proved otherwise.

Furs, timber, wheat, and gold brought our northern neighbor through colonial to Dominion status. In World War II she emerged as a leading nation in her own right. To-

Above left, gold mining has long been an important factor in the Canadian economy. This is the Timmins, Ontario field works of Hollinger Consolidated, the Dominion's leading producer. Left, intrepid bush pilots ferry animals as well as people to any part of Canada

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day, Canada promises to assume an even larger role in the developing atomic age.

Canada has what it takes to be a great nation. Larger than the United States, our neighbor is one of the world's greatest storehouses of mineral wealth. It is a principal supplier of uranium, nickel, asbestos, platinum, iridium, cadmium, cobalt, pulpwood—commodities the United States lacks entirely or has in only limited quantities. Now, within a few years the Dominion promises to be a major producer of iron ore and oil in its own right, as a result of recent exploratory and development efforts.

For three centuries transportation difficulties held Canadian settlements within a strip two hundred miles wide along the American border. The North was a trackless wilderness sparsely dotted with Hudson's Bay Company posts. In summer the Land of Little Sticks swarmed with ferocious black flies.

Gasoline and DDT changed all that. The new roads running north through Ontario and Quebec's wooded hills and across the treeless prairies of the western Provinces are alive with truck caravans, hauling in supplies and bringing out gold, oil, copper, zinc, nickel, and lead.

The roads stretch toward the Arctic, and beyond them the tractors take over. Fifty below zero means nothing to the crew of a "cat train," hauling their string of sleds across uninhabited country, on frozen rivers and over the immense ice sheets of Great Slave and Great Bear Lakes, where deposits of uranium lie.

Where even the cats cannot reach, the plane can and does. The "bush pilots" are to the modern Canadian North what Kit Carson and Daniel Boone were to the American frontier, pathfinders and guides. Many are youthful ex-Servicemen; others are old-timers who soloed in Jennys and DH-4s.

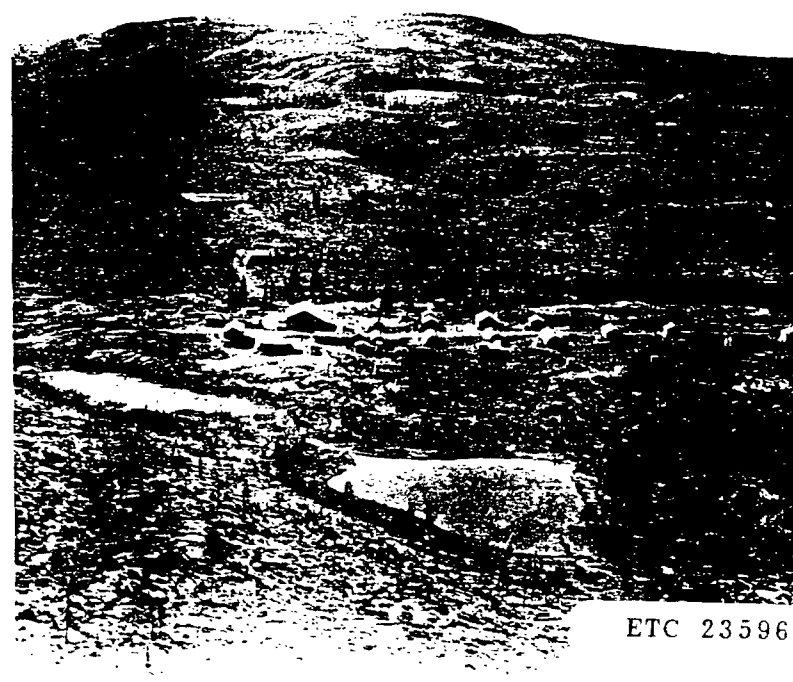
The North has a million lakes, many unmapped. The bush pilot knows them from the air. He flies anywhere, any time, any cargo. His tiny two or four passenger plane, fitted with pontoons in summer, with skis after freeze-up, flies 600 miles beyond the last post office as a daily chore—and comes back. Accidents are very rare, losses almost unknown.

Pride in the bush pilots who have unlocked the treasures of the North has made Canadians airminded. Airlines are thronged, advance reservations a must. The Dominion Government has parcelled out the scheduled routes. Trans-Canada Airlines flies coast to coast, to the States, Bermuda, and Europe. Canadian Pacific operates the north-south feeders, the links between the transcontinental and other routes. Canadian caution rides as a co-pilot with Canadian daring; TCA has had only two crashes in its history, one without fatalities.

By air the North is within arm's reach. DC-3s make daily roundtrips between Edmonton and the fabulous gold camp of Yellowknife on Great Slave Lake, comfortably within a business day. From Edmonton's municipal field, which is the greatest air-freight terminal in North America, a mining company's big planes carry supplies, mail, and the latest movies each morning to Port Radium, on the Arctic Circle, where Eskimos now yawn at the white man's iron birds and sometimes thumb a ride.

Canada is a magnet to Americans. Last year 22 million people, mostly Americans, crossed the border to visit our neighbors. A lot of American money crossed, too, seeking investment opportunities. Nearly a half of Canada's industry, over a third of her mining, is owned by American stockholders. Five billion U. S. dollars are at work in the Dominion. More will follow, for

The base camp at Burnt Creek, on the Quebec-Labrador border, where vast new supplies of iron ore are being developed



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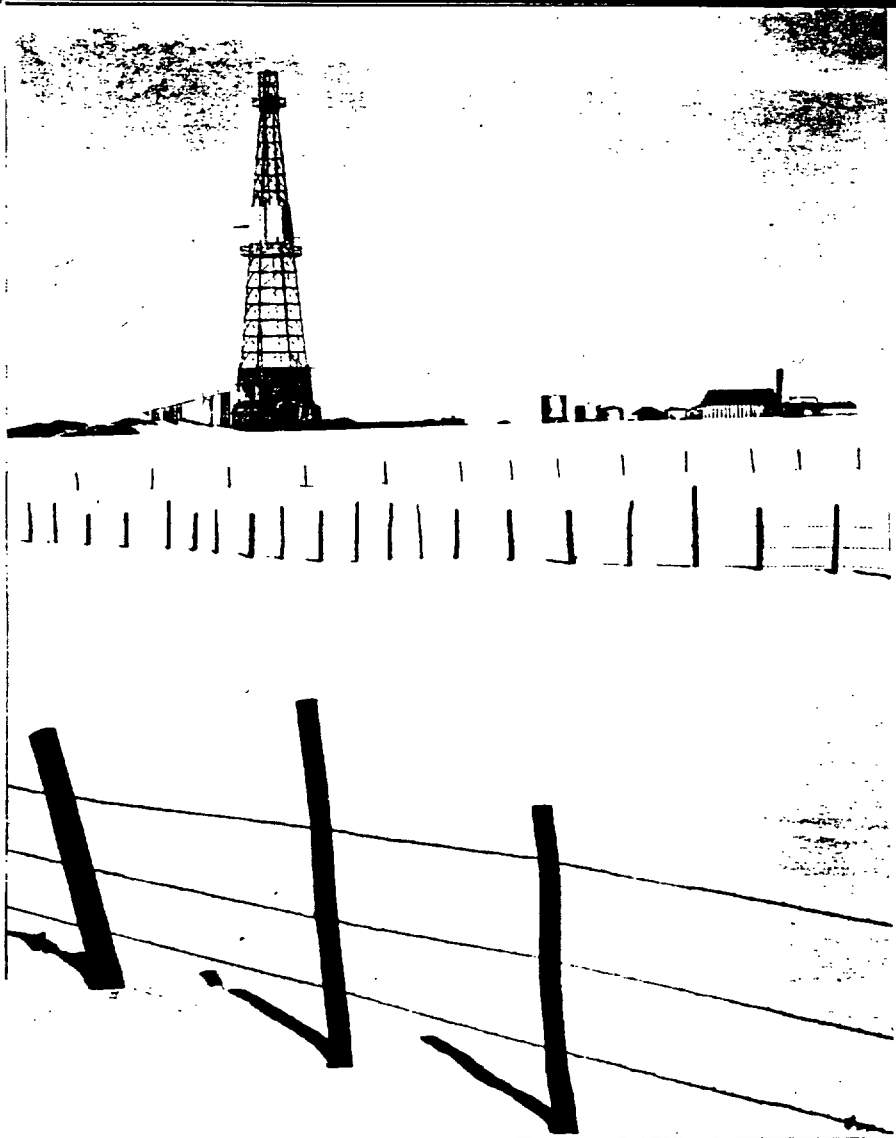

$150 million to mine and smelt a vast deposit of titanium-iron ore. Inland, on the Quebec-Labrador border, Canada's leading gold mining company, Hollinger Consolidated, is associated with the M. A. Hanna Company, of Cleveland, in developing a mineral concession larger in area than Vermont and New Hampshire combined.

In this latter project, some 300 millions tons of high grade iron ore have been proven thus far. The area promises to be a big new source of iron ore, comparable to the famous Mesabi Range in Minnesota.

Under present plans, several hundred million dollars will be spent

Above, Leduc No. 1, brought in last year, is considered to be the most important oil discovery ever made in Canada. Below, this once-idle refinery at Whitehorse, Yukon Territory, was dismantled and shipped 1,400 miles to process Leduc crude oil

the industrial demands of both countries are exceeding available supplies.

Since the war, Canada has been the scene of intensive exploratory efforts – for uranium, for iron, and for oil. These efforts in turn have resulted in a number of highly important discoveries. Collectively, they presage an era of industrial growth and development comparable to what the United States has experienced.

Along the St. Lawrence, on the Romaine River and at Sorel, Quebec, two American firms, Kennecott Copper Company and New Jersey Zinc Company, are spending

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in developing the area, which lies 435 miles north of Mont Joli, the nearest rail point, and 320 miles northwest of Seven Islands, Quebec. Besides the facilities to be erected in the field, the expenditure of vast sums is contemplated in order to bring the ore to market. Included in these plans is a new railroad to be built through the Canadian wilds and an ice-free port on the Saint Lawrence at Seven Islands. Meanwhile, the geological crews which have been at work in the ore field have been supplied entirely by air. Seven hundred tons of food and equipment were flown in the past summer.

North of the Hollinger concession lie tracts held by Quebec-Labrador Development Company and subsidiaries of such major Canadian gold mine operators as Noranda, Conwest, Anglo-Huronian, Ventures and Frobisher, Ltd. These concessions, aggregating 3,500 square miles, have revealed large reserves of similar ore.

Total investment in eastern Canada iron properties will probably approach a half billion dollars. What does it hold for the future? A greatly expanded Canadian steel industry, possible new steel mills in New England, and ultimate replacement of Mesabi ores as our great Minnesota deposits approach exhaustion.

Under the wheat fields of Alberta, in the shadow of the Canadian Rockies, a new mid-Continent oil field may be developing, in the opinion of some observers.

It all began, of course, early last year, when Imperial Oil, Limited, discovered the now-famous Leduc field which lies 20 miles south of Edmonton. Since then, the province of Alberta has become the scene of intensive exploration for oil, with some 200 producing wells

A mechanical shovel or "mucking machine" at work deep in a mine in northwestern Quebec

drilled to date (over 100 of them in Leduc alone) and with more than 50 exploration parties out in the field in a recent month. As of early October, more than 45 million acres of land in Alberta were under lease for oil exploration, according to the Dominion Bureau of Statistics. Of this total, nearly 14 million acres were leased in the late summer and early fall, the Bureau reported, mostly in the Edmonton areas of Leduc, Woodbend and Redwater.

To handle the flow of crude from the Leduc field, Imperial Oil last year purchased the war-built refinery at Whitehorse, Yukon Territory, and had it dismantled and shipped a distance of more than 1,400 miles to Edmonton. Over 7,000 tons of equipment were taken apart, carried by truck over 910 miles of the Alaska Highway, and then shipped by rail the final distance. Today, the refinery is in operation at its new location, processing Leduc crude.

Other significant Canadian discoveries have been made in recent months, strengthening the belief of some geologists that a wave of new oil discoveries may come all the way from Norman Wells in the north to as far south as Wyoming or Colorado.

The oil developments in Alberta have a double meaning. For the near term, they promise a self-sufficiency in petroleum products for Canada's prairie provinces. Over the long term, they may mark the emergence of Canada as a major oil producer in its own right, able to satisfy a large part of its domestic requirements and thereby lessening its dependency on imports.

These are some of the things stirring in Canada. Voltaire would not recognize the patch of snow.

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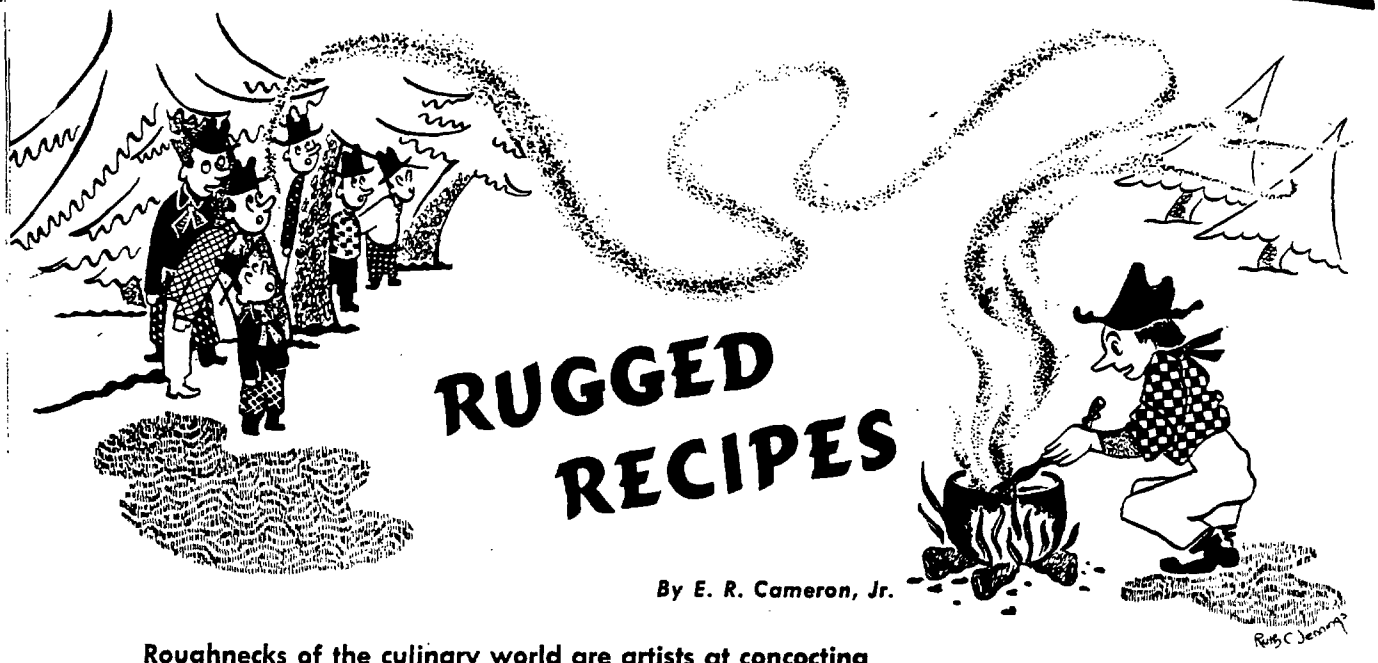

RUGGED RECIPES

By E. R. Cameron, Jr.

Roughnecks of the culinary world are artists at concocting a wide variety of tasty triumphs from large and small game

IN THE HIGH country of northwestern California, under the morning shadow of the snowclad Trinity Alps, between Jim Jam Ridge and the ice-blue waters of Rattlesnake Lake, north of Devil's Canyon lies a wilderness called Jake's Hunting Ground. On the Forest Service map black type spells out the legend "Primitive Area," an understatement, for this is the real backwoods, beyond the last cabin where owls mate with the settler's chickens.

In the old days, before the Great White Father provided monthly checks and modern homes on their fertile Reservation nearby, the Hoopa Indians made autumnal pilgrimages into Jake's preserve, gathering *pinon* nuts and *po-witch*, the wild crabapple from which the squaws brewed a skull-cracking drink. Whites rarely visit the nameless ridges and cranebrakes save when some perennially hopeful prospector pans the cold mountain streams for the telltale yellow glint of gold.

Jake is gone and his very name with him. The oldest inhabitants along Virgin Creek and at Keystone hamlet on Backbone Ridge recall him dimly as a white bearded Paul Bunyan and Nimrod. But the pioneer hermit knew his game. Mountain lion and lynx roam the Hunting Ground, black and brown bear gorge on blueberries in the natural clearings. The great pad of a vagrant grizzly may mark the rippled sandy bed of a stream. Quail cheep in the thickets, gray squirrels and red race amid the rubbery leaves of the strange *madrone* trees.

The hunter or sourdough miner far from camp need never go hungry for grouse whir under the Douglas firs, are tame nearly as chickens on the bald ridges. Large as Plymouth Rock hens, the grouse grow broad-breasted and fat under the summer sun. Jake's recipe is simplicity itself, requiring no utensils other than a hunting knife. Choosing a spot where the nearest stream runs over a bed of clay, a shallow pit is scooped out on the bank and a large cooking fire built therein of driftwood or dead pine boughs. The bird is drawn but not plucked and swathed in an inch-thick blanket of stiff wet clay, worked down into the feathers to adhere tightly.

Connoisseurs and those who can restrain appetites whetted by the bite of the mountain air, stuff the grouse and thicken the clay wrapper by a half for slower cooking. In season a handful of shelled pine nuts imparts a tang to the fowl. Jake would have scorned the refinement, but a cleaned, plucked quail stuffs a grouse snugly and is eaten as a tidbit, the delicate meat savory with the juices of the larger bird.

How to Peel a Grouse

The grouse in its clay blanket is placed in the pit under the fire, on a layer of glowing embers. Hot coals are heaped over it and slow fire maintained atop. When the clay, white, hard and bone-dry from the firing, cracks open, the grouse is baked. If the plastering has been well applied, the clay can be peeled off, bringing feathers and skin along. Frontiersmen lacking salt, burned a birch twig on a clean stone standing in the flames and sprinkled its ashes on their meat.

From the bears he flushed from wild berry patches, and caves and dens under fallen trees, Jake took more than shaggy skins, roasting ribs or teeth and claws to ornament his deerskin shirt. Bear hams and sidemeat, smoked over cedar boughs,

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filled his winter larder and were traded at Old Denny, the mining camp at Siskiyou border, for powder, flour and redeye whiskey. To this day some trappers and guides in Trinity County cure and cherish bear bacon as far superior to "store bought" flitches. The uninitiated often wash down tentative first bites with scalding coffee and hastily plead urgent business out of doors.

In mid-July, along with the first spawning run of the Chinook salmon, eels en masse ascend New River and the creeks probing Jake's Hunting Ground, seeking refuge from the summer heat in the deepest pools. The plump wrigglers, often a yard in length, were an important food source to the early mountaineers, white and Indian alike. Pickled in brine or packed in salt, eels were cached in kegs against the lean cold months to come. The ubiquitous tin can has driven out such primitive fare, but eel roasts, reminder of self-sufficient old days serve as get-togethers for the widely scattered settlers.

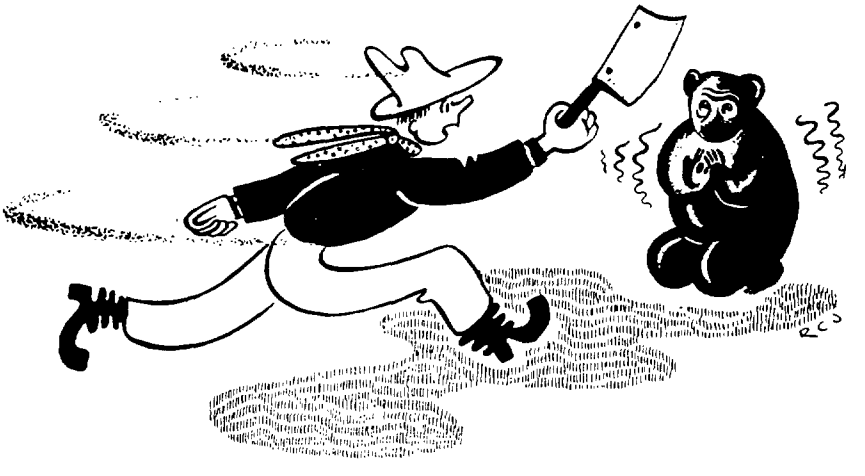
On the festive night, for miles along the canyons and beside foot trails over the hogback ridges, cabins are dark and empty while their owners hurry to the "eeling." A fire, large enough to serve a dozen cooks at once, is built on a sandbar in the river. The prey is hooked or speared in the black water streaming alongside and hurried to its destiny. Heads and tails are removed with deft slashes of hunting knives and the bodies spitted on ramrods with sharpened points. When the skin blisters, the eel is roasted to backwoods taste. Some finicky folks, aping "city manners," chop their catches into three-inch lengths and fry them in their own fat in skillets lashed to extension handles of green saplings, to reach well into the center of the blaze. Washed down with "mountain dew" from jugs innocent of revenue stamps, a man-sized "bait" of rich roast eel is a guarantee of insomnia.

For "tasty light eatin'," Jake's stand-by was squirrel stew, since he had but to knock the principal ingredient from the trees above his cabin. The old hunter scorned the Kentuckian custom of "barking" the squirrel, hitting the branch under the rodent's feet and bringing it stunned to the ground, skin unmarked by lead. When Jake shot squirrels, they stayed shot—headless. His descendents have "prettied up" the recipe, but the old man would have admitted no improvement. Down at Burnt Ranch, where New River brawls into the Trinity, Jack Bradley makes a snack from four squirrels and what else is on hand.

Squirrel Stew

His knife moving with the smooth flow of quicksilver, Jack skins, cleans and quarters the squirrels. They go into the stew pot after it has been rubbed with a clove of garlic. Two inch cubes of lard follow — Jake would have used bear fat or grease rendered from it. The lard is hardly melted before Bradley has sliced four small onions into wafers and dropped them into the pot. When the contents are well browned and an intriguing odor steams through the cabin, he adds a generous half cup of flour. If he has tenderfoot guests, Jack may run down to Pete Gandi's store at the fishing resort of Willow Creek for a can of mushrooms. They join the squirrels along with three or four slices of bacon chopped fine, salt, a dried red pepper from the string hanging from the rafters and a cup of spring water per squirrel. While the mixture bubbles in the covered pot, Jack watches his guest's faces. When hunger is etched ravenously on their features, he sets out soup plates and a half loaf of bread apiece, "for sopping," and ladles out his masterpiece.

Queried for the cooking time, Bradley grins. "No need for a clock," he explains between mouthfuls. "Nary a man could stand to smell squirrel stew a-cooking more'n forty-five minutes. When I see them getting white around the gills and squirming in their chairs, I know time's up." Jack pauses, surveying the emptied plates and expectant faces before him. "That part's easy, but I always make the same mistake. I can't learn to measure city folks' appetites. There's never enough squirrel stew to fill 'em up."



Detroit is one of the safest cities in the country. It got that way through a safety program intelligently applied

The Motor City has plenty of traffic but has learned how to control it and those who drive

AMONG THE NATION'S CITIES, one common problem is to reduce the number of traffic deaths even though the number of automotive vehicles in use is constantly increasing. For that reason, it is interesting to take a look at Detroit, which today holds the distinction of being the safest of the nation's largest cities.

The motor capital's record is all the more enviable when measured against the background of events. For, although the number of motor vehicles traveling its streets is now double that of 20 years ago, traffic fatalities have declined to almost half of what they were back in 1928.

Not only is Detroit the safest city among those of more than a million population each, but it has held that top position each year since 1942. Today, the Motor City leads in the fewest number of auto deaths per 10,000 registered vehicles, the yardstick employed by the National Safety Council. In the first half of 1948, there were 73 traffic fatalities for a rate of 3.2 per 10,000 vehicles. Los Angeles had 147 deaths for a rate of 4.2, Philadelphia 66 and 4.6; New York, 266 and 6.1; and Chicago, 242 and 8.1.

But Detroit is not satisfied with having reached the zenith merely among the nation's five largest cities. The prize it is now shooting for is the title long held by Milwaukee — that of being the safest of the country's cities of more than half a million inhabitants. In this competition, it has climbed from fourth place (behind Milwaukee, St. Louis, and Washington) in 1941 to second place in 1946 and 1947. This year, it is in third place, right behind Milwaukee and Buffalo, on the basis of the first six months' experience.

Detroit is especially proud of its highway safety record because it is the world center of automobile manufacturing. So successful have been its efforts in promoting safety that the Detroit Plan for reducing death on the highway is now regarded as a model one.

Just as safety itself is no accident, as the slogan goes, neither has Detroit's notable safety record come about through mere chance.

To achieve what has been accomplished has required the coordinated efforts of more than a score of public and civic agencies and thousands of safety-minded individuals, merchants, and industrial establishments. These efforts are tied together into one comprehensive and effective accident reduction bundle by the Traffic Safety Association of Detroit. Probably no other city approaches Detroit's degree of cooperative effort.

The Traffic Safety Association was established in 1941 as a privately

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financed, non-profit corporation by five leading figures of the automotive industry. Their objective was to have an organization that would administer a hard-hitting educational program to make Detroit more safety-conscious than any other city had ever been before. They wanted the Motor City to be the test tube, and the staff of the Traffic Safety Association to be the research workers, in an experiment to prove that traffic fatalities could be reduced. And they got what they wanted.

Founders of the Association were Messrs. K. T. Keller, of Chrysler; C. E. Wilson, of General Motors; the late Edsel Ford; Clarence W. Avery, of the Murray Corporation, and Hugh J. Ferry of Packard. The first three years of TSA operations were underwritten by Chrysler, General Motors, and Ford. During that time, 21 other Detroit concerns were added to the roster. Today, more than 60 companies, banks, department stores, and other establishments are members.

Incidentally, the Ethyl Corporation Research Laboratories in Detroit hold membership in the TSA, and have contributed to the city's outstanding traffic safety record. In hundreds of thousands of miles of road research and other driving in metropolitan Detroit since 1942, Laboratories vehicles have been involved in only two accidents resulting in injury to the occupants of one car or the other. In both cases, the injuries received were slight.

With Don Slutz, former Detroit newspaperman and city controller, as its Managing Director, the Traffic Safety Association in 1941 buckled right down to the serious business of saving lives. The year it was founded, 320 persons were killed and 6[illegible] accidents occurred on Detroit streets. One year later, the city could point to 52 fewer deaths and almost 15,000 fewer accidents. In 1943, the traffic fatality toll dropped below 200 and accidents numbered only about half those of 1941. Since then, traffic deaths have never mounted over the 200 mark in any one year and have been as low as 160 (in 1944).

How did Detroit achieve that improvement, in the face of record traffic loads? There are many answers to that question, but the one big reason is the unique method of approach which the Association has followed.

New Line of Approach

Most cities hope to promote safer driving through gruesome photographs and posters bearing the warning: THIS COULD HAPPEN TO YOU. But the Traffic Safety Association of Detroit is convinced this doesn't work. Says Mr. Slutz, "The average motorist is so sure he will not be involved in an accident that he looks upon such messages as being directed to 'the other fellow.' Feeling as he does that he is a good driver, it's pretty hard to convince a man that his car might cause damage and death."

So, Detroit attacks the problem a different way.

It alerts drivers to accident hazards, and, more importantly, to the hazards of the law. It may be difficult for the average motorist to realize that he could run down a child or ram another car. But getting a traffic ticket, losing a driver's license, or going to jail is something that almost anyone can readily appreciate – and it's something he doesn't like.

As proof of the effectiveness of its "alertness to the law" strategy, the TSA can point to scores of successful educational programs. Take, for example, its posters which simply and forcefully proclaim: "90 DAYS FOR DRUNK DRIVING." These were hung over the bars of virtually every tavern in the town and were slapped on the 1,400 streetside and corner signboards erected throughout the city by the Association. The result was a decided decline in drunk driver cases. An-

The Traffic Safety Association was established in 1941 as a non-profit organization. Here the operations committee meets to plan an attack on accidents

ETC 23602

other poster, warning that "Drunk Drivers Go To Jail," is given a large share of the credit for enabling the Motor City to pass through a New Year's week-end without a single arrest for drunk driving – and that's no small achievement.

But no safety endeavor, no matter what its pitch or slant, can be effective unless it is backed by the strong arm of the law.

In Detroit, police and traffic court judges subscribe faithfully to the axiom that "as enforcement goes up, accidents come down." Police employ the "selective" enforcement technique, which means that their efforts are aimed at curbing specific violations which cause accidents when and where the accidents are occurring. Once offenders have been nailed, traffic court judges carry the enforcement program through to its logical conclusion – a stern reprimand, a maximum fine, suspension of the driving privilege, or a jail term.

Unlike many other cities, Detroit controls the movement of pedestrians as well as vehicles. A clearly-defined Pedestrian Protection Ordinance, enacted in 1942, makes it illegal for any person on foot to risk his own – or anyone else's – life on the city's streets. The ordinance renders pedestrians liable to traffic violation tickets and summonses. As a result, traffic deaths among pedestrians are down 25%.

The Detroit Plan for reducing traffic tragedies is long range in that it tries to anticipate troubles before they arise. But it is also geared to cope with situations that develop overnight. Taking an actual case, here's how a sudden accident outbreak on McNichols Road in the

Top, Detroit traffic experts put 5,000 of these posters in bars as part of their campaign. Above, an officer gives a pedestrian a ticket as he shows him the skid marks of a car that almost hit him when he carelessly walked out onto the street. Left, punishment is meted out according to each individual violation. In this case the driver is about to lose his license

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city's northwest section was attacked last year.

A safety task force – the Traffic Safety Association's operations committee – immediately analyzed the accident facts and trends to determine ways and means of combating the accident epidemic through its customary unified effort. Members of the committee include representatives of the Traffic Engineering Bureau, the police department, the public and parochial schools, the Public Lighting Commission, the Department of Street Railways, and the Traffic Safety Association.

The offensive began with thousands of written and spoken words on the subject in the city's press and over its radio stations. Safety-minded editors earmarked the stories for prominent display, and the broadcasts were adroitly timed to peak travel hours. The homeward-bound shopper or commuter heard his car radio loudspeaker jeer at him for thinking he could beat the light or win some other foolish gamble. Theaters also lent their support.

The Public Lighting Commission investigated the area to ascertain whether insufficient lighting was a cause of the increase in mishaps. The Traffic Engineering Bureau sent a crew into action to find out whether a different routing of traffic, or a new setting of traffic lights, would solve the problem. Also on hand was the Department of Parks and Recreation – because something as comparatively simple as trimming a tree that was blocking view of a signal might be the answer to the accident outbreak.

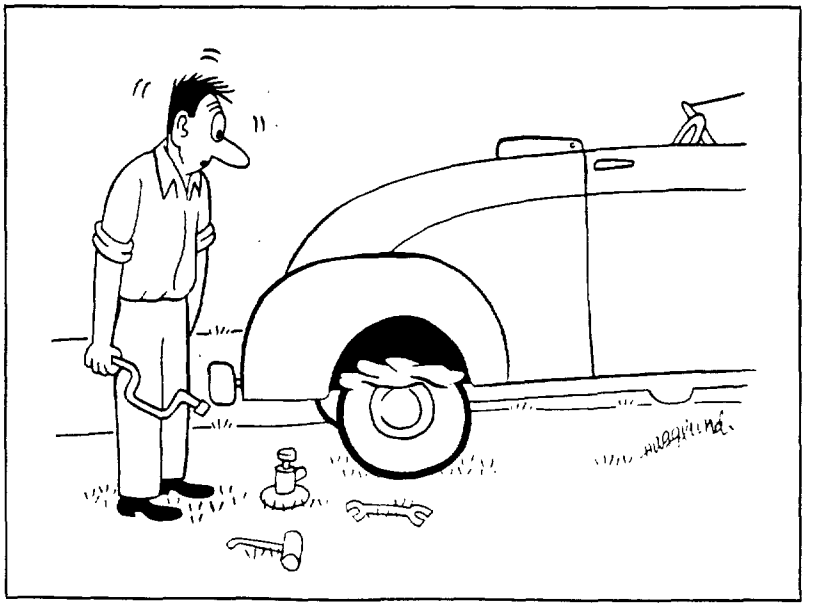
The Traffic Safety Association posted scores of its "curbstone policemen" (streetside and street corner signboards) in the area, proclaiming the dangers of that district. Speakers appeared before the leading civic, business, fraternal and other clubs in an effort to enlist their support in the drive to cure the accident rash. Pamphlets, broadsides, and literature by the thousands roared off the printing presses for mass distribution. And, in keeping with Detroit's switch in psychology, they carried not the "This Can Happen to You" message, but rather the blunt warning that an accident can deprive a driver of his license and perhaps result in a heavy fine or jail sentence.

Within a few weeks after the Traffic Safety Association operations committee had drawn up battle plans, there were few, if any, Detroiters who weren't aware that McNichols Road had become a high-accident zone. Detroit has found that the average motorist and pedestrian will cooperate wholeheartedly once he understands the problem. That is why the city concentrates on pounding home its educational program before assigning extra policemen to patrol a high-accident area. For those who remain unconvinced of the need for extra precaution, even after the extensive educational efforts, the prospect of fine or imprisonment is very real.

Just as programs of this type have been successful throughout all Detroit, so was last year's outstandingly effective on McNichols Road. In 1946, this street suffered 14 traffic fatalities and a 24% increase in accidents over the previous year. In 1947, thanks to the TSA-directed safety campaign, only two persons were killed on McNichols and the number of accidents dropped correspondingly.

Despite its enviable traffic safety record and its smooth-functioning accident prevention group, Detroit realizes a big job still lies ahead. Needed, it feels, are better roads and other physical facilities, better drivers, and better vehicle maintenance.

Once these basic improvements in motor vehicle use and facilities have been effected, the Traffic Safety Association is confident that it can accelerate the progress it has made in the field of traffic accident prevention – progress that in a comparatively short span has converted Detroit into the safest of the nation's metropolises.



ETC 23604

HEARING AIDS FOR CONGRESS

(Continued from page 8)

federation should request a hearing or ask to testify in the event one already was planned.

Committee investigators, too, can cite impressive statistics to give an indication of the work they do in preparing for hearings. For instance, before the present hearings of the House Un-American Activities Committee even got started, staff investigators completed 150 reports on espionage and 200 reports on atomic workers.

As frequently happens when a probe is begun, the committee investigators had no idea they were getting into such a mammoth project when they started their work. They began by checking up on just three government workers. Their findings served as the springboard for the giant-size probe.

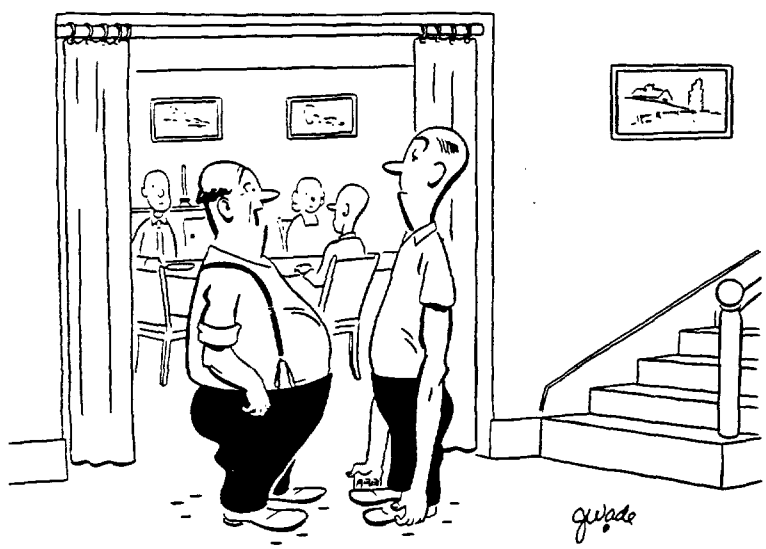
A committee's sensationalism in hearings, however, is not always a true indication of the work it does. During the 80th Congress, for instance, the Senate Armed Services Committee received nationwide publicity for only two sets of its hearings – those on universal military training and unification of the armed forces.

To determine the subjects for hearings and most intensive work, however, the committee considered 460 measures. It reported 171 bills to the Senate for action. The other measures died in committee. Of the 171 bills sent to the Senate, 148 became law.

Following the committee's hearings and Senate debate, the upper house passed the law unifying the armed forces. The story was different for universal military training. After the stormy open hearings on the subject, the committee went into executive session for 14 days and came up with what is now the Selective Service Act.

The number of hearings held by some committees often seems to be too much for one group of legislators to handle. They solve this problem, however, by setting up sub-committees. The Senate Foreign Relations Committee, for instance, has 22 sub-committees ranging all the way from the Sub-Committee to Investigate the Voice of America Program to the Sub-Committee on the International Convention for the Regulation of Whaling.

Many a person who has testified at a hearing has denounced the procedure as unfair and too time-consuming. But it still remains an important part of representative government and is one of Congress's best means of getting the views of all segments of the population on questions of importance to the nation's welfare.



"Have you been living in a boarding house long?"

OUR COVER: The knock-test engine, dressed up in a new coat of paint, is one of six in use at Ethyl's gasoline testing laboratory in Yonkers, N. Y. A story of Ethyl's gasoline testing service appears on Page 9 of this issue. The color photograph was taken by O. Winston Link. **OUR PICTURES:** Page 6, Philip Gendreau; Page 7, top, courtesy Republican National Committee; bottom, Acme Newspictures, Inc.; Page 8, Press Association; Page 12, top, Alberta Government Photograph; left center, courtesy W. H. Durrell; bottom, courtesy M. J. Metcalf; Page 13, courtesy John E. Kelly; Page 14, top, courtesy Corsini; bottom, courtesy Imperial Oil Co., Ltd.; Page 15, courtesy Louvicourt Goldfields Corp.; Pages 16 and 17, illustrations by Ruth C. Jennings; Page 18, Wide World; Page 21, cartoon by Hagglund; Page 22, cartoon by J. Wade.

A familiar landmark throughout Baton Rouge, La. is the tower pictured on the opposite page. Glistening in a new coat of paint, and with the familiar "Ethyl" trademark painted on top of it, the tower is, in a way, a symbol of Ethyl's manufacturing plant in Baton Rouge. The 120-foot tower, with a capacity of 100,000 gallons of water, is part of the plant's extensive water system, and serves as an auxiliary unit of the fire fighting system. A story on the plant's water system appears on Page 3 of this issue.

ETC 23606

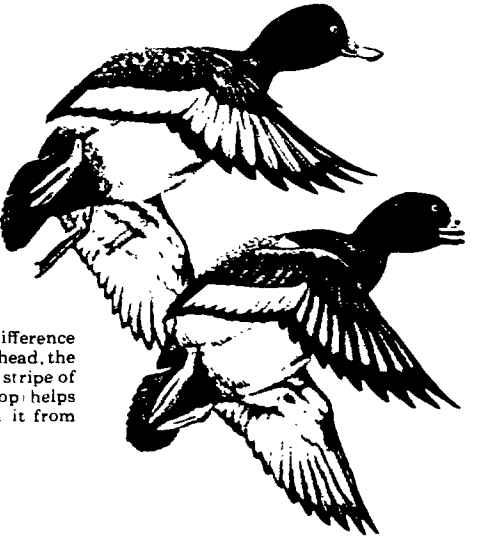
Back feathers that look like woven canvas identify the **CANVAS-BACK**. Another characteristic is the way the bill is streamlined into the forehead without a sharp break in the profile.

A green head and a white collar identify th **MALLARD** drake. At right is shown the femal Mallard, which, like most female ducks, is le strikingly colored than the male, or drake.

When you go after ducks

THE "TRADE-MARKS" OF NATURE*

identify these quackers

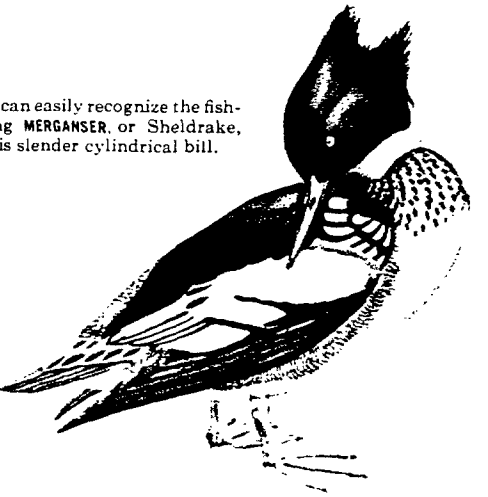


In addition to the difference in the color of the head, the longer, white wing stripe of the **GREATER SCAUP** (top) helps you to distinguish it from the **LESSER SCAUP**.

When you buy gasoline

THE TRADE-MARK "ETHYL"

identifies gasoline stepped up with "Ethyl" antiknock fluid



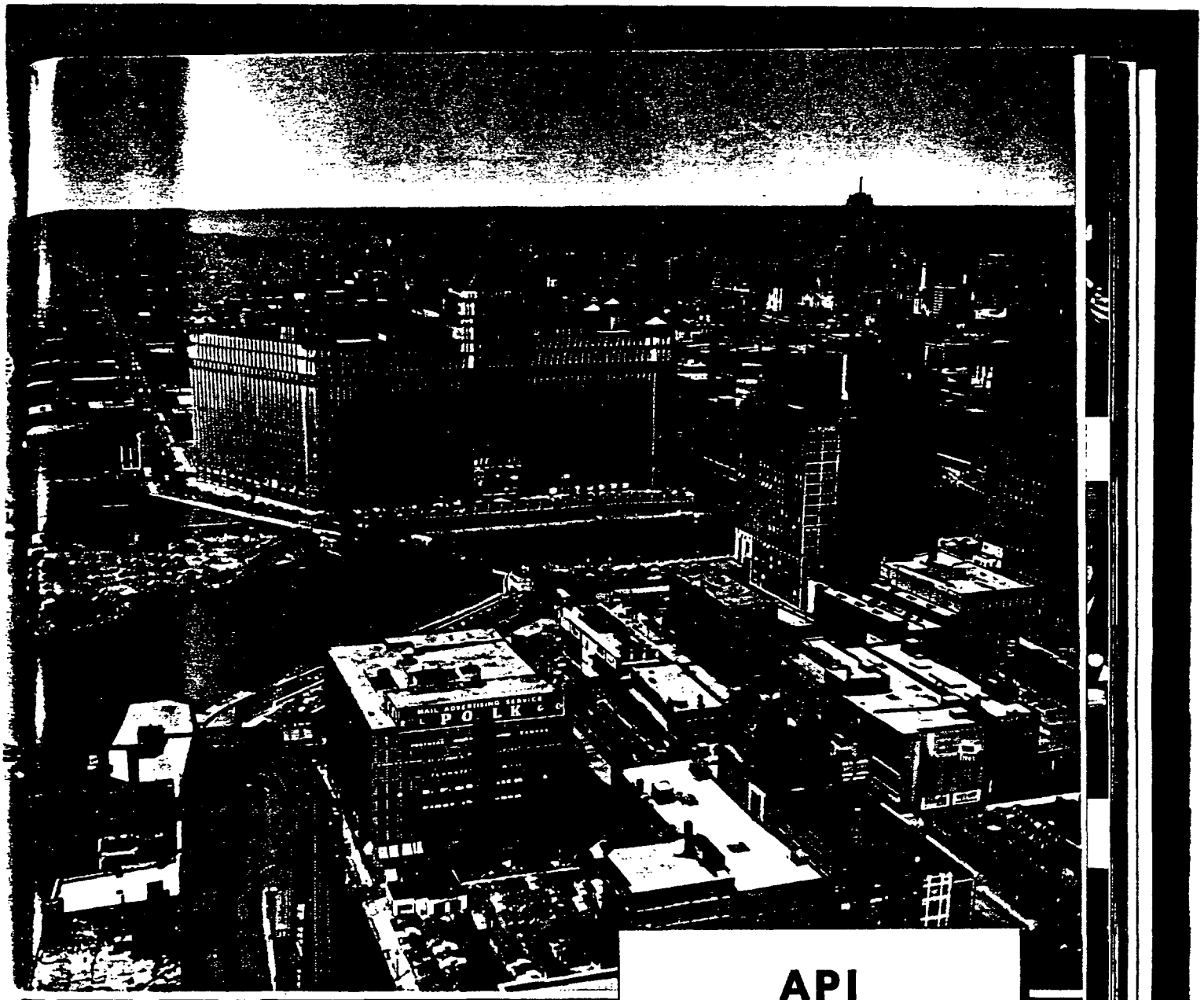
You can easily recognize the fish-eating **MERGANSER**, or Sheldrake, by his slender cylindrical bill.

To get the best performance from your car, use high quality gasoline improved with "Ethyl" antiknock fluid — the famous ingredient that steps up power and performance.

To show you their best gasoline contains "Ethyl" antiknock compound, oil companies display "Ethyl" trademarks on their gasoline pumps. "Ethyl" fluid is made by *Ethyl Corporation, Chrysler Building, New York 17, New York.*

In cooperation with Ducks Unlimited, Inc. Bird illustrations by Jim Eckelberry. Unless otherwise noted, items pictured are males.

ETC 23607

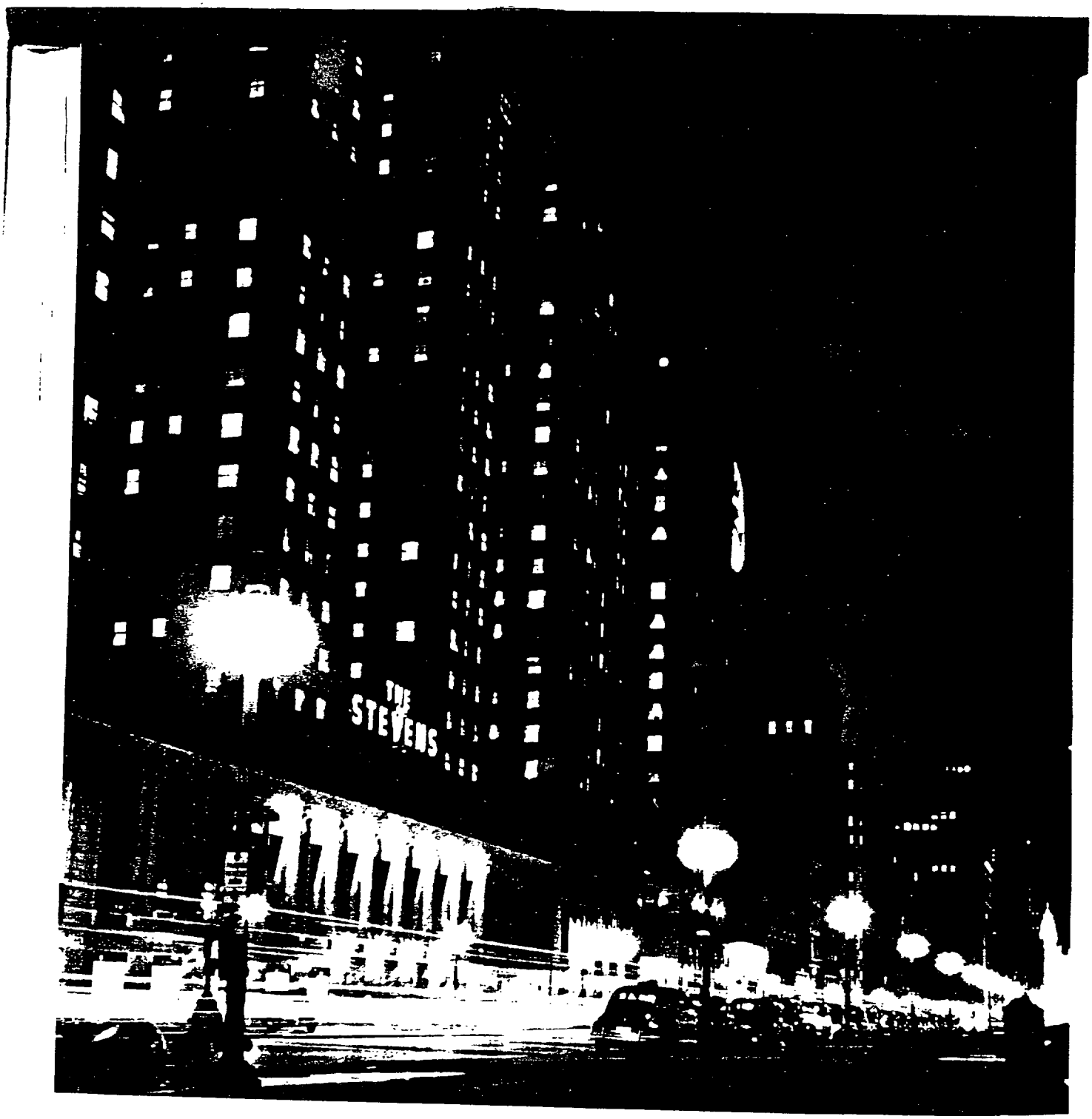


API CONVENTION ISSUE

ETHYL NEWS

DECEMBER ★ 1948

ETC 23608

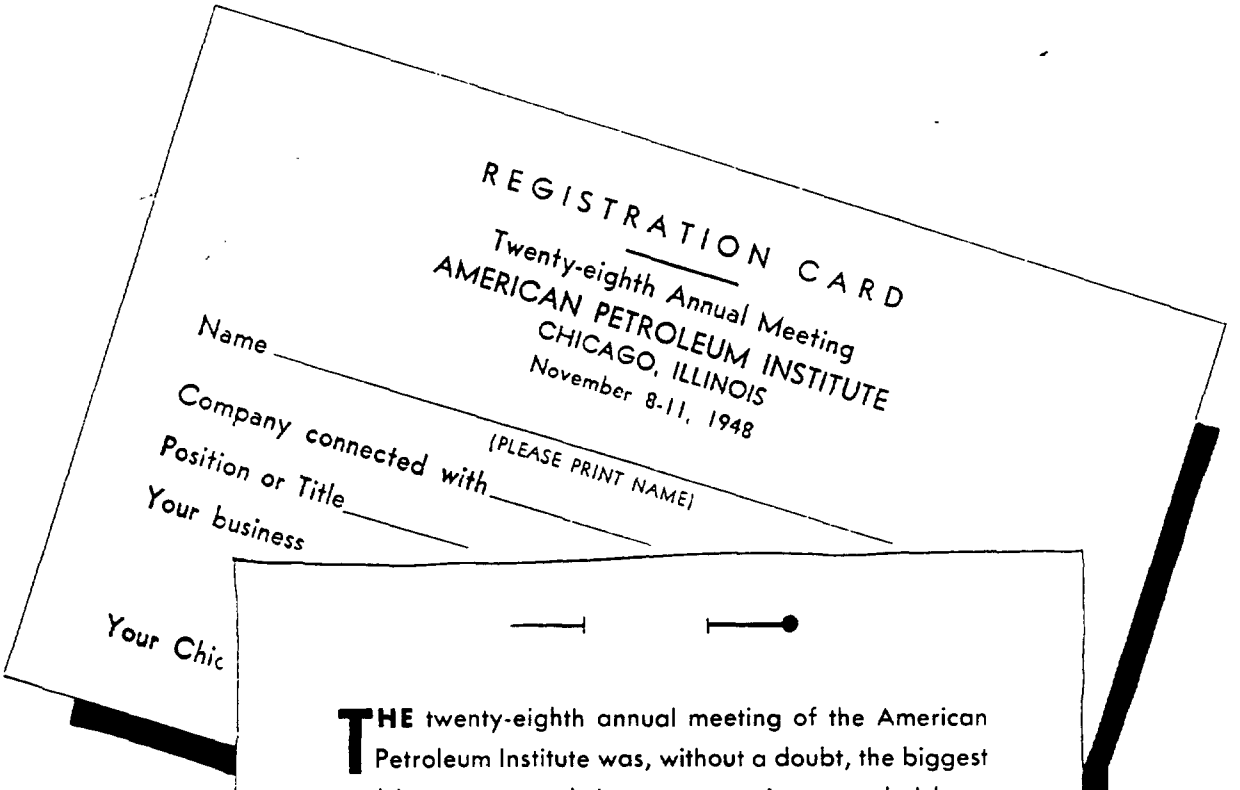


ETHYL NEWS

DECEMBER 1948

Published by ETHYL CORPORATION, 405 Lexington Avenue, New York 17, N.Y. Edward L. Shea, president, Stanley T Crossland, vice president and treasurer; Richard M. Page, secretary

ETC 23609



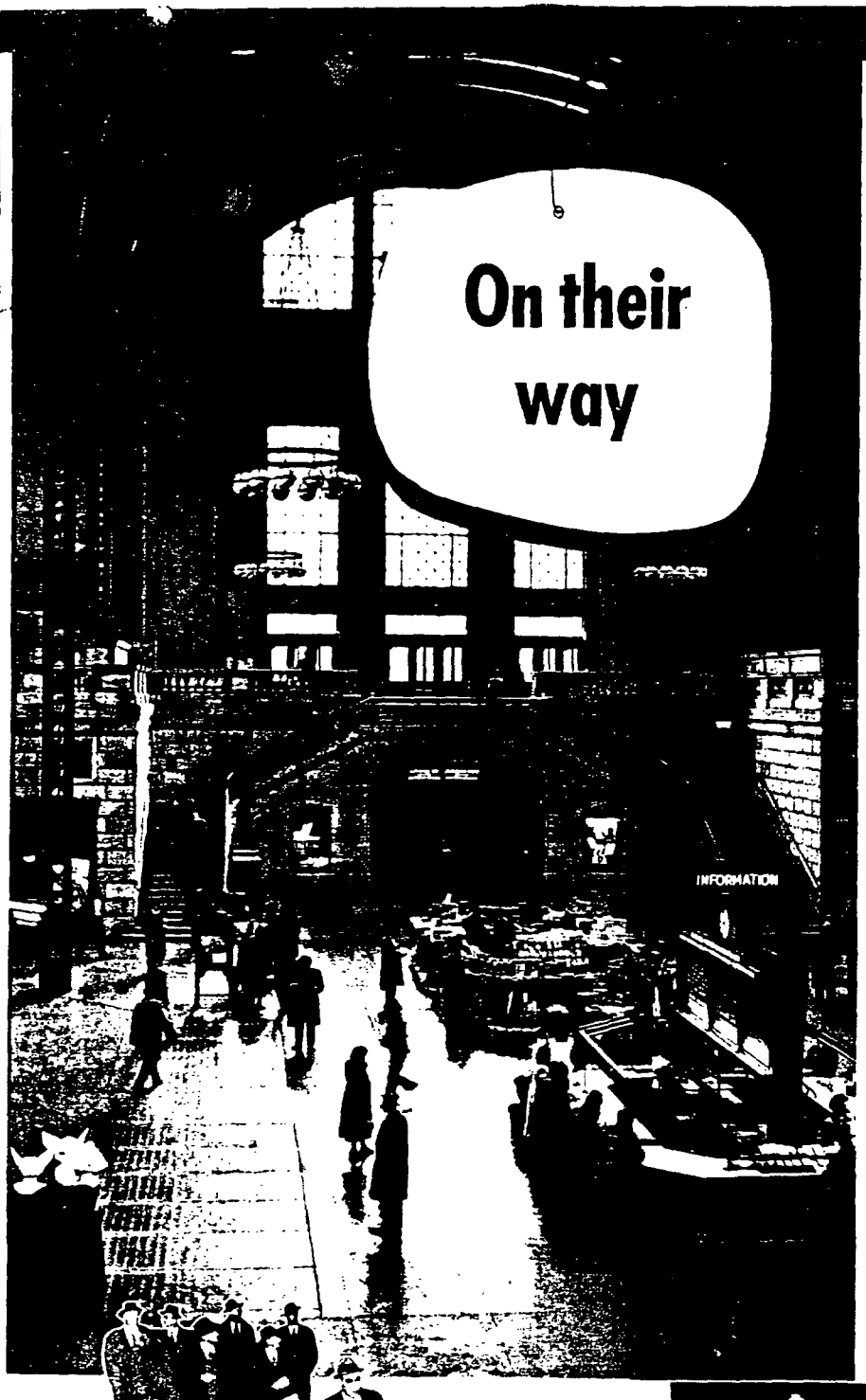
THE twenty-eighth annual meeting of the American Petroleum Institute was, without a doubt, the biggest and best on record. It was a meeting attended by a record number of more than 5,200 delegates. It was a meeting whose busy days were filled with some 160 separate sessions, approximately 130 of which were committee meetings that began four days ahead of the convention's formal opening. And it was a meeting which, in the words of William R. Boyd, Jr., was "a splendid reflection of the spirit of unity, of cooperation, and of team work which are such invaluable assets in our industrial life."

Again this year, the December issue of the Ethyl News is devoted to an informal report of that meeting. Through the medium of the candid camera, we have sought to obtain not only a pictorial report of the meeting but perhaps something of its spirit and meaning as well.

THE EDITORS

ETC 23610

On their way



VIA HIGHWAY, skyway, and railway travelled the 5,200-plus men and women who converged on Chicago in record numbers last month to attend the 28th annual meeting of the American Petroleum Institute.

Special convention-bound trains rolled out of the East and the Southwest. Those not aboard the "specials" moved on Chicago in regular trains, planes, and private automobiles. Most of the delegates arrived just prior to the annual meeting's November 8 opening date, but countless hundreds were on hand days earlier for the 34 committee meetings conducted November 4, 5, and 6.

As usual, the annual meeting taxed even the facilities of the Stevens Hotel, world's largest, to capacity and beyond. While most of the business meetings, conferences, luncheons, and receptions were held at the Stevens or the Palmer House, the facilities of more than 20 other hotels and clubs were required to accommodate the record-breaking assemblage.

Below, a delegation of oil men from the Southwest, as they arrived in Chicago.

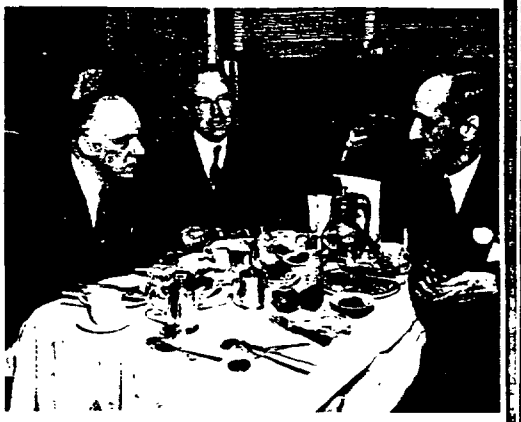
Top, incoming oil men thronged Union Station and other Chicago terminals as they arrived for the convention. Above, a group leaving the 20th Century.

ETC 23611

Aboard the Century were John D. Brandli; R. H. Pruitt, of Pruitt Petroleum; Charles M. Smythe, of E. W. Saybolt & Co.; A. K. Stone, of Modern Petroleum; and Howard Westfall, of General American Transportation.

Other Century passengers included R. K. Kelly, of Tide Water Associated; Marc F. Braeckel, president of Richfield of New York; E. F. McCabe, vice president, Tide Water Associated; and W. P. Hamilton, of Esso Standard Oil.

C. M. Davison, of Esso; and J. A. Kelley, vice president, Cities Service Oil (Pa.).

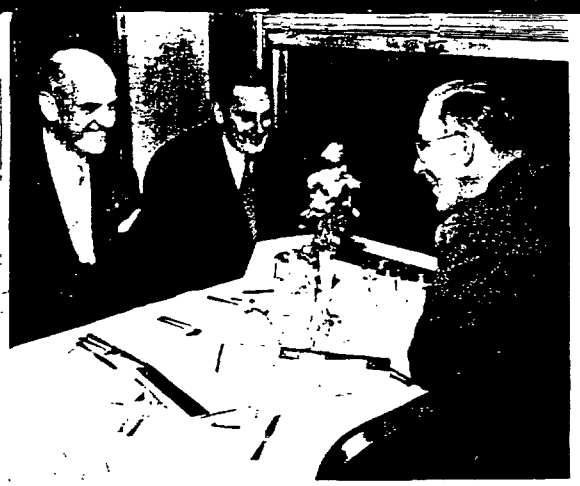


Three Sinclair men — Paul J. Butler and Vice Presidents J. E. Dyer and A. E. Watts.

E. H. Wellemeyer, vice president, Cities Service (Pa.), and A. A. Lacazette, Esso.

Harry H. Fuller, of Sinclair Refining; H. E. Brandli, vice president, Cities Service Oil (Pa.); and George H. Hill, Jr., assistant to the president, Cities Service Co. At the far right are Kenneth L. Patterson, of Esso Standard Oil, and Frank H. Barnes, of Standard Vacuum.

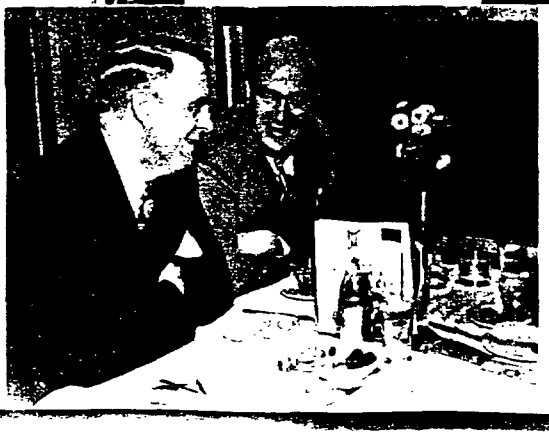
ETC 23612



Ethyl representatives on the Century included (left) Roy Goltz, Julian J. Frey, general sales manager, and Malcolm P. Murdock. Below them are Robert J. Phillips, vice president of Hegeman-Harris; and H. W. Haight and Robert W. Miller, Creole Petroleum vice presidents.

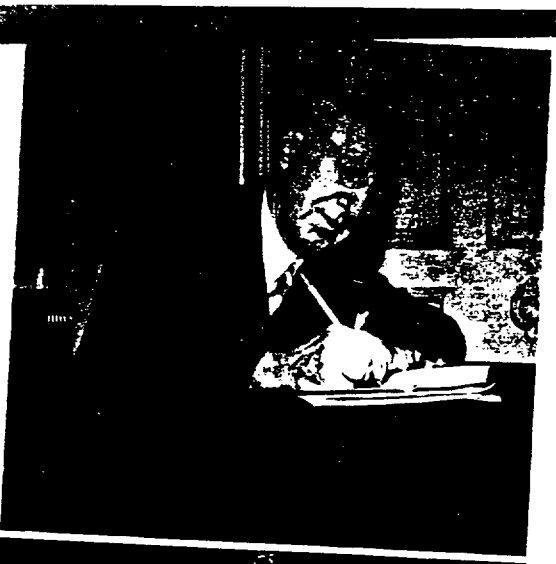
Below, top photo, are Maynard I. Landa, Petroleum Advisers, and D. P. Sturges, of Cit Service Oil (Pa.). Bottom, Eugene R. Sulliv counsel to Cities Service, and George L. Mate vice president of Cities Service Research a Development.

Left to right, Harry M. Hilts, secretary of ESPA and the Atlantic Coast Oil Conference; Henry L. Schwartz, president of Paragon; and John F. Riddell, president of Riddell Petroleum.



Left, John A. Walstrom, vice president of Asiatic Petroleum, and J. Milton Rice, of Esso Export.

ETC 23613



Early arrivals included James T-B. Bowles, right, Crown Central Petroleum. Right center, Edwin Ross, of Baash-Ross Tool, greets George Dehn, of Magnaflux.

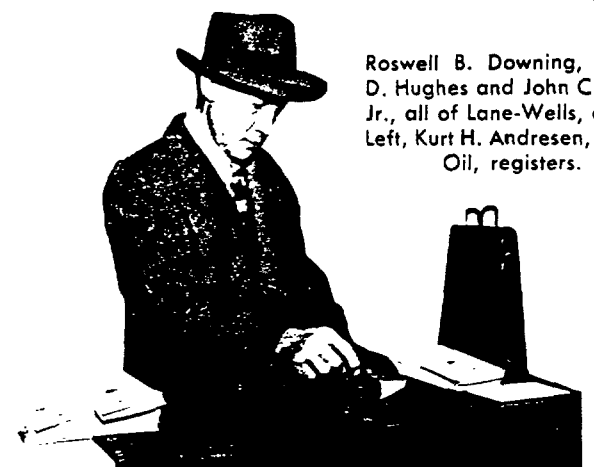
Booklets and magazines interest Harry D. Kolb, of Esso Standard, and John Woodruff, of the University of Texas.

Vernon B. Zacher, top, of Tide Water Associated, picks out his luggage in the Stevens lobby. Above, George Mahoney, of the Ladish Co., and John Stumpf, of Johnson Oil, check in.

ETC 23614

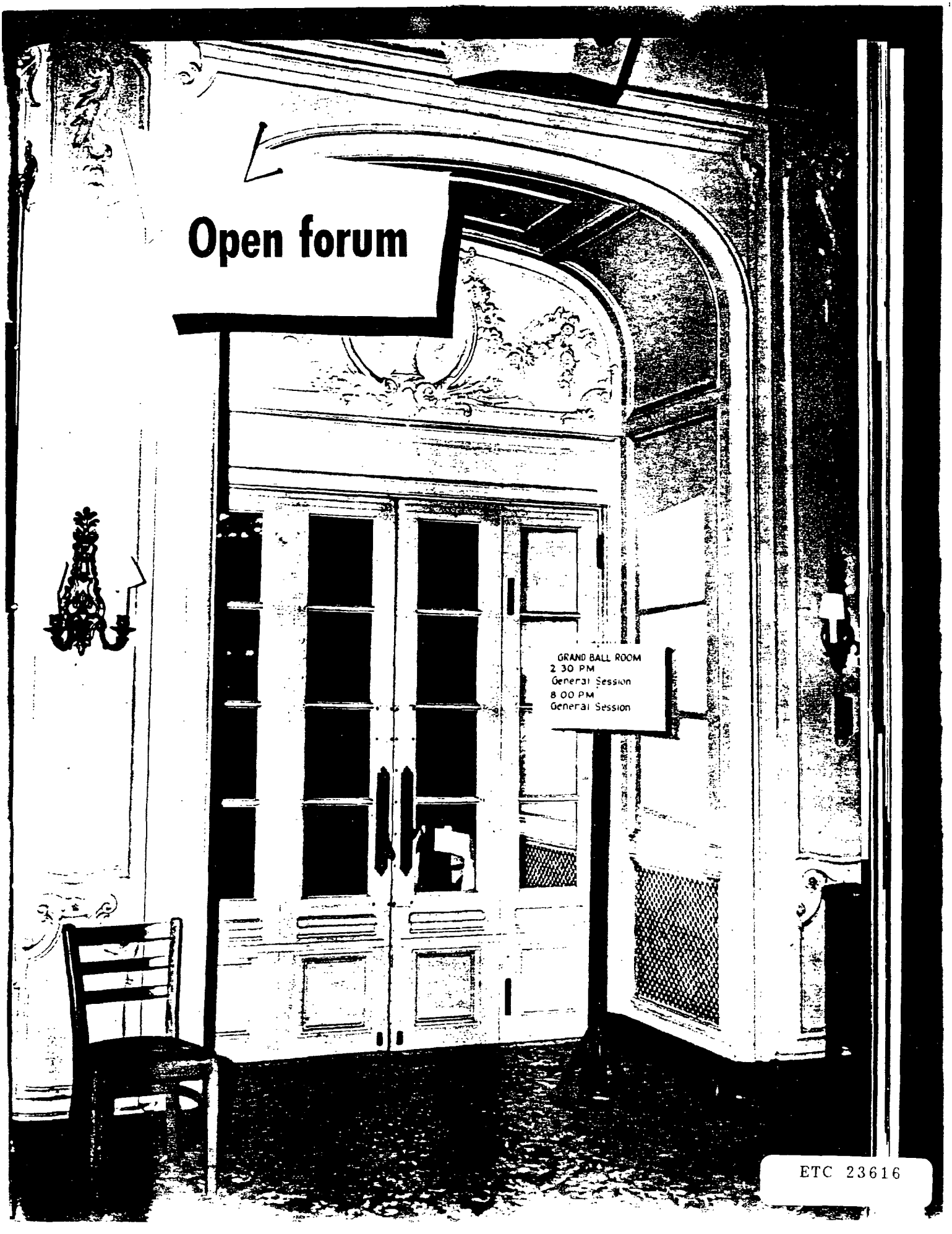
Editors of the two special API daily publications registered early. They were Warren L. Baker, of World Oil, and Mr. and Mrs. Donald W. Wilson, of the Oil and Gas Journal.

Other early arrivals included Col. T. H. Barton, board chairman of Lion Oil, right, who headed an Arkansas delegation.



Roswell B. Downing, James D. Hughes and John C. Stick, Jr., all of Lane-Wells, above. Left, Kurt H. Andresen, Carter Oil, registers.

The registration room at the Stevens was busiest just before the Monday morning sessions began.


Open forum
GRAND BALL ROOM
2 30 PM
General Session
8 00 PM
General Session
ETC 23616

Oil... and the record

API Secretary Lacey Walker reading names of new members elected to the Board.

The President's address by William R. Boyd, Jr., officially opened the first general session.

Dr. Robert E. Wilson, board chairman, Standard Oil (Ind.) discussed oil supply.

THE CREATIVE GENIUS of Charles F. Kettering was formally recognized by the API when it presented its annual Gold Medal for Distinguished Achievement to this "leading prophet of research and invention" at the first of three general sessions.

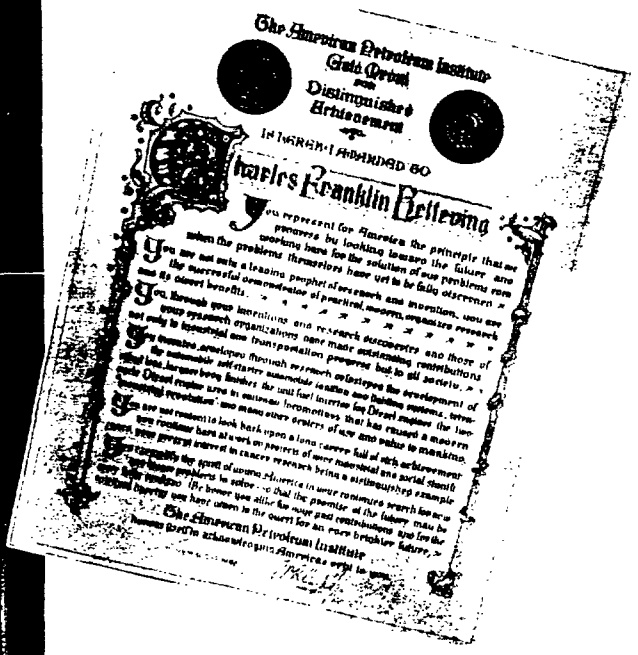
"Boss Ket," who joined the late Henry Ford and Dr. William M. Burton as recipients of the three-year-old award, was honored "for your past contributions and for the spiritual impetus you have given to the quest for an ever brighter future." "You, through your inventions and research discoveries, and those of your research organizations, have made outstanding contributions not only to industrial and transportation progress but to all society," the citation declared.

In his talk following the presentation, Mr. Kettering said that our supply of energy is limitless, predicting that scientists some day would learn how to capture the energy from the sun.

The annual President's Address by William R. Boyd, Jr., was the first one ever devoted exclusively to the subject "The API." Mr. Boyd took occasion to summarize, and then conclusively refute, some of the charges that have been made against the API from time to time. The Institute, he declared, has won the respect not only of oil men, but of the public and government as well.

Third speaker of the Wednesday afternoon general session was Dr.

Charles F. Kettering, third to receive the API Gold Medal for Distinguished Achievement, told the audience that "as long as the sun shines . . . we shall never run out of energy." His Award Certificate is reproduced below. At left, below, he is shown receiving the medal and certificate from President Boyd.



The American Petroleum Institute
Gold Medal
for
Distinguished
Achievement

IN HONOR AWARDED TO

Charles Franklin Kettering

You represent for America the principle that we preserve by looking toward the future and the problems that are for the solution of our problems now . . . you are not only a leading pamphleteer of research and invention, you are the successful commercializer of practical, modern, organized research and its utmost benefits. . . .

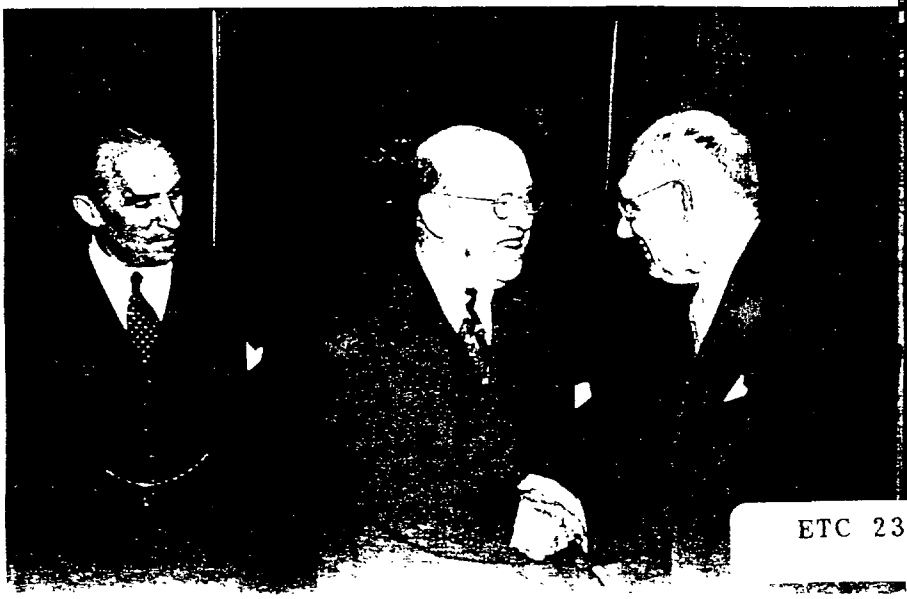
You, through your inventions and research discoveries and those of your group research organizations, have made outstanding contributions not only to individual and transportation progress but to all society. . . .

You, through your inventions and research discoveries and those of your group research organizations, have made outstanding contributions not only to individual and transportation progress but to all society. . . .

The American Petroleum Institute

William G. Skelly, president of Skelly Oil, (center) greets "Boss Ket" as Edward L. Shea, Ethyl president, looks on.

Robert E. Wilson, board chairman of Standard Oil Co. (Indiana). In an address entitled "How the Oil Supply Problem Was Licked," he cited the keen competition among oil companies as the major factor in this respect. "There has never been such intense competition by each and every company in the important job of trying to take care of its own customers almost regardless of cost, and thus retain their good-will and hold their business for the future," Dr. Wilson noted.



ETC 23618

Taking time out for a glance at the news are John H. Moran, of Oil Center Tool Co., and John F. Maher, the firm's president.

J. H. Forrester, of Stanolind Oil and Gas, and D. W. Wilson, of Arthur G. McKee & Co.

D. V. Stroop, of the API staff, and S. B. Eckert, vice president of Sun, at the meeting of the Board of Councillors.

W. S. Zehrung, president of Pennzoil and of the National Petroleum Assn; Everett Wells, vice president of Ashland Oil and Refining; and Harry W. Kaley, vice president of Ethyl.

The API Board of Councillors, as it met to nominate candidates for election as API directors.

ETC 23619

PERSONAL VIEWS as to how Congress and the petroleum industry may increase their understanding of each other were expressed by U.S. Senator George W. Malone of Nevada and Frank M. Porter, president of the Mid-Continent Oil and Gas Association, in talks before a capacity audience at the Wednesday evening general session.

Senator Malone said the industry must convince Congress that the public interest is uppermost in all its operations, and that it must keep the lawmakers supplied with factual information on the position of petroleum in this country. Mr. Porter, in turn, called upon Congressmen to be "guided by the facts" and to "follow their own sound judgment instead of those with axes to grind."

A special feature of the general session was a panel discussion in which leading radio commentators interviewed oil executives on their companies' public relations efforts.

Among the speakers at the Wednesday evening session were Senator George W. Malone, Frank M. Porter and Elmer Davis. Bottom, a view of the speakers' platform during a panel discussion by oil executives and radio commentators.

ETC 23620

Right, participating in the panel discussion were radio announcer Dwight Weist and Col. T. H. Barton, chairman of Lion Oil. Col. Barton told how his company is carrying forward the oil industry's public relations program.

Another speaker at the panel discussion was Alex Dreier, the well-known commentator.

Below, caught between sessions were Al Basye, of Ethyl; L. E. Kincannon, vice president, and C. O. Anderson, of Rock Island Refining; and A. L. Russell and Ralph Booker, of the Indiana Farm Bureau Cooperative.

Above, other participants in the panel discussion included (top) Joseph W. Butler, president of the Butler Oil Corp., and news commentator Ray Henle, and (below) Harry Milton, president of the Milton Oil Co., and radio broadcaster Richard Harkness. Mr. Butler told of the progress of the industry's public relations program in the state of Maryland while Mr. Milton spoke on the meaning of the program to oil jobbers.

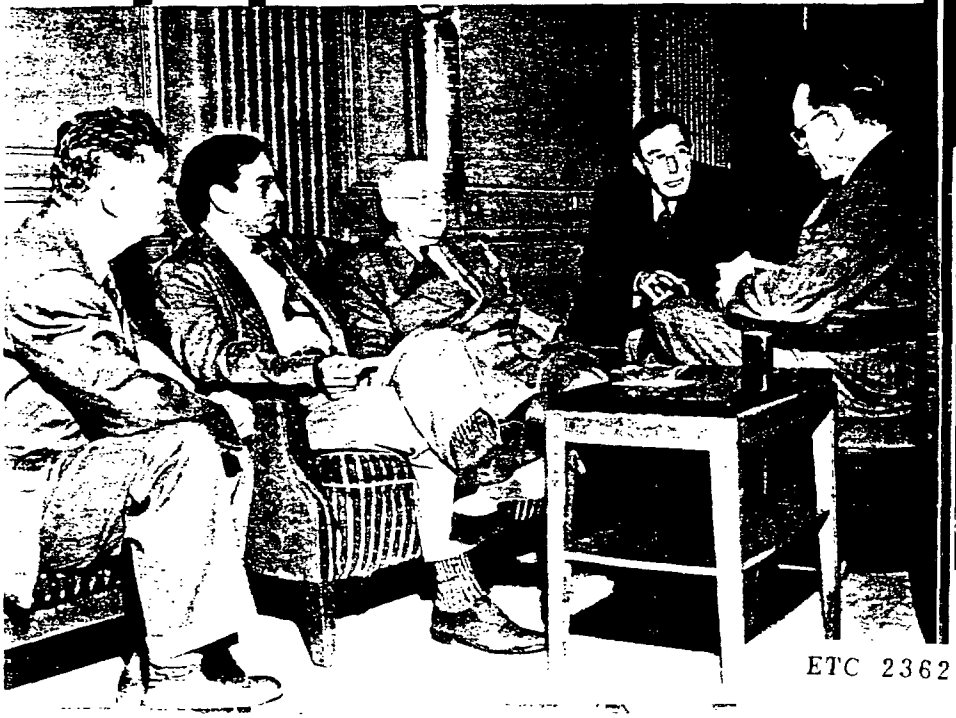
ETC 23621

Looking over a program are Gilbert J. Mueller, executive vice president of Argo Oil; H. A. Stewart, president, Rocky Mountain Oil and Gas Assn; and J. F. Cullen, of Stanolind Oil and Gas.

Exchanging greetings between sessions are Dr. W. F. Faragher, of Houdry Process; William H. Hubner, of Ethyl; and Reid Brazell, president of Leonard Refineries.

Above, Willis H. Thompson and Ramsey C. Armstrong, president of Welex Jet Services, and Mercer H. Parks, of Humble, make up this trio.

Above are Charles P. McGaha, of the Fain-McGaha Oil Corp., and Charles F. Roeser, of Roeser and Pendleton.



Right, listening as Sidney A. Swensrud (right), president of Gulf, makes a point are Hines H. Baker, president, and Dr. R. J. Gonzalez, of Humble; Dr. Joseph E. Pogue, the well-known oil economist; and Albert C. Mattei, president of Honolulu Oil

ETC 23622

Max W. Ball, retiring director of the Oil and Gas Division, U. S. Department of Interior, spoke at the final session.

Oil... and the future

Above, Robert G. Dunlop, president of Sun, speaking on prices, profits and productivity in petroleum.

THE FINDINGS of one of the most comprehensive studies ever undertaken on the future supply of petroleum were disclosed at the Thursday morning general session. The report, covering the 1949-58 period, was prepared by L. F. McCollum's subcommittee on Long-Term Availability. Summed up, it not only refuted the persistent myth that we are running out of oil, but foresaw a substantial increase in the national supply of petroleum liquids. Other speakers were Robert G. Dunlop and Max W. Ball.

Right, L. F. McCollum, president of Continental Oil, as he reported on the long-term availability of crude oil supply. Below, a part of the audience at the closing general session.

ETC 23623

Among the visitors to Chicago were Oscar B. Irizarry, editor of Petroleo Interamericano; Carlos L. Corcuera, of Petroleos Mexicanos; C. C. Tate, of Phillips; and Teodoro Reith, of Petroleos Mexicanos.

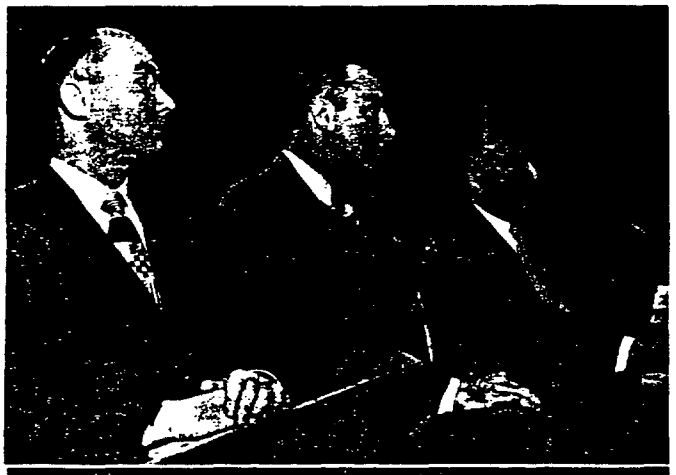
Top, Ralph O. Dietler, chairman of Stanolind Oil Purchasing; M. H. Robineau, president of Frontier Refining; and J. P. Moroney, vice president of Sinclair Wyoming. Above, C. G. Skartvedt, president of Skarty Oil, and J. E. Adrian, secretary of the South Dakota Independent Oil Men's Assn.

Right, glancing over some convention literature are James A. Cashen, Jr., of Pan American Petroleum, and J. A. LaFortune, executive vice president of Warren Petroleum. Below, Leo King, of the Happy Co., and A. J. Brewer, vice president of Aetna Oil, formed this pre-session twosome. Below right, T. N. Law, president, and J. L. Stauss, vice president of Falcon Seaboard Drilling, stop for a drink of water.

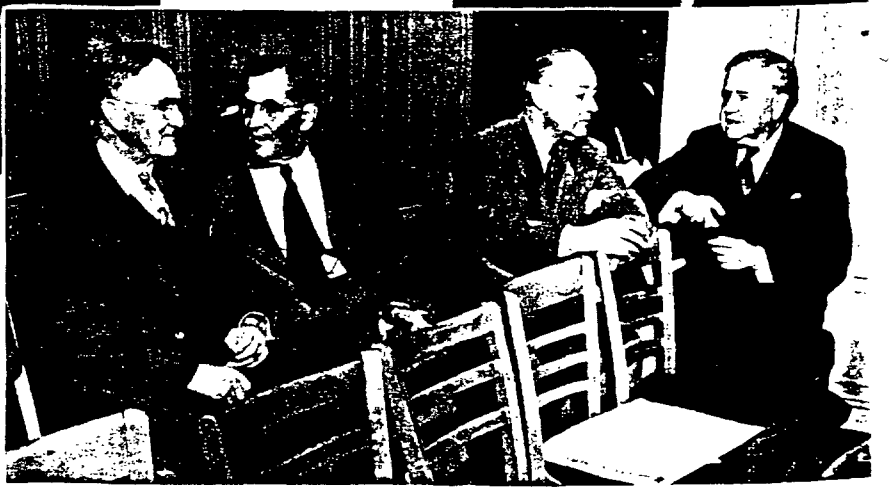
ETC 23624

E. B. McConnell, vice president of Standard of Ohio, talking to Harry Mack, of Ethyl.

Above, William R. Argyle, vice president of Sinclair Refining, and Richard Murphy, of Ethyl. Right, Russel S. Williams, president of the Individually Branded Petroleum Assn.



Right, Jack Macauley, of Ethyl, with A. M. Maxwell, vice president of Standard of Ohio. Below, holding a pre-session conference are Wirt Franklin, of Franklin, Aston and Fair; Frank Buttram, president of Buttram Petroleum; Ted Sutter, of Baker Oil Tools; and E. L. De Golyer, of De Golyer and MacNaughton.



Top, intent listeners at a general session are John H. Easthagen, L. F. Schimansky, and A. H. Batchelder, all of California Research. Above, a buffet party brought together David G. Gray, of Humble; A. C. Sailstad, president of Stanolind Oil Purchasing; and J. E. Scally, vice president of Harmony Oil.

Board of directors

Newly elected API director Joseph S. Morris, of the American Assn. of Oil Well Drilling Contractors, is escorted to a Board meeting by Maston Nixon, of Southern Minerals.

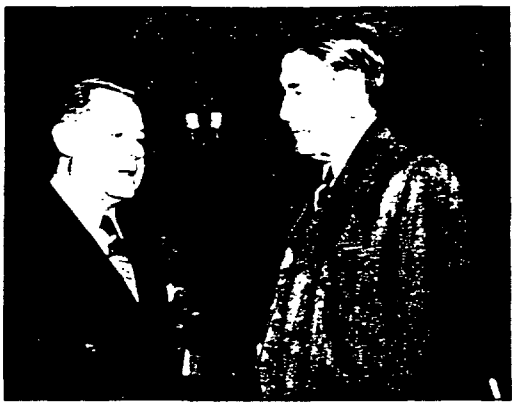
THREE WORK SESSIONS and a luncheon made up the busy schedule of the API Board of Directors.

The Board re-elected William R. Boyd, Jr. to serve as President of the Institute for the eighth year. Vice Presidents named were R. L. Wheelock, for Production; Chester F. Smith, for Refining; J. Howard Marshall, for Marketing; and W. Alton Jones, for Transportation. L. S. Wescoat was re-elected Treasurer, and Lacey Walker was again chosen Secretary and Assistant Treasurer.

William R. Boyd, Jr., flanked by Lacey Walker and D. V. Stroop of the API staff, presiding at a meeting of the API Board of Directors.

Above, Senator-elect Robert Kerr, former governor of Oklahoma, addressed the Board meeting. Below, a view of the Board room as the API directors met.

ETC 23626



Shown above and on the opposite page is a luncheon meeting of the executive committee of the API Board. Above are L. S. Wescoat, president, Pure Oil; H. T. Klein, president, The Texas Co.; J. Howard Marshall, president, Ashland Oil; J. L. Hamon, of Cox and Hamon; H. A. Gidney, executive vice president, Gulf Oil; George A. Hill, Jr., president, Houston Oil; R. G. Follis, vice chairman of the board, Standard of California; J. N. Pew, Jr., chairman, Sun; Eugene Holman, president, Standard Oil (N. J.); A. C. Mattei, president, Honolulu Oil; and Lacey Walker, of the API staff.

Left, B. A. Hardey, of Shreveport, La., and Eugene Holman, president, Standard Oil (N. J.) have a chat before a Board meeting.

W. K. Warren, president of Warren Petroleum, chatting with N. C. McGowen, president of United Gas Pipe Line.

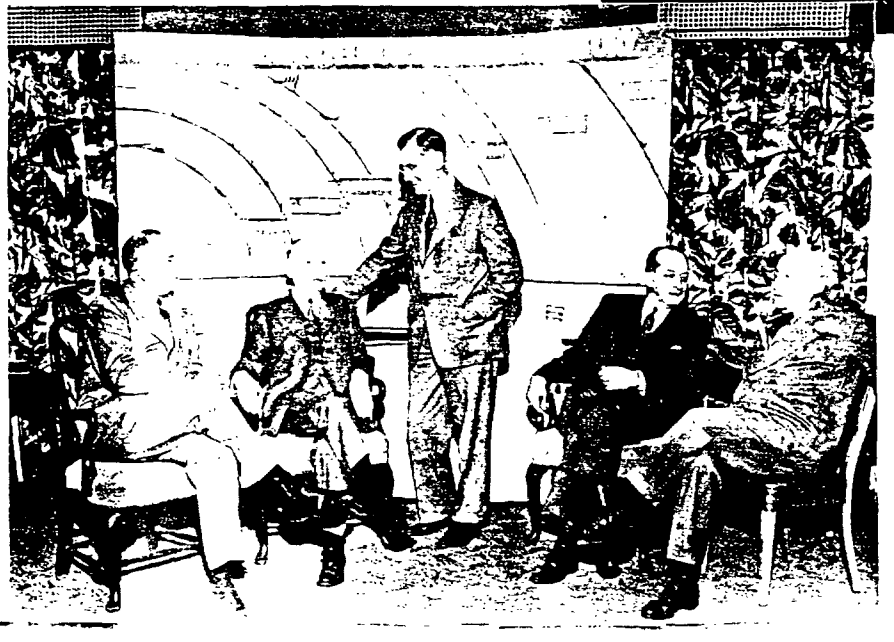
Left, Eric V. Weber, president of the Ohio Petroleum Marketers Assn, and W. W. Vandeveer.

Right, R. C. Stoner, vice president, and R. G. Follis, vice chairman of the board, Standard Oil of California.

ETC 23627

The other half of the luncheon table, with API President Boyd presiding, shows R. L. Wheelock, of Wheelock and Collins; N. C. McGowen, president, United Gas Pipe Line; John M. Lovejoy, president, Seaboard Oil; W. G. Skelly, president, Skelly Oil; A. E. Watts, vice president, Sinclair Oil; W. Alton Jones, president, Cities Service; B. L. Majewski, vice president, Deep Rock; C. F. Roeser, of Roeser and Pendleton; Robert H. Colley, president, Atlantic Refining; D. V. Stroop, API; Paul Blazer, chairman, Ashland Oil; J. C. Donnell II, president, Ohio Oil; and A. Jacobsen, president, Amerada. Standing are Dr. R. E. Wilson, chairman, Standard Oil (Indiana); L. F. McCollum, president, Continental Oil; B. I. Graves, vice president, Tide Water Associated; and Howard W. Page, Standard Oil (N.J.).

Edward L. Shea, president of Ethyl, and H. S. M. Burns, president of Shell, talking before a Board session.

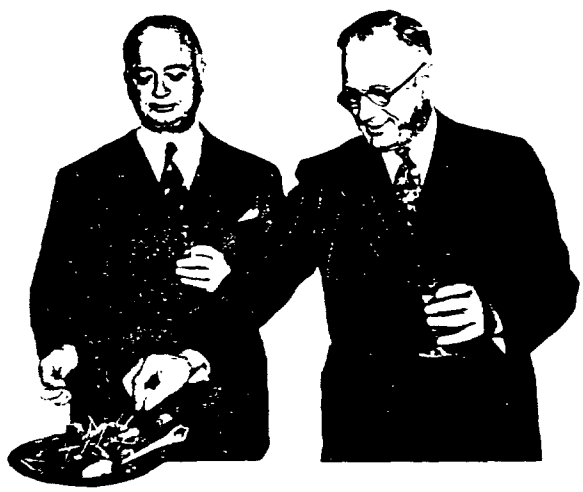


With a convention exhibit forming an interesting backdrop, five directors hold an informal chat. They are J. French Robinson, president, East Ohio Gas; O. D. Donnell, former president, Ohio Oil; Frank Buttram, president, Buttram Petroleum; R. Ogarrio, vice president, The Texas Co.; and E. B. Reeser.

ETC 23628

Pure Oil held a reception for the API Board (above) during the convention. Left, Pure Oil executives Lee S. Wescoat (president), Henry M. Dawes (chairman of the executive committee), and Rawleigh Warner (board chairman) served as a welcoming committee for their guests.

Above are R. L. Milligan, treasurer of Pure, and R. L. Kent, president of Kent Oil, and below are Amon Carter, S. W. Richardson, and K. S. Adams, president of Phillips.

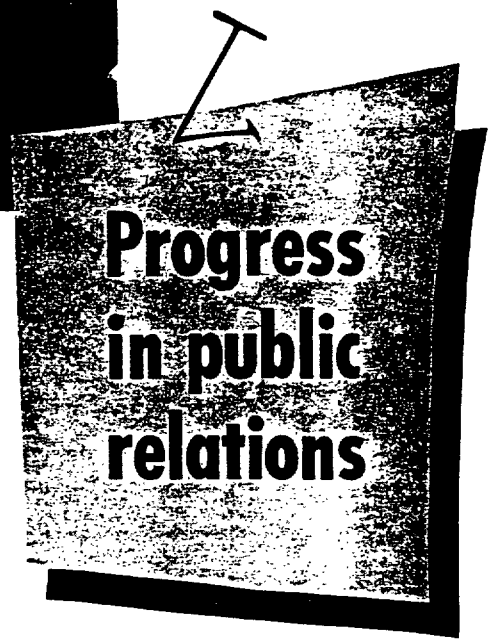


Above, R. L. Wheelock, of Wheelock and Collins, and W. S. S. Rodgers, chairman of The Texas Co., have a helping of hors d'oeuvres.

Below, Harry Moreland, president of Great Lakes Pipe Line, chatting with R. W. McDowell, executive vice president of Mid-Continent Petroleum.

ETC 23629

The Public Relations group session heard timely talks by H. H. Anderson (left), vice president, Shell Pipe Line; and Claude Robinson, president of Opinion Research Corp.



PAST ACCOMPLISHMENTS of the industry's two-year-old public relations program were reviewed and plans for future activities were discussed at several meetings during the API convention.

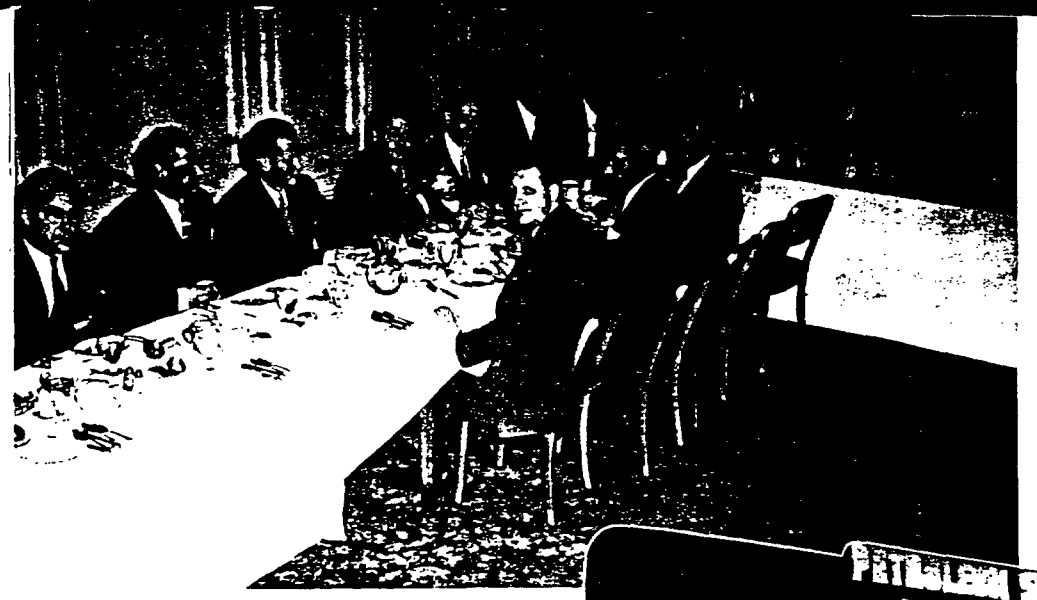
The program will go forward during the coming year with Conger Reynolds as chairman of the Oil Industry Information Committee. A budget of $1,850,000 for the OIIC program, recommended by John M. Lovejoy, chairman of the API Public Relations Committee, was unanimously approved by API Directors for 1949.

The report of the OIIC for 1948 noted that 4,039 companies have now participated in the industry-wide program, compared with 1,500 a year ago.

ETC 23630

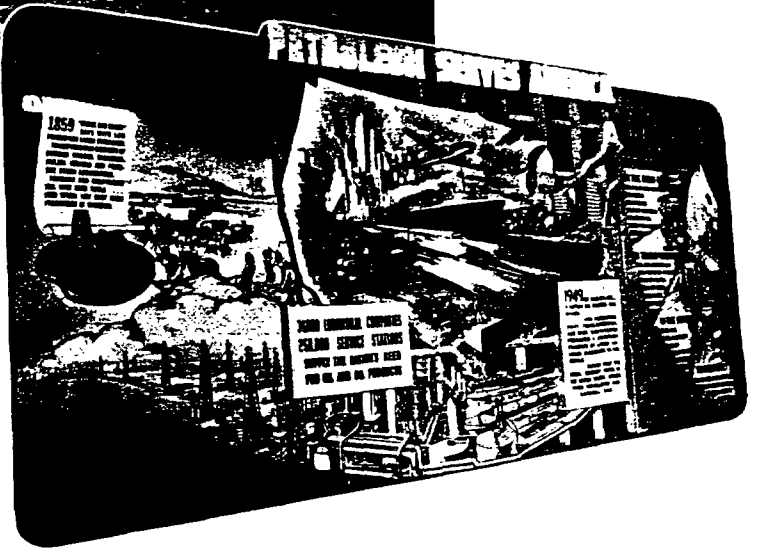
At the microphone, telling how he put Oil Progress Day across in Eau Claire, Wisconsin, is Ken Dougherty, of the Kenmac Petroleum Co. and OIIC area chairman for Wisconsin. The interested head-table listeners are H. H. Anderson, Claude Robinson, and Ralph Champlin.

For his outstanding job as "a one-man Oil Progress committee" in his home town, Ken Dougherty (right) receives a gift on behalf of the OIIC from Ralph Champlin, chairman for 1948.



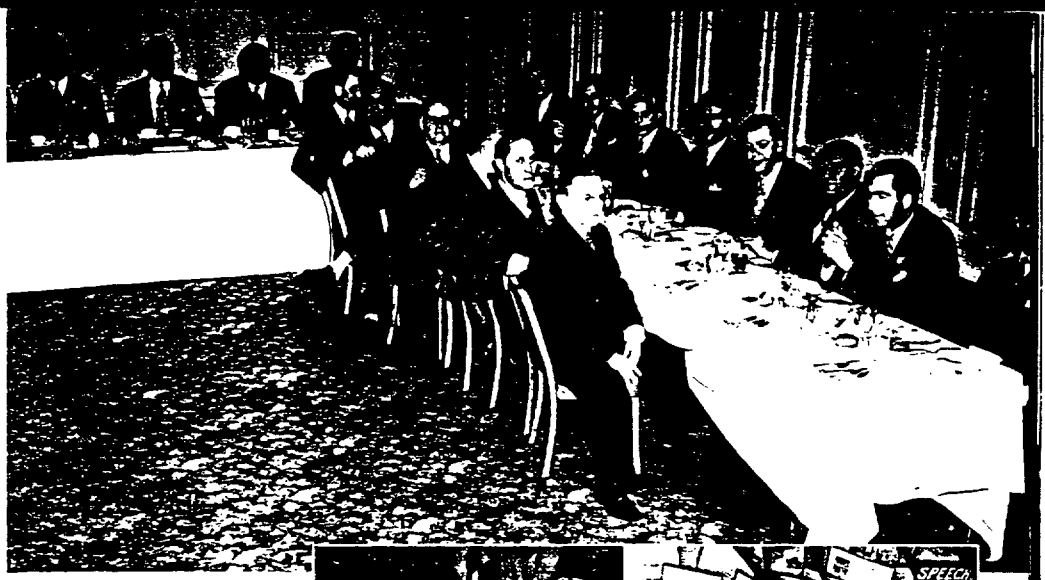
Present at Thursday's OIIC luncheon were Henry E. Rose, Harry W. Simonds, Stanton K. Smith, William Finnegan, Edwin Esmay, Keeton Arnett, John Canning, Fred Eldean, H. B. Miller, and Ralph Champlin. On the inner side of the table are W. J. Arnold, William Gerwe, and H. Brown.

Virtually all APIers saw this OIIC-prepared "Petroleum Serves America" display (below), near the Registration Room. Companies or associations wishing copies of the display may obtain them from the OIIC.



OIIC district chairmen, either past or present, are (standing) L. C. Pfaff, Socony-Vacuum; Wiley Moore, Wofford Oil; Eric V. Weber, Ohio Petroleum Marketers Assn.; L. E. Ulrope, Esso Standard; and Joseph W. Butler, Butler Oil. Seated are M. H. Robineau, Frontier Refining; Robert Pielsticker, Skelly Oil; W. J. Arnold, Pure; W. J. Gerwe, Socony-Vacuum; and Robert Garrett, Gulf.

ETC 23631



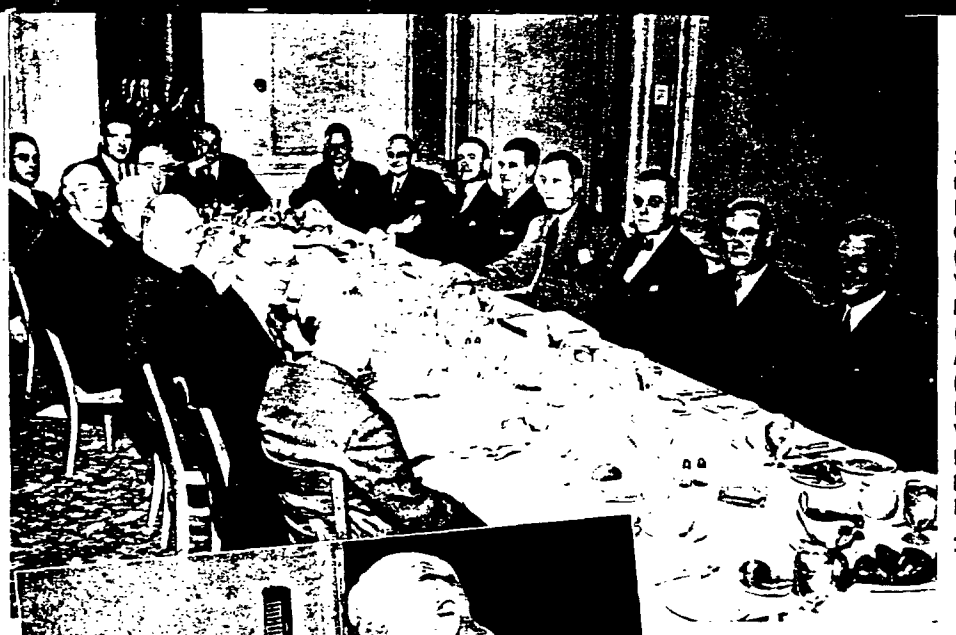
The OIIC Thursday luncheon also was attended by Douglas Campbell, Conger Reynolds, Franklyn Waltman, W. R. Huber, E. A. Cunningham, Paul Hodges, Richard Rollins, Jack Cohane, John Wieland, G. Stewart Brown, Daniel McCarthy, and J. L. Dupree. Inside are Clarel Mapes, J. A. Lentz, Fayette B. Dow, Warren Drew, Howard Volgenau, and John S. Cooke. Standard of Indiana and Pure Oil were hosts at the luncheon.

Franklyn Waltman, OIIC chairman for 1947; Conger Reynolds, chairman for 1949; and Ralph Champlin, chairman for 1948.

Rawleigh Warner, chairman of Pure Oil, and Admiral H. B. Miller, manager, API Department of Information.

The oil industry's Information Committee in joint session with district chairmen and the trade press Monday afternoon in the Upper Tower.

ETC 23632



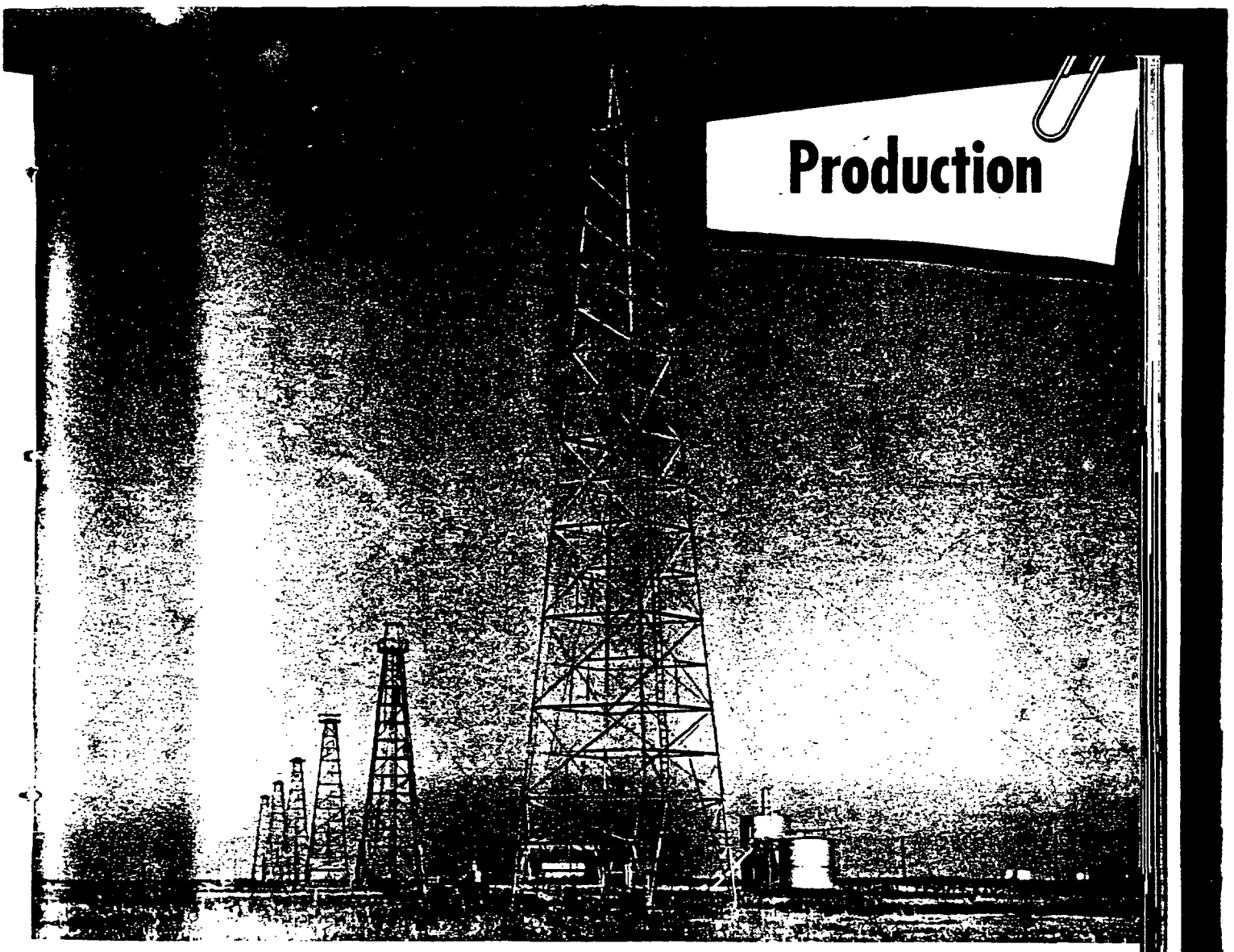
Shown clockwise at a luncheon of the Board of Directors Public Relations Committee are Robert H. Colley (Atlantic), Lee S. Wescoat (Pure), B. L. Majewski (Deep Rock), W. G. Skelly (Skelly Oil), Col. T. H. Barton (Lion), Dr. Robert E. Wilson (Standard Indiana), Admiral H. B. Miller (API), Ralph C. Champlin (Ethyl), Chairman John M. Lovejoy (Seaboard), John S. Cooke (API), William R. Boyd (API president), R. G. Follis (California Standard), B. B. Howard (Jersey Standard), H. S. M. Burns (Shell), B. Brewster Jennings (Socony-Vacuum), Ralph T. Zook (Sloan and Zook), and L. L. Aubert (Bankline Oil).

John M. Lovejoy, president of Seaboard Oil and chairman of the Public Relations Committee of the Board, chats with Joseph L. Dwyer of the API staff.

ETC 23633

Discussing the oil industry's public relations effort for the coming year are John Southworth, of Shell, new OIIC chairman for Michigan, and Conger Reynolds, 1949 chairman of the OIIC. Lower left, M. S. Hauser and Douglas Campbell, public relations directors of Ohio Oil and Pure Oil.

George Bays, of Stanolind, glances at the roster of companies supporting the industry's public relations program, while K. C. Sclater, Petroleum Engineer editor, and P. E. Fitzgerald, of Dowell, Inc., chat nearby.



Production

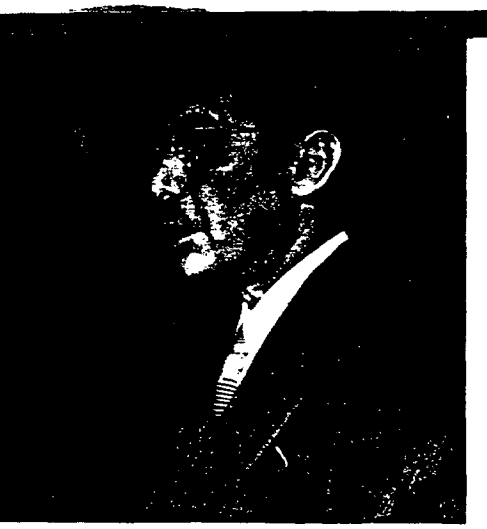
THE DIVISION of Production held three sessions during which nine speakers reviewed subjects of interest to that branch of the industry. In all, twelve men authored the papers, which ranged in subject matter from offshore drilling to employee relations.

George Cannon, of Humble, opened the first session with a review of "Improvements in Cementing Practices and the Need for Uniform Cementing Regulations." This was followed by a discussion on "Factors to be Considered in Obtaining Proper Cementing of Casing." This paper was co-authored by George Howard and J. B. Clark, both of Stanolind. Edgar Kraus, of Atlantic Refining, concluded the Tuesday morning session with an analysis of "Factors Used in the Allocation of Production Among Pools and Within Pools." W. V. Vietti, of The Texas Company, and M. E. Holmberg, of Phillips, presided.

The Production session of Tuesday afternoon was presided over by H. H. Kaveler, Phillips Petroleum, and John Sherborne, Union Oil. John McNulty, of Ohio Oil, spoke on "Do You Recognize Your Employees As People?" His talk was followed by an examination of the "Importance of Natural Gas in the National Economy of the United States," given by R. H. Hargrove of Texas Eastern Transmission Corp. The session was concluded by E. G. Gaylord, of California Research Corp., who discussed the "Role of Research in the Production of Oil."

The concluding session, held Wednesday morning, had W. L. Horner, Barnsdall Oil, and R. O. Garrett, Arkansas Fuel Oil, as chairmen. The program included "Geophysical Exploration" by R. D. Wyckoff, of Gulf Research; "Regulations Covering Drilling Activities in Coastal Waters" by R. G. Watts, of Magnolia; and "Offshore Drilling and Development" by Mercer Parks and J. C. Posgate, of Humble. C. E. Reistle, Jr., also of Humble, read the report of the Division's nominating committee.

George E. Cannon, of Humble Oil, spoke on cementing practices at the first session on Production.



Edgar Kraus, of Atlantic Refining, speaking on factors used in the allocation of production.

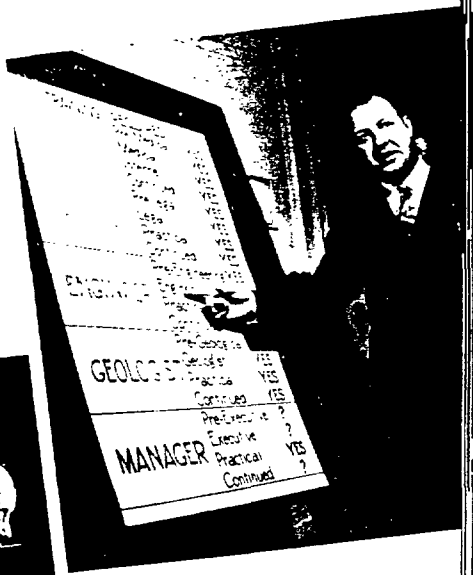
George C. Howard, of Stanolind Oil and Gas, discussed proper cementing of casings.

Right, Presiding Officers W. V. Vietti, of The Texas Co. and M. E. Holmberg, of Phillips Petroleum.

The Tuesday afternoon session in the South Ball Room was attended by this large audience.

Part of the audience which attended the Tuesday morning session on Production.

Left, John E. Sherborne, of Union Oil, and H. H. Kaveler, of Phillips Petroleum, presiding at the Tuesday afternoon session. Lower left, E. G. Gaylord, California Research Corp., spoke on the role of research in production.



Above, John R. McNulty, of Ohio Oil, spoke on employe relations. Left, R. H. Hargrove, of Texas Eastern Transmission, discussed the economic importance of natural gas.

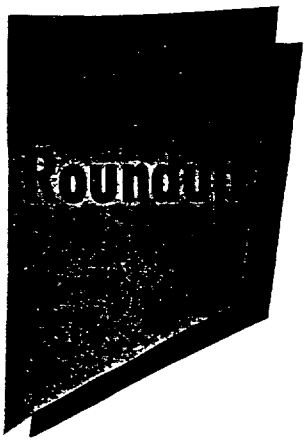
ETC 23636

Left, R. G. Watts, of Magnolia Petroleum, addressing the Wednesday morning Production session. Above, R. O. Garrett, Arkansas Fuel Oil, and William L. Horner, Barnsdall Oil, were chairmen of the meeting.

Mercer H. Parks, left, of Humble Oil, spoke on "Offshore Drilling and Development." Below, C. A. Young presenting API Production Division awards to Jake L. Hamon, of Cox and Hamon; F. E. Rice, vice president, Phillips Petroleum; T. E. Swigart, president, Shell Pipe Line; and DeWitt Ring, vice president, Preston Oil. Seated: C. C. Ashley, Shell Chemical; and George Supple, who accepted award for E. L. Adams, retired president of General Petroleum. Other recipients were C. C. Scharpenberg and W. R. Trelford, both of whom are retired.

Below, R. D. Wyckoff, of Gulf Research and Development, speaking on "Geophysical Exploration."

ETC 23637



It's time out to write a letter for Charles M. Linthicum, of Max Waller Co., above. George Senn, right, president of George Senn, Inc., scans the paper. On the extreme right are A. W. Ambrose, president, Cities Service Oil (Del.), and Ralph Neuhaus, vice president, Hughes Tool. Below is President A. W. Peake, of Standard Oil (Ind.), and at the bottom, Vice President Clive M. Alexander, of Aetna, and S. T. Pruitt, of Ethyl.

Below are T. J. Crowley, W. L. Love and F. W. Wallace, oil magazine executives, with J. B. Merritt. Bottom, San M. Wagner, of Ethyl, greets Glen Foster, George Van S. Randall, and Howard Cuyler of Standard of California.

ETC 23638

The Advisory Committee on Fundamental Research on Composition and Properties of Petroleum met on Tuesday afternoon.

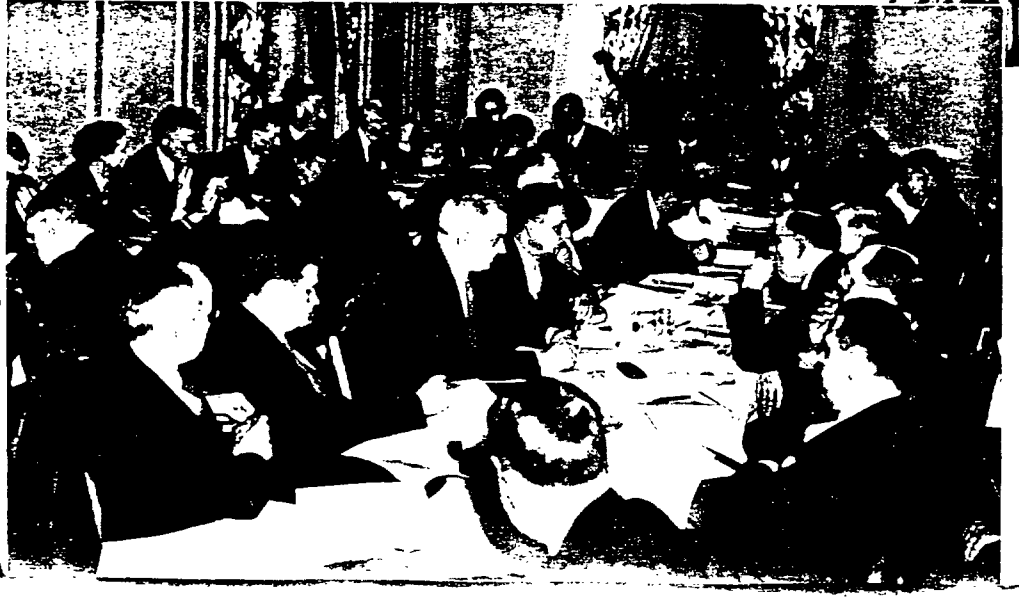
Board Chairman Elmer Cooper, of Chanute Refining.

R. J. Laidlaw, of Worthington Pump & Machinery.

W. J. Distler, of Ethyl, chats with H. W. LaFleur, of Sinclair.

Critchell Parsons, president of Engineering Development Co., and Lt. Col. Joseph H. Lee, U. S. Air Force.

One of the many committee meetings on Monday was the session on Standards 5L and 5LX.



ETC 23639

Refining

IN AN INDUSTRY as progressive as the petroleum business, methods for insuring continued high quality of products are of particular importance.

Attention to laboratory and pilot plant approaches to process operations was given, therefore, in the Division of Refining meetings. There were two symposiums on Rapid Methods of Analysis, sponsored by the Committee on Analytical Research, with J. B. Rather, Jr., of Socony-Vacuum, presiding.

Subjects covered represented the research of representatives of a dozen laboratory groups, including Gulf Research and Development, Richfield Oil, Phillips Petroleum, Socony-Vacuum Laboratories, Anglo-Iranian Oil Co., Standard of Indiana, The Texas Co., Jefferson Chemical Co., Standard Oil Development, Universal Oil Products, Atlantic Refining, and Humble Oil.

In the only address of the final Refining group session, Eugene Ayres, chief chemist of Gulf Research and Development, declared that our reserves of petroleum and coal are sufficient to last three or four centuries.

To supplement these reserves, he said, every effort should be made to learn how to tap and harness the energy of the sun. Mr. Ayres described solar energy as our best reservoir for heat and power in the future.

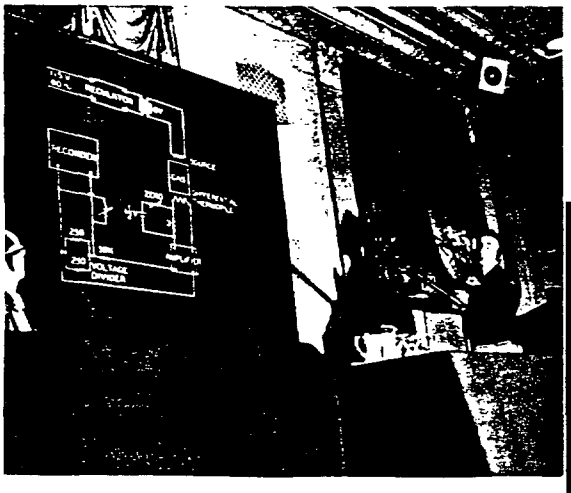
Chester F. Smith, of Standard of Jersey, presided at the session as newly-elected API vice president for Refining. He succeeds Dr. Robert E. Wilson, of Standard of Indiana.

ETC 23640

Right, Harry Levin, of The Texas Co., raising a question from the floor during the Symposium on Rapid Methods of Analysis.

Below, E. L. Baldeschwieler, of Standard Oil Development, and J. B. Rather, Jr., of Socony-Vacuum, who presided at the symposium.

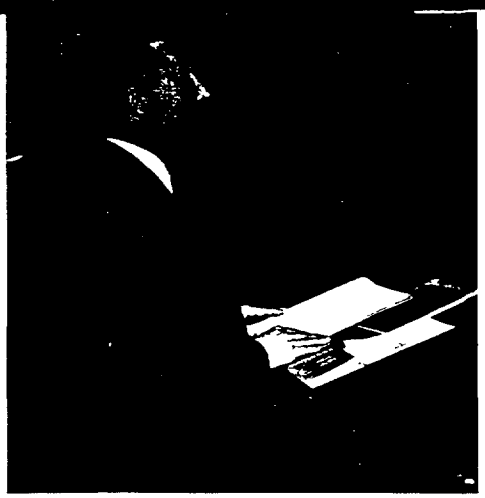
John W. Hyde, right, delivering a paper by J. H. D. Hooper, of Anglo-Iranian Oil.



H. Sobcov, Socony-Vacuum, points to a chart to illustrate a point in his paper.

C. W. Key, right, of Richfield Oil, spoke on "Rapid Method of Stack-Gas Analysis for Total Sulfur and Sulfur Dioxide."

L. V. Sorg, of Standard Oil (Indiana), as he addressed the Monday afternoon Refining session.



B. J. Heinrich, of Phillips Petroleum, addressed the symposium.

Above, Dr. James F. Black of Standard Oil Development.

Right, Dr. G. E. C. Wear, of Standard Oil Development, speaking before the Monday afternoon session.

Part of the audience which attended the Monday afternoon Symposium on Rapid Methods of Analysis.

ETC 23642

Left, Harold K. Hughes, of Socony-Vacuum Laboratories, speaking.

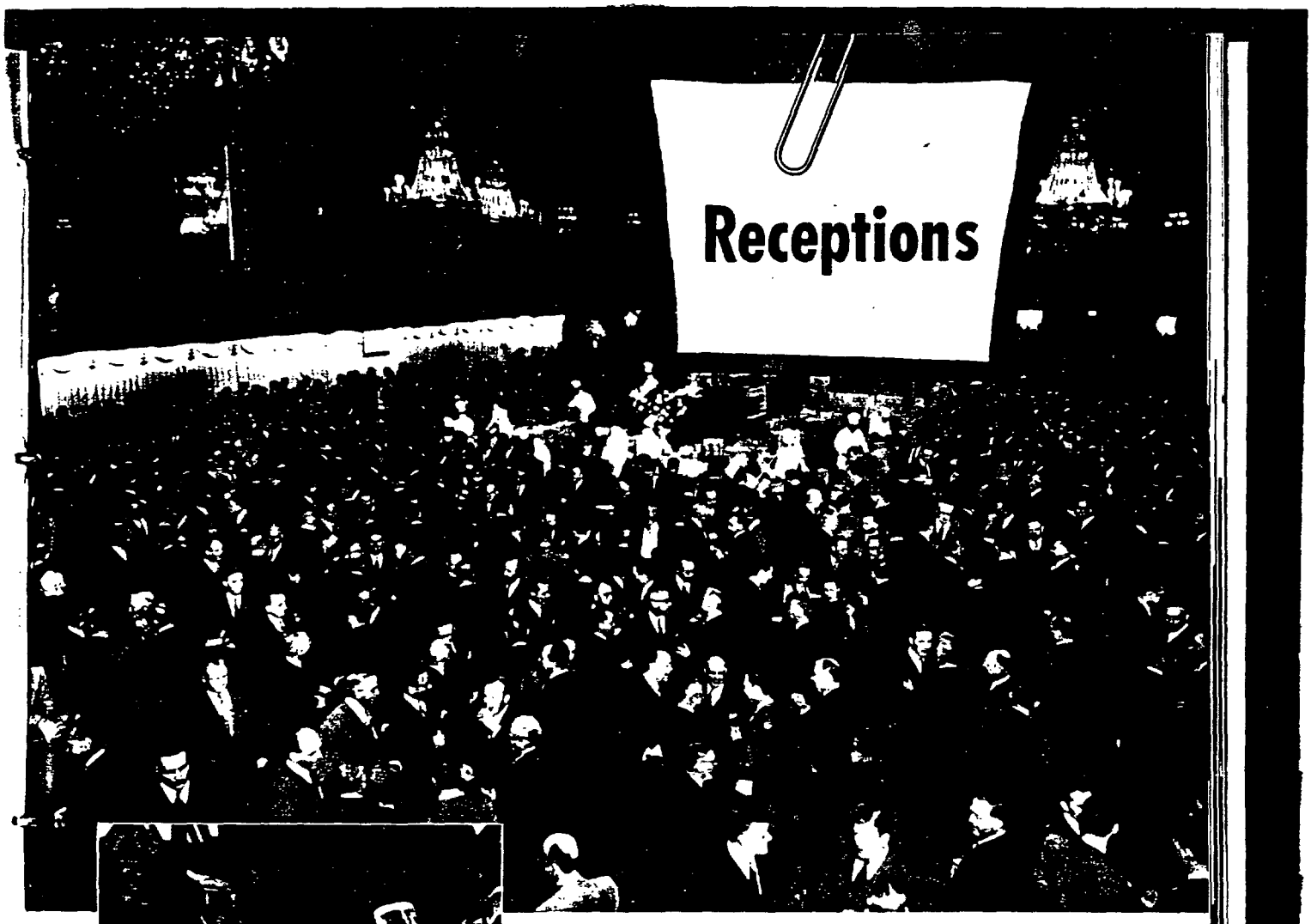
W. D. Seyfried, right, of Humble Oil, delivered a paper by J. A. Anderson, Jr. Below left, W. S. Gallaway, of Universal Oil Products, speaking.

ETC 23643

The group session on Energy was presided over by Chester F. Smith, standing, vice president of Standard Oil (N. J.), and the new API vice president for Refining.

Eugene Ayres, of Gulf Research and Development, delivering his talk on "Major Sources of Energy." Right, part of the audience attending the Energy session.

Receptions



A number of cocktail parties and receptions served to leaven the seriousness of the convention with opportunities for pleasant fellowship. Pictured above is a Grand Ball Room scene of the traditional buffet party given by Youngstown Sheet and Tube Co., Youngstown Steel Products Co., Continental Supply Co., and Emsco Derrick and Equipment Co. At left is Henry Wagner, Stevens Hotel chef, shown as he puts the finishing touches on one of the beautiful ice pieces which colorfully decorated the buffet tables.

Representing the hosts at the buffet party were, left to right, Frank I. Brinegar, executive vice president, Continental Supply; C. H. Longfield, vice president, and Frank Purnell, president, Youngstown Sheet and Tube; and William Powell, vice president, Emsco Derrick.

ETC 23644

Carl W. Georgi, of Quaker State Oil, and Harry L. Moir, of Pure Oil, sample the hors d'oeuvres at a buffet party.

Hosts at Gulf Oil's party included, left to right, Richard R. Johnston, President Sidney A. Swensrud, and H. G. Meador.

This group at the Gulf party included, Col. Gustave H. Vogel, USA; John F. Walton, Jr., Gulf; Capt. John M. Boyd, USN; and Col. Stephen C. Lombard, USAF.

Thomas J. Sullivan, Gulf, at left, greets Julian J. Frey, Ethyl sales manager, at Gulf's party.

Dr. Gustav Egloff, UOP, is surprised by a birthday cake in his honor at Universal Oil Products' party. At lower right, are, left to right, Edwin F. Nelson, vice president, UOP; John E. Kenney, vice president, of Foster Wheeler; and David W. Harris, UOP president.

ETC 23645

Attending the Bureaucrats Buffet were, left to right, B. H. Barnes, Gulf Oil; W. R. Argyle, vice president, Sinclair Refining; E. Oliver Jones, Ethyl's manager of customer services; A. P. Frame, vice president, Petroleum Advisers. At upper right, William P. Gee, vice president, Texaco Development, was a guest at the Lummus buffet party.

This Lummus party group includes, left to right, L. D. Mann, vice president, Cities Service Refining; Carl S. Reed, Lummus president; James E. Fenex, Continental Oil; E. G. Christian, Cities Service; and Frank M. Simpson, vice president, Cit-Con Oil.

As host, Paul C. Clark, welcomes Donald B. Edwards, of Stanolind Oil and Gas, at the Clark Brothers' buffet party.

Time for a snack for this Lummus party group. From left to right, C. Willard Key, Thormod C. Cook, Charles A. Day, Richfield Oil; and William M. Stratford, president, Texaco Development.

A general view of Clark Brothers' buffet party as seen from a balcony.

THE APIC HIGHWAY session was conducted as a forum on "Planning and Paying for Highways." Three speakers discussed matters such as taxes, Federal aid, planning, and other factors concerning progressive highway development.

Edwin S. Hall, chairman, American Petroleum Industries Committee, presided at the forum.

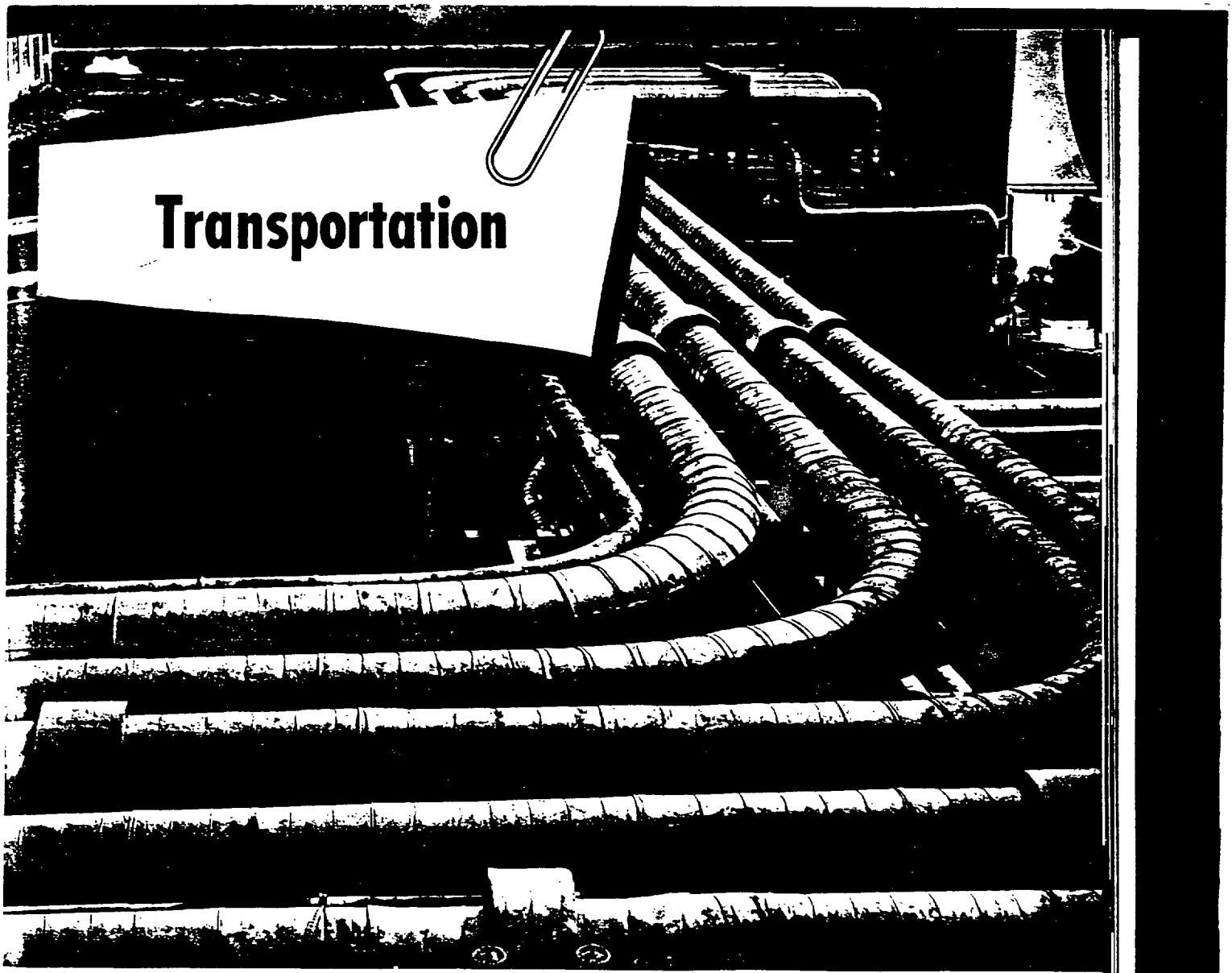
Left, M. S. Aldrich, chairman of the West Virginia Highway Users Conference, discussing "The West Virginia Platform for Progressive Highway Development."

Charles L. Dearing, of the Brookings Institution, talking before the APIC Highway session.

Below, part of the audience which attended the APIC session and forum on Planning and Paying for Highways.

Below, Alexander Fraser, president of Shell Union Oil, addressing the forum.

ETC 23647



Transportation

A VARIETY of oil movement problems was considered by those who attended the four sessions of the Division of Transportation on Monday and Tuesday in the Palmer House.

Key representatives in the field of oil transportation presented their subjects from the point of view of the scientist, the engineer, and the technologist. Other speakers discussed the transportation of petroleum products by pipeline, rail, highway, and tanker, and highlighted aspects of federal regulations covering those movements.

One of the broadest subjects discussed was "The Current Critical Problems of Highway Transport," by Prof. John S. Worley of the University of Michigan. Emphasizing the point that the public interest is of primary importance in considering highway transportation problems, he spoke on current and future aspects of taxation, trade barriers, an adequate highway system, fuller use of highways, a uniform traffic code, and long-range highway planning.

The Transportation group sessions were supplemented by meetings of the Central Committees on Pipe Line, Railroad, Automotive and Water Transportation, of which Clark H. Kountz, Fayette B. Dow, J. W. Sinclair and H. G. Schad were chairmen.

Newly-elected members of the General Committee of the Division of Transportation were announced on Tuesday. W. Alton Jones, president of Cities Service, was re-elected API vice president for Transportation. Committee chairman Paul H. Kuhns, of Continental Oil, reported for the nominating committee of the Division.

ETC 23648

Prof. John S. Worley, right, spoke on highway transport problems.

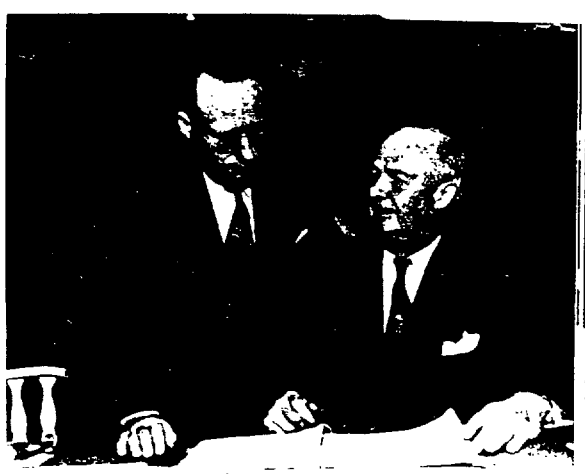
Below, Admiral Joseph F. Farley, of the Coast Guard, who discussed the regulation of the movement of oil by water.

Above left, R. A. Brannon, of Humble Pipe Line, speaking on internal corrosion of crude oil tanks. Left, another Monday afternoon speaker was H. F. McConomy, of Atlantic Refining.

Above, Allen Baxter, of Keystone Pipe Line, speaking before the Pipe Line Symposium.

ETC 23649

Right, the speakers' table at the Tuesday morning Transportation session, with Admiral Farley, A. G. Anderson, of Socony; Robert S. Henry, of the AAR; and Prof. Worley. Below, J. C. Donnell II, president, Ohio Oil, and W. Alton Jones, president, Cities Service, who presided at the Tuesday meeting.



Fayette B. Dow, of API, left above, introduced the speakers at Tuesday afternoon's Transportation meeting. A. G. Anderson (right), of Socony-Vacuum, was program committee head.

Clyde B. Aitchison, of the ICC, addressed the session.

Above, Donald D. Conn, Transportation Assn. of America, as he addressed the meeting.

Left, Chester C. Thompson, president, American Waterway Operators, read a paper by Clifford A. Hahn, of the U. S. Department of Commerce.

In the audience were Ray L. Smith, president of Ray L. Smith & Son; C. C. Keane, of Great Lakes Pipe Line; Fred Hague, of Sun; and A. F. Winn, Skelly Oil.

W. Alton Jones presenting API Transportation awards to J. Howard Pew, retired Sun president; B. Brewster Jennings, president of Socony; B. C. Graves, president, Union Tank Car; and Clark H. Kountz (retired), of Sinclair, as James Moss, API, and J. C. Donnell II, president, Ohio Oil, look on. J. F. Winchester, formerly of Esso, also received an award.

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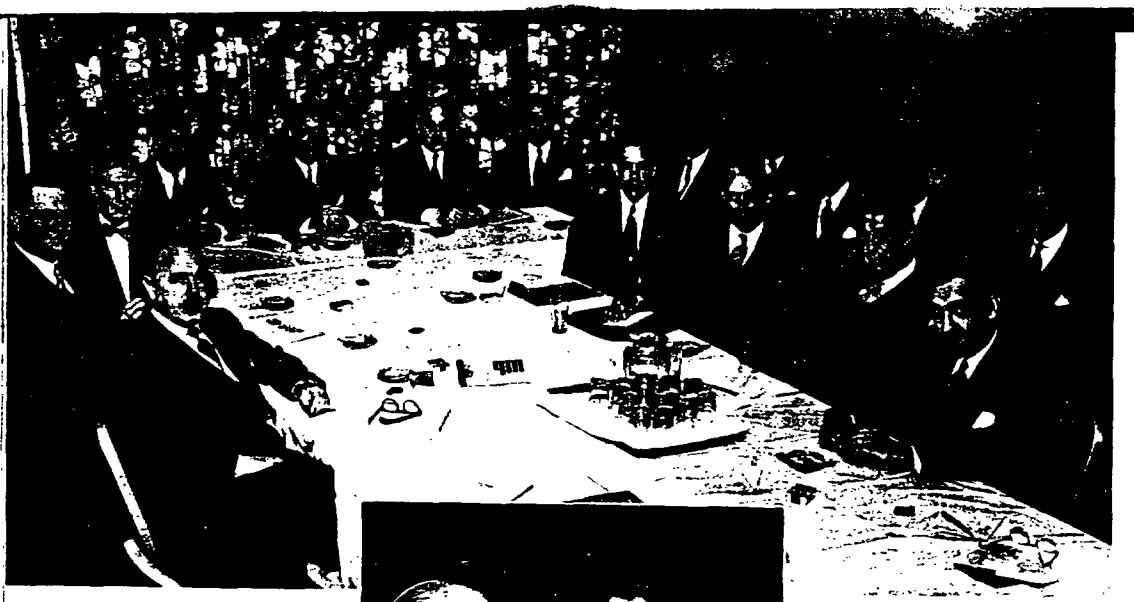
Camera Candids

Left, Joel H. Hirsch, of Gulf Research and Development, chats with F. L. Herle, of Hydrocarbon Research, and his wife in the lobby of the North Ball Room.

Below, Paul H. Kuhns, of Continental Oil, and J. W. Sinclair, of Union Oil, compare notes.

Left, Maurice L. Barrett, of Shell; M. H. Strickland, of Proportioneers; and C. C. Keane, of Great Lakes Pipe Line, stop for a talk after a meeting. Right center, O. C. Bridgeman, of Phillips, and Richard B. Sneed, of Ethyl.

Above, Alfred D. Carleton (left), Standard Oil of California, succeeded Andrew G. Anderson, Socony-Vacuum, as president of the Transportation Club. Right, a general view of the Transportation Club dinner.



A meeting of the Aviation Technical Service Committee.

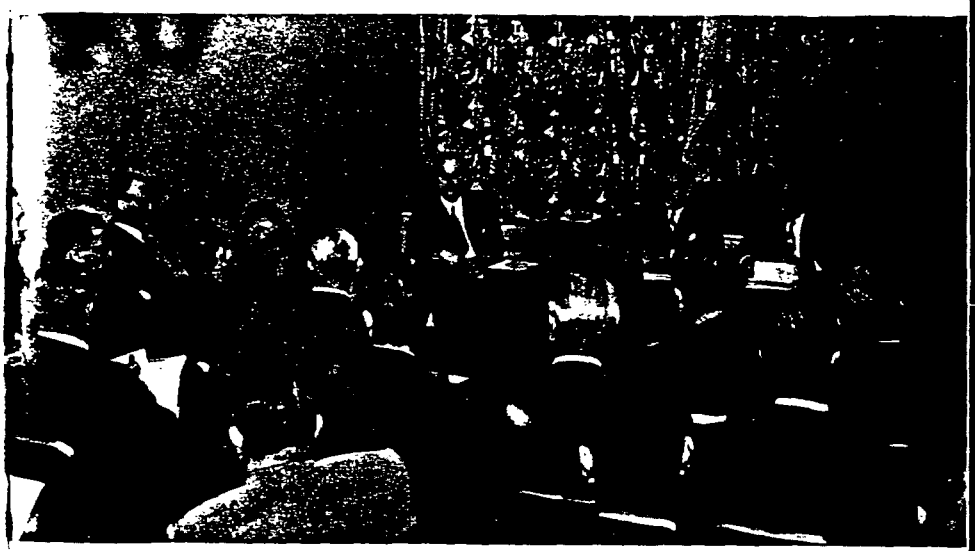
Left, O. B. Lewis, of Ethyl, and John M. Gardiner, of Republic Oil. Below, W. A. Baker, vice president of Shell Pipe Line.

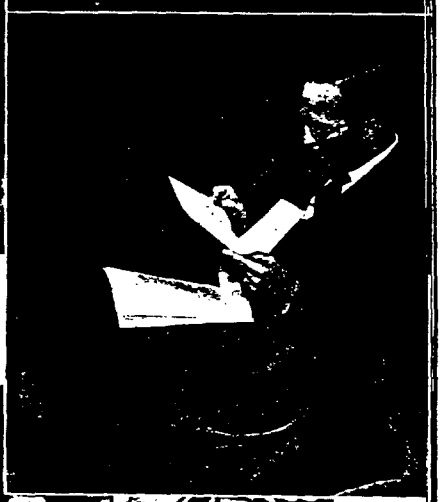
Below, J. H. Peper, president of Buckeye Pipe Line, checks his coat. In the bottom photo, F. M. Watkins, of Sinclair Refining, and C. S. Hazard, of Neptune Meter.

Below, three pipe liners exchang ideas: John C Norton, of Mag nolia; J. C. Raw lins, of Interstate W. G. Horstmar of Plantation.

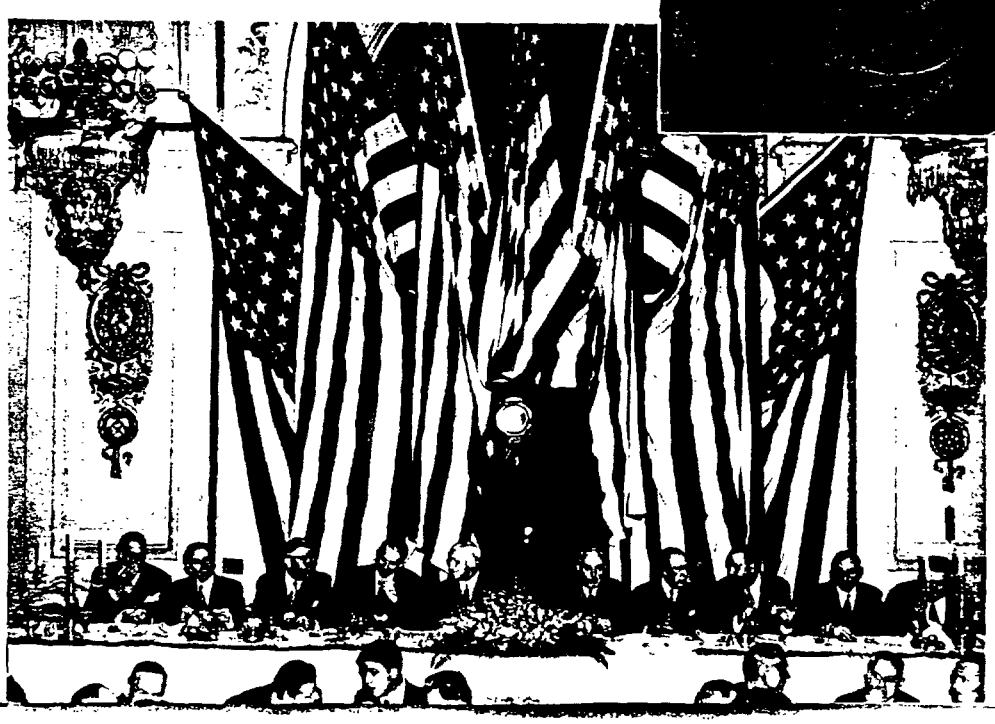
ETC 23652

H. J. Kennedy, vice president, Continental Oil, and A. B. Anderson, Oil Jobbers Service. Top right, Jack Coast, Coast Oil; A. C. Tully, Ethyl; and J. W. Shemwell, vice president, Atlas Oil.





Above, a meeting of the Defense Services Committee. Above right, George C. Morris, of Pure Transportation; and Banks Moreland and President Edward N. Gosselin, of Graver Tank. Right, Norman J. Rees, of Socony-Vacuum.



The Pipe Liners Club enjoyed its annual dinner at the LaSalle Hotel. At the center of the head table are D. D. Irwin, vice president, Pure Oil; and C. H. Kountz, the new and retiring presidents of the Club.

ETC 23653

Marketing

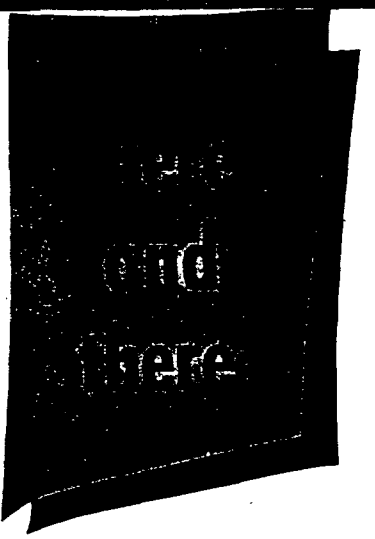
A REPORT ON the current petroleum supply position by John W. Boatwright, Standard of Indiana economist, highlighted the Division of Marketing group session. Other speakers were Theodore Yntema and Charles H. Wible.

Top, Dr. T. O. Yntema, of the Committee for Economic Development, talking, with B. L. Majewski, vice president, Deep Rock, presiding. Above, John W. Boatwright, of Standard Oil (Ind.), discussing current supply.

Right, C. H. Wible, of Edwin K. Williams Co., delivers his speech. Below, J. Howard Marshall, president of Ashland Oil & Refining, and the new API vice president for Marketing.

Below, this large audience attended the Marketing group session on Monday afternoon.

ETC 23654



Top left, John Harper, president, of Harper Oil; H. L. Thatcher, president, of Thatcher Oil; and Dr. John W. Frey, of the API, chat. Left, five Ethyl men confer: They are (left to right) Harold Berg, Julian J. Frey, Richard C. Murphy, San M. Wagner, and James E. Boudreau. Mr. Frey is Ethyl's general sales manager and the others are regional managers. Below, general view of the 25-Year-Club dinner at which John M. Crawford, chairman, Parkersburg Rig & Reel, was elected president for 1949.

Motor oil classification

FUEL TECHNOLOGISTS and marketing men met in a Symposium on Motor Oil Classifications at the first group session of the convention to consider proposals for simplifying present methods of classing crankcase oils. The session was sponsored by the Automotive Research Committee and the Committee on Petroleum Products of the Division of Refining, and the Lubrication Committee of the Division of Marketing.

Above, Dan P. Barnard, Standard Oil (Indiana), presided as chairman of the symposium.

Kenneth G. Mackenzie, The Texas Co. gave a history of the subject.

J. C. Geniesse, of Atlantic Refining, was a speaker.

A. H. Batchelder, of California Research, addressed the group.

The Committee on Petroleum Products of the Division of Refining is shown in session, with H. W. Field, of Atlantic Refining, presiding as chairman.

Viscosity Requirements for Cold Weather Starting were discussed by J. K. Appeldoorn, Standard Oil Development.

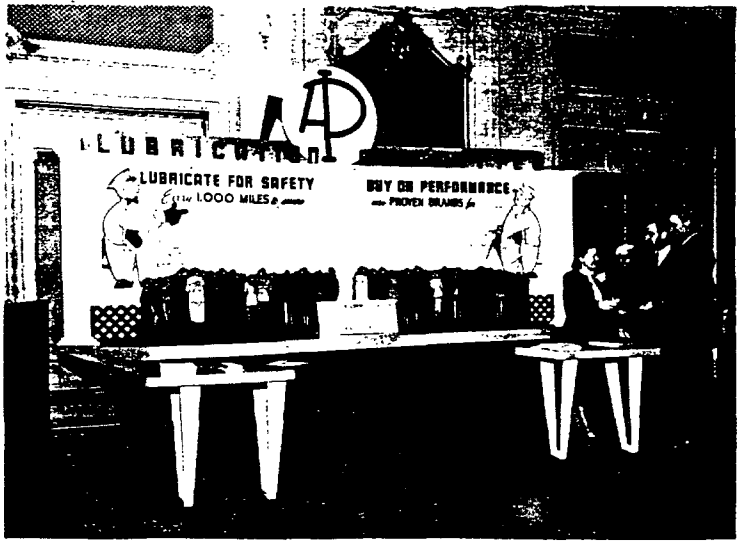
ETC 23656

Part of the audience is shown at the Symposium on Motor Oil Classifications.

Left, W. M. Murray of Deep Rock, spoke on "The Number of Viscosity Grades Desired from the Marketing Standpoint."

Above, H. R. Wolf, of General Motors, speaking from the floor at the symposium.

The summing up task at the two meetings was assigned to R. J. S. Pigott, of Gulf Research and Development, and president of the Society of Automotive Engineers.



This Lubrication exhibit was on view during the convention. At the right are Miss Ruth Peterson, exhibit attendant; Lloyd C. Gibson, Standard Oil (N. J.); and Lt. Tony Meyer, USN.

ETC 23657

M. B. Chittick, (right), committee chairman who presided, and B. G. Symon, program committee head.

THE LUBRICANT REQUIREMENTS of future automobile engines were discussed by both petroleum and automotive industry speakers at the Lubrication group session.

Another discussion was conducted on the subject of "Additives for Lubricants – Their Advantages and Disadvantages."

A talk on brand name marketing factors rounded out the session, at which M. B. Chittick presided.

Henry E. Abt, of Brand Names Foundation, speaking.

Arthur O. Willey, vice president of the Lubrizol Corp., before the mike.

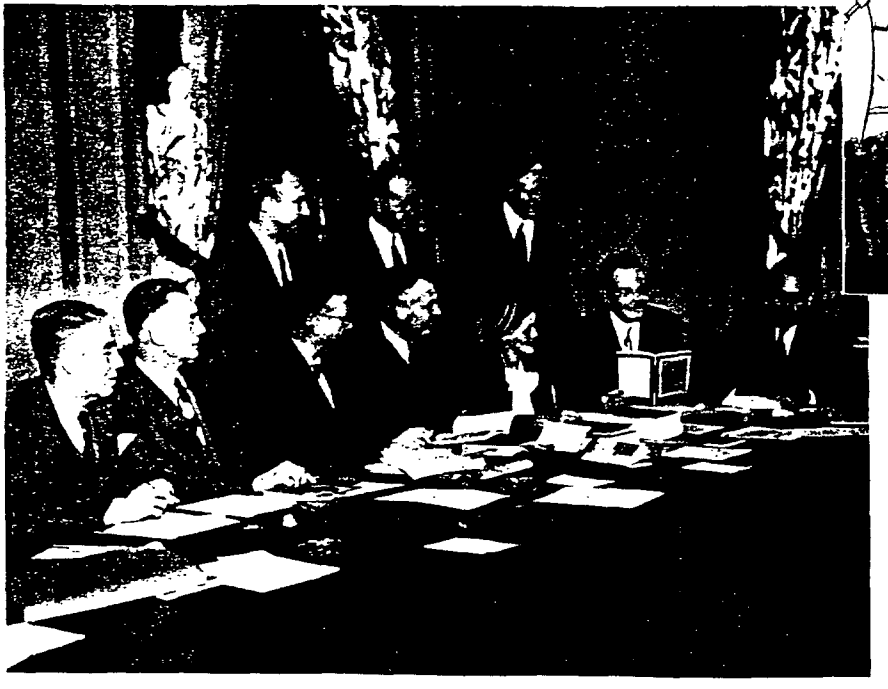
A. T. Colwell, vice president, Thompson Products, and W. M. Holaday, director of Socony-Vacuum Laboratories, spoke.

Bottom, left to right – speakers Harry C. Mougey, of GM Research; A. Bruce Boehm, of Enjay; and Robert E. Jeffrey, Jr., Shell.

ETC 23658

The Lubrication session in the North Ball Room of the Stevens drew a capacity crowd. Many were obliged to stand. The balcony was also filled.

The Agricultural Development Committee met Thursday, with Chairman Jesse D. Wooten, vice president of Mid-South Oil (head of table), presiding.



Franklyn M. Moffitt, of Ashland Oil, gets some literature from Miss Coletta M. Leddin at the Lubrication exhibit.

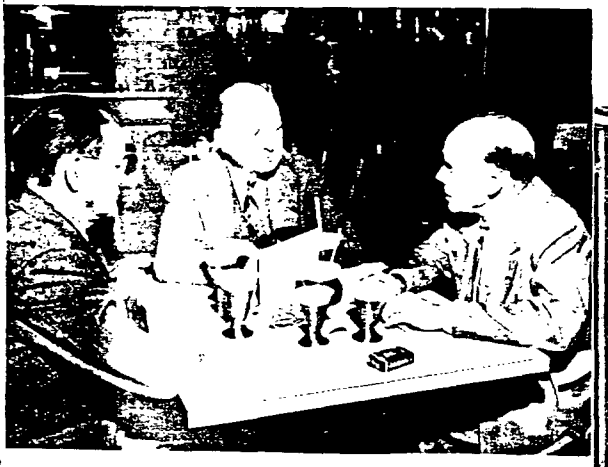
Roundup

Lon A. Casler and A. E. Hess, both of the Oil Heat Institute of America.

D. J. Smith and E. R. Turner, presidents of Pan-American Petroleum and Pan-American Production, with J. B. Kennedy, of Sinclair Prairie.

C. C. Tyler and C. J. Berlin, of Baker Oil Tools, flank E. M. Kipp, of The California Co.

Checking up on API functions listed on the Stevens lobby board is E. N. Koonsman, of Pittsburgh Des Moines Steel. Below are M. E. Brock (Gulf), Lot Bowen (Western Gulf Oil), M. D. Hughes (Long Beach Harbor Dept.), J. D. Robinson (Santa Fe Drilling), and Frank Hunter (Allis-Chalmers).



Having sodas are W. A. Allred, Lone Star Gas, D. P. Long, Shamrock Oil; and E. A. Brown, Lone Star Gas.

Accident prevention

H. T. Markee, of Phillips Petroleum, presiding at the session.

THE ACCIDENT PREVENTION session on Monday evening was devoted to the general subject of Safe Handling of Petroleum Products. Four speakers reviewed topics covering a wide range of interest to those engaged in accident prevention work. The meeting was presided over by H. T. Markee, of Phillips Petroleum.

F. R. McLean, of Socony-Vacuum, spoke on safe handling of petroleum products in the home and on the farm.

T. E. Flowers, of Standard Oil of California, delivering his paper at the meeting.

Left, J. W. Sinclair, of Union Oil, discussing "The Avoidance of Contamination in Petroleum Products Delivery." Below, part of the group attending the session.

R. W. Black, of Esso Standard, talking on "Gas-freeing Tanks — Air Movers vs. Steaming."

ETC 23661

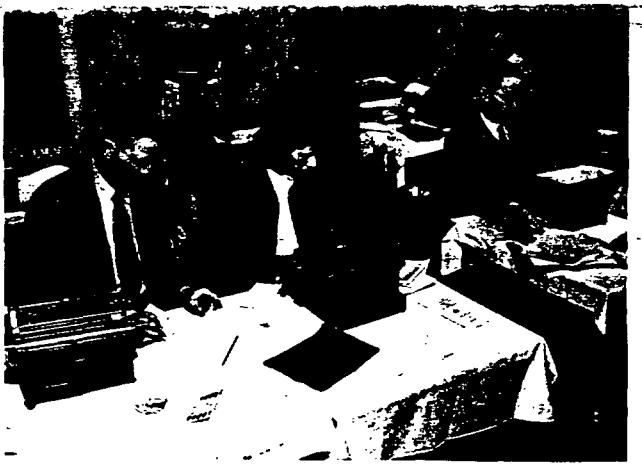
Charles H. Bunn, Jr., of Standard Oil Development, presided at the Fire Protection session.

J. E. Hill, Union Oil, spoke on the "Value of Training Personnel in Fire Fighting Practices."

THE FIRE PROTECTION session featured four speakers who discussed a wide variety of subjects within the field of fire protection. Among the topics covered were "The Value of Fire Safety Standards to the Petroleum Industry," "Accident and Fire Press Relations," and the "Value of Training Personnel in Fire-Fighting Practices."

Left, center, Frank G. Wilson, of the API, on the rostrum. Right, J. L. Risinger, Socony-Vacuum, discussed "Accident and Fire Press Relations."

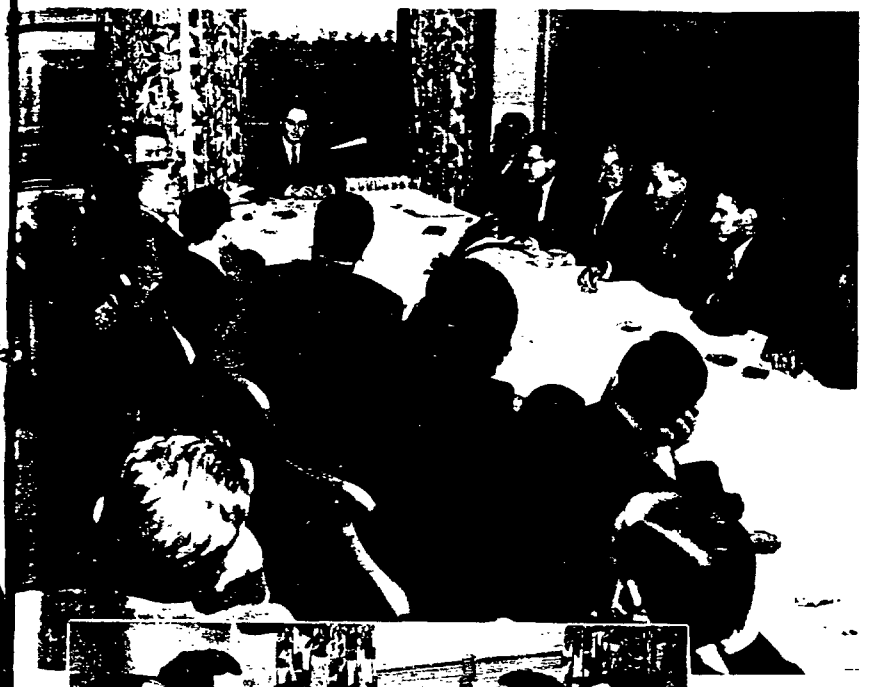
Robert S. Moulton, National Fire Protection Assn., delivers his speech. Right, after the session William T. Gunn, of the API; and C. D. Norris and L. M. Blenderman, both of The Texas Co., gather to talk.



The press room was busy throughout the convention. Many newspapers and oil publications sent special writers.

Working press

THE CORPS of writers and editors at the convention not only covered meetings, but interviewed key API delegates on such subjects as the tanker picture, military requirements, and future fuels and engines. There were few idle moments for the press.



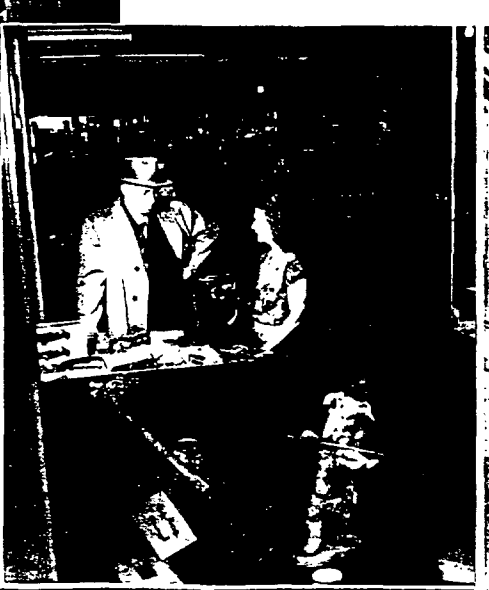
Reporters interviewing Bruce K. Brown, vice president of Standard Oil of Indiana, chairman of the Military Petroleum Advisory Board.

Not even the camera interrupted these NPN staffers Herbert A. Yocom, Glenn W. Dietrich and Paul Wollstadt, and William F. Bland, (second from right), of Petroleum Processing.

Officials of the Assn. of Petroleum Writers, which met during the API convention, are Paul S. Hedrick, president; Milburn Petty, director; Le Roy Menzing, vice president; Rosalie Jordan, assistant secretary; Charles J. Deegan, chairman; and Jay Hall, secretary-treasurer.

Above, last minute calls before leaving Chicago. To competing in an APIC contest, E. A. Lowenthal (right), o Drew & Co., asks Milo Taxman, of Advance Refining, i "Mr. Taxoline." Left, J. C. Chatfield, of World Petro receives a prize for discovering that R. A. Worley, of P Co. (right), is a "Mr. Taxoline."

John Beaumont, of Anglo-Transvaal Consolidated, rese ticket for home, Johannesburg, So. Africa.



Paul Schultz, of Stanolind, walks off with his "Mr. Taxoline" prize, a golf bag carrier. Right, A. M. Ault, Premier Oil, buys a toy gun for his son. Far right, L. O. Miller, California Oil World, heads for home.

ETC 23664

T. A. BOYD • DR. ROBERT E. WILSON • CHARLES F. KETTERING

CHARLES F. KETTERING has earned many honors in his fruitful and busy life but perhaps none is more significant to oil men than the API Gold Medal for Distinguished Achievement awarded to him at the 28th annual meeting of the Institute this year. It was a tribute from the entire petroleum industry to a man whose contributions to science and good living have benefited not only the automotive, petroleum, chemical and railroad industries, but all mankind.

Mr. Kettering invented the automobile self-starter. He also invented, or fostered the development of, automobile ignition and lighting systems, lacquered body finishes, the unit fuel injector for Diesel engines, the two-cycle Diesel engine, and "many other devices of use and value to mankind," as the API citation declares.

And it was Mr. Kettering's research in engine knock that led to the discovery of the antiknock properties of tetraethyl lead by the late Thomas Midgley, Jr.

The story of the discovery of tetraethyl lead as an effective antiknock agent for gasoline, and the part that Mr. Kettering had in it, has been told many times before. It is mentioned here again only because it was one of the many contributions which induced the API to "honor itself" by awarding "Boss Ket" the Distinguished Achievement Medal.

We of the Ethyl Corporation feel a close kinship to "Boss Ket." His initial research, and his help and encouragement to Midgley, created the principal product of this company. Moreover, he was Ethyl's first president. Although he served as president for less than a year — in order to return to his first love, the research laboratory — Mr. Kettering has continued to cock a parental eye upon the Ethyl Corporation. As the senior member of our Board of Directors, we as a company owe him much for his optimism, his faith in the future, and his wise counsel.

The occasion of the API award in Chicago in November brought together three men who contributed to the solution of the engine knock problem. "Tab" Boyd worked shoulder to shoulder with Tom Midgley through the many years before the Midgley research team came upon tetraethyl lead as the most effective antiknock agent it could find. He continued to be associated with Mr. Kettering in research projects until his recent retirement as head of the Organic Chemistry Department of the General Motors Research Laboratories. Dr. Wilson, an eminent research director of the times, was a close friend of Midgley. He kept in touch with the search to find an antiknock compound and it was he who gave Midgley his special arrangement of the Periodic Table with which Midge and his associates conducted a systematic survey of possible chemical compounds.

These three — "Tab" Boyd, Bob Wilson, and "Boss Ket" — know more than any other living persons about the research which ended with the discovery of tetraethyl lead. They all share in the satisfaction that what they did, individually and collectively, in this work has meant so much to progress in automotive transportation.

ETC 23665

"ETHYL"
(TRADE-MARK)
ANTIKNOCK
COMPOUND
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