

**PLAINTIFF'S
EXHIBIT**

ETCO-111

ETC 32248

ETHYL CORPORATION

ETC 32249

INDEX "ETHYL NEWS" 1951

AUTOMOTIVE

Aristocrats of the Road (custom built cars)	January
Built-In Octane Numbers	August-September
Destination: Motorists Everywhere (third cover)	April
Detroit's 250th Birthday	June-July
Engines Live Longer, Too!	June-July
Geared to Fight (Army vehicles)	April
Rodeo on Wheels (National Truck Roadeo)	November
Thanks by the Truckload	February
They're Little Demons (three-quarter midget racing cars)	June-July

AVIATION

Airports à la Mode (world airports)	January
Aviation Logbook: 1926-1951	May
Blimps Ahoy	February
Home Front Air Force (Civil Air Patrol)	August-September
Mid-Air Fill Up (flight refueling)	November

CORPORATION ACTIVITIES and PERSONNEL ITEMS

Ad-ing New Customers (Ethyl advertising program expanded)	May
Armstrong, Wallace F., named Houston plant manager	August-September
Baillie, John D., named chief automotive engineer of Central Region	May
Boudreau, James E., named public relations director	November
Clinical Aid for Motorists (Product-Sales Clinic)	August-September
Cole, John S., named RMOGA director	March
Collins, Merritt, named manager of marketing analysis	April
Electronic Particle Counter (third cover)	March
Ethyl - An Adventure in Chemistry	October
Ethyl Exhibit at Spindletop Observance (third cover)	February
Killing Cotton Killers (third cover)	June-July
Lewis, Oscar B., elected Ethyl Antiknock, Ltd., vice president	November
Macauley, J. B., authors paper for World Petroleum Congress	January
New Sales Training Center (box)	August-September
Remondino, Michael A., named technical representative	February
Roll Call of Ethyl Chemicals (third cover)	October
Stockpiling for Security (third cover)	August-September
Technique in Tractor Service (new Ethyl program)	March
The Trail of the Arbutus (Kettering birthday booklet)	October
There Is A Difference (new Ethyl film)	April
Turner, B. Bynum, elected a vice president	June-July
Two Equals Three (Oil Progress Week demonstration)	November
Visibility Unlimited (third cover)	November

FARM

Soil for Our Sons	June-July
The Passing Scene in Barns	February

INDEX "ETHYL NEWS" 1951

GENERAL INTEREST

A World of Sport (foreign athletics)	March
Accidentally Yours (freak mishaps)	March
ACS Diamond Jubilee Meeting (picture report)	October
Blow the Myth Down (box)	September
Business in Bloom (seed-growing industry)	February
... But Few Are Chosen (Hall of Fame)	March
Dashboard Telephones (mobile phone service)	March
Dispatch from Spain	August-September
Educated Americans or Trained Robots?	October
Father Time's Art Gallery (calendars)	January
Fountain of Youth (young scientists)	April
Idyl of an Island King	August-September
Men Have a "New Look," Too!	November
Most Likely to Succeed	October
Ocean Free Delivery (bottled messages)	April
Once Upon a Holiday (old-fashioned Fourth of July)	June-July
R for Industrial Health (Kettering Laboratory)	May
Roamin' Holiday (national parks)	May
The Fish and I	April
The Heat's on the Woolly Bears	November
Tuning in the Sun (the coronagraph)	January
You Name It (unusual geographical names)	February

PETROLEUM

Atoms, Oils, and Engines	November
Collectors' Items in Oil	August-September
Fighting Fuel (jellied gasoline)	March
Floating Service Stations (Navy fleet oilers)	May
Housekeeping: Continental Plan	February
Metered Progress (gasoline pump history)	April
Revolution in Vermont (use of oil in syrup making)	March
Spindletop Anniversary (third cover)	January
The Queen of Clubs (Desk and Derrick organization)	June-July
The Town That Lives on Oil (Petersburg, Alaska)	May
Third World Petroleum Congress (third cover)	May
Tomorrow's Service Today (N. J. Turnpike service stations)	November
Warehouse for Oil (deep-water terminal)	January

SPECIAL ISSUES

American Petroleum Institute annual meeting	December
Education and Chemistry	October



ETHYLENE NEWS

JANUARY ★ 1951

ETC 32252



IN THE

ETHYL NEWS

JANUARY 1951

J. B. Macauley, director of research at the Ethyl Corporation Research Laboratories, has prepared a technical paper, "Advances in the Utilization of Tetraethyl Lead," which will be discussed at the Third World Petroleum Congress, The Hague, Netherlands, May 28-June 6. Mr. Macauley will also attend the Congress, the first world-wide meeting of industry technologists since before World War II.

Purpose of the gathering is to focus attention on the place of science and technique in the petroleum industry. Representatives of at least 25 nations and all major petroleum producing and refining countries are expected to attend.

A native of Washington, D. C., Mr. Macauley interrupted his studies at the University of Illinois to serve in the First Marine Aviation Force during World War I. He began his automotive career with the Packard Motor Car Company. For 20 years he was associated with Chrysler Corporation, where he was active in the development of the famous Red Head engine. Mr. Macauley was chief of applied research for the Pratt and Whitney division, United Aircraft Corporation, before he joined Ethyl as director of engineering research in 1945. He was named director of research in 1947.

As was announced several months ago, Earl Bartholomew, general manager of the Ethyl Laboratories, is representing the S.A.E. on the six-man Executive Committee of the National Committee for the United States for the Third World Petroleum Congress.

ARISTOCRATS OF THE ROAD

3

Do you want an automobile with a rear seat instrument panel, glass partition between front and rear seats, leather or hinged roof, no rear quarter panel windows, or gold plated fixtures? See Philadelphia's Derham brothers — they're the world's leading custom body specialists.

WAREHOUSE FOR OIL

7

The modern deep-water fuel oil terminal is a vital link in the whole long chain of our complex yet efficient petroleum transportation and distribution system. Here are pictured some of a typical terminal's most important operations.

TUNING IN THE SUN

10

Thanks to the coronagraph, an instrument that enables them to study the sun's raging fires, scientists may soon be able to make travel safer and communications more efficient. It may even unfold secrets about strange forces that could be affecting our lives.

AIRPORTS À LA MODE

14

With international and intercontinental air travel now so commonplace, air terminals in all parts of the world are familiar sights to many Americans. These pictures show some of those best known global travelers.

FATHER TIME'S ART GALLERY

16

The huge crop of 1951 wall calendars that have just made their appearance all over the country indicates, once again, that America's taste in popular art is still changing.

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.

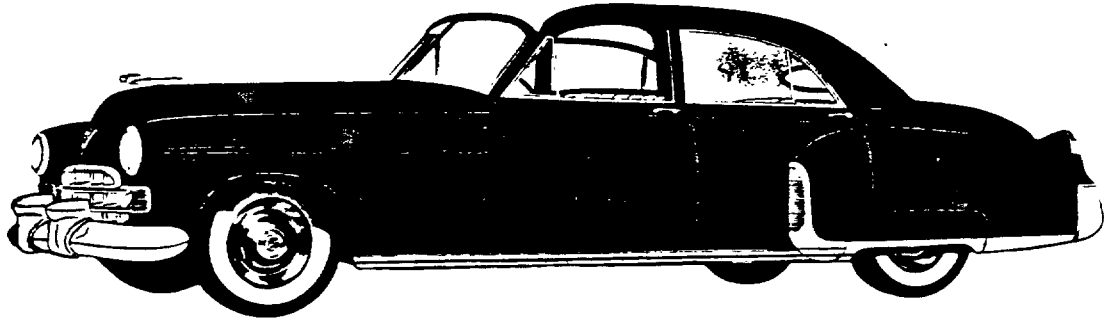
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Manufacturer of "Ethyl" antiknock compounds, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer;
Herbert A. Savage, assistant secretary

ARISTOCRATS OF THE ROAD

951



Custom-built automobiles, like those produced by the Derham brothers, are for discriminating owners who want and can pay for more luxury than standard models provide

TAKING A STANDARD automobile and making it into something that it wasn't is a hobby to which hundreds of automotive fans are incurably addicted. "Customizing," they call their avocation to distinguish it from the mere stripping down and souping up that teen-agers do to make a car a hot-rod. And samples of their work can be seen almost anywhere. The proprietor of an Illinois body repair shop, for example, recently took a convertible chassis, added a larger car's engine, blended in parts from seven other makes of cars plus two truck tops and six fenders, and came up with a striking "car of the future."

Such complete rebuilding may be more than most of his fellow part-time body stylists go in for, but many of them do add or eliminate windows, make convertibles out of closed models, or replace standard body parts with ones of their own design to give their vehicles the individuality they seek.

But for every one of these automotive handymen, there are many motorists who, while they haven't

the time, ability, or inclination to do their own customizing, yearn for cars that are a little fancier, more bizarre, distinctive, or utilitarian. For such car owners, custom body shops are the answer.

Recognized king-pin in the tailor-made car field today is the Derham Custom Body Company of Rosemont, Pa., tony Main Line suburb of Philadelphia. This concern has survived — and prospered — because of its ability to translate the whims and fancies of discriminating car owners into skillfully-built four-wheeled realities.

World-Wide Market

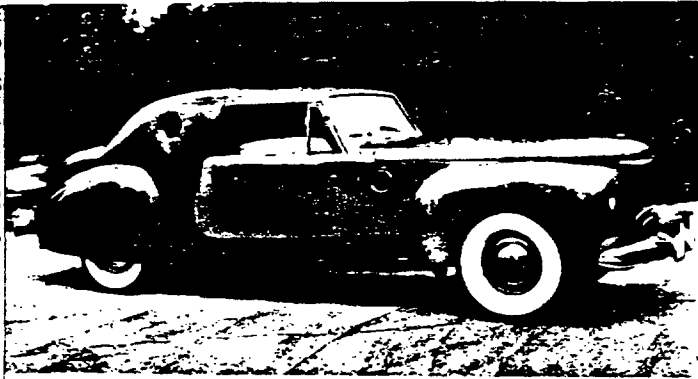
Plenty of evidence that "It takes all kinds to make a world," can almost always be found on the floor of the Derham shop. And "world" is no exaggeration. Derham custom-made automobile bodies can be found in virtually every corner of the globe. Besides American movie stars, government officials, and millionaires, made-to-order car owners include Middle Eastern sheiks and shahs, presidents of Central and

South American countries, European potentates, and countless other folk who want their standard production-model cars altered for some reason or other.

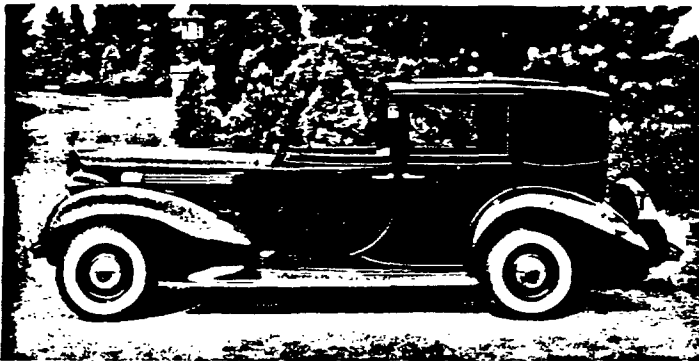
Derham's jobs range all the way from giving the rear end and trunk of a young salesman's coupe the "continental" look to building a 21½-foot desert cruiser for the Sheik of Kuwait. Bills for their work run anywhere from a few hundred to \$40,000 for a single job.

Despite the high price tag on automotive individuality, custom body building isn't a sizeable business from the standpoint of units produced. The number of people who have the money to further any inclinations they may have along this line limits the market severely. But those who have, however, sometimes go to what many people would consider rather unusual ends to satisfy their desires.

Witness the case of a socially-prominent Philadelphia family paying Derham \$5,000 to fit a Rolls Royce body to an old Model T Ford chassis. It seems that nothing less than Rolls style, dignity and comfort would do to convey their young daughter to her many social engagements. And sentiment dictated that mother's old chauffeur do



All the cars pictured on these two pages are Derham creations. This one was made from a Lincoln, according to plans drawn by industrial designer Raymond Loewy

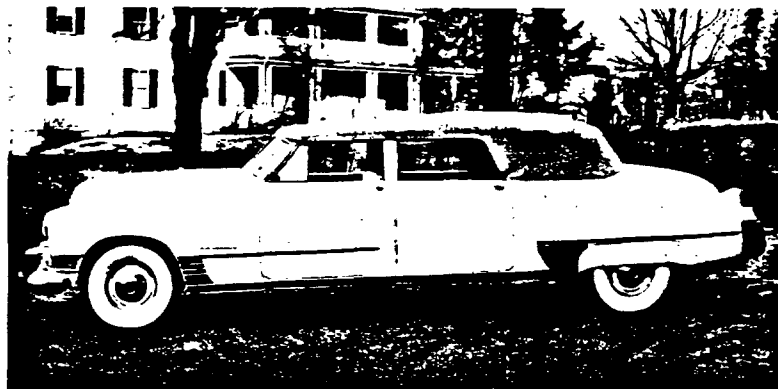


This 12-year-old Packard brougham with an extra rear seat cushion for its diminutive owner is still used by Lily Pons. It bears the Connecticut license PONS



The Duke and Duchess of Windsor specified every detail for their maroon Cadillac. The Duke even drew sketches for the special map pockets that are built in the doors and back of the front seat

Right, this 163-inch wheelbase, seven-passenger, convertible sedan was Derham's answer to the Sheik of Kuwait's demand for a car longer than his neighbor's



the driving. The gimmick was that while the old man was an old hand at manipulating the foot pedal shift, he had never dared to tackle a "new-fangled" hand gear shift lever.

But the unusual and sometimes seemingly fantastic requests of customers are taken in stride and seldom cause a raised eyebrow in the Derham plant. James P. Derham, president of the custom body firm, is a customer relations man par excellence. Aided and abetted by brother Enos, the design and engineering genius of the team, he does everything possible to satisfy even the most bizarre requests.

Refused Order

On one occasion, however, Derham did "regret that previous commitments" prevented them from accepting an order to bulletproof a Duesenberg belonging to a notorious gangland character. And it wasn't that they couldn't have built the car. The Derhams refused the order for fear that the hoodlum's followers might wreak vengeance on them if the body failed to stop some flying lead.

Catering to the great, the near-great and the socially elect is nothing new for the Derham family and their close-knit team of about 40 veteran craftsmen, the junior of whom claims 20 years' experience. Ireland-born Joseph J. Derham, father of the two middle-aged brothers who now carry on the business, opened

his own carriage-making plant in Rosemont in 1887 and made a variety of horse-drawn broughams, landaus, and phaetons for Philadelphia residents for years.

The absence of tops or presence of only fabric ones on early autos is what started him in car body work. Many owners, who wanted something better, asked the Derhams to build them winter and summer bodies for their cars and switched them with the seasons.

Three Types of Jobs

Basically, the company now does three types of jobs: standard conversions, such as making limousines from high priced production model sedans; custom conversions which entail building or rebuilding and trimming a car from the chassis up; and "sample" work for Detroit automobile manufacturers. In this last type of work, manufacturers ship Derham a late model car and give them a free hand to experiment, with new styling and design treatments. Desirable features which they originate may then be incorporated into future production models by the manufacturers.

Most conversion orders come

through local automobile dealers who determine customer's wants, act as middle-man between the car owner and the Rosemont firm, arrange for shipping and delivery and receive a commission. On any number of occasions, though, famous people get in touch with the Derhams directly, by mail or with personal visits to the shop, to tell James and Enos just what they want.

The brothers thought they were in for a dose of "temperament" one day when Leopold Stokowski strode into their office. But to their surprise they found the great musician was a sound business man, with definite but sound ideas of the kind of open-front town car he wanted. When the famed conductor left, they agreed that he'd been an easy customer to deal with.

But standard conversions account for the bulk of Derham's work. They are its closest approach to a mass production operation and really are its bread and butter. These involve installing a glass partition between the front and rear seats, reducing the rear window to a small discreet oval, filling in the rear quarter windows on both sides and padding and covering the entire top of

the car with tan canvas or black leather. Such a job costs anywhere from \$1,800 to \$2,500.

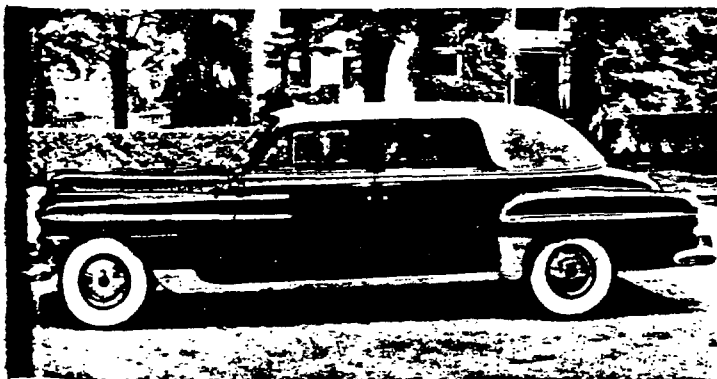
Entire custom bodies, of course, far outstrip these standard conversions both in cost and work involved. They average around \$20,000 in price and require several months' work. If extraordinary features such as bullet and bomb proofing, rear seat instrument panels, short wave radios, mink lap robes and gold plated fixtures are included, the price tag may read \$40,000 and they may take a year to complete.

Built Loewy's Cars

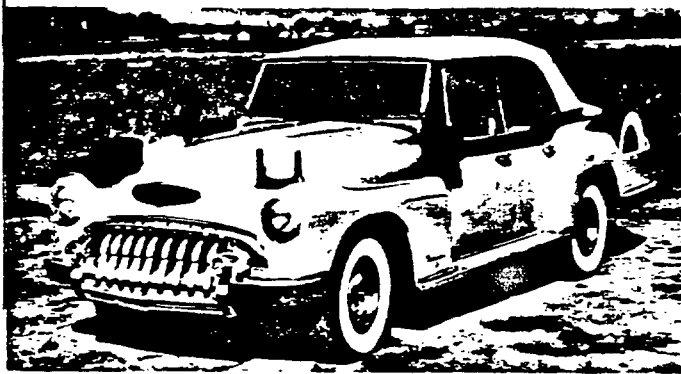
Two identical but entirely original car bodies designed by and built for industrial designer Raymond Loewy rank among the most distinctive Derham has built in recent years. They look exclusive enough to satisfy even a most exacting maharajah. And the enclosed rear seat with small porthole-like windows of blue tinted glass and the plastic roof over the front seat don't tend to shatter this illusion.

Of course, there are cases where sheer luxury or a desire for something different aren't responsible for getting Derham an order. A customer's health or physical infirmities can be responsible for jobs like Derham's wheelchair cars with built-in ramps, and the body with the hinged roof panel which allowed the crippled Cuban arthritis sufferer to get in and out without stooping.

But most orders result from the natural human desire for something very different or simply distinctive. The Sheik of Kuwait's order of three years ago smacked entirely of a Middle Eastern version of "keeping up with the Joneses." It seems that the chortling of one of the Sheik's neighboring rulers over the fact that his 21-foot land yacht was the longest in existence nettled His



Once a standard production model Chrysler Imperial, this distinctive car was converted for Harvey Turnure, president of a New York City Chrysler agency



Six months went into the designing and building of this special, all-purpose vehicle for Richard Kleberg, owner of Texas' fabulous King Ranch

Highness more than the royal blood could stand. So he called for a 21-foot, six-inch, peach-colored convertible, complete with two radios and an ear-piercing siren to proclaim his vehicular supremacy.

Cars destined for sandy country, like the Sheik's, are "desertized." This includes a dust-proof carburetor and air cleaner, window and door seals, and oversize fenders and wheel housings to accommodate extra wide tires.

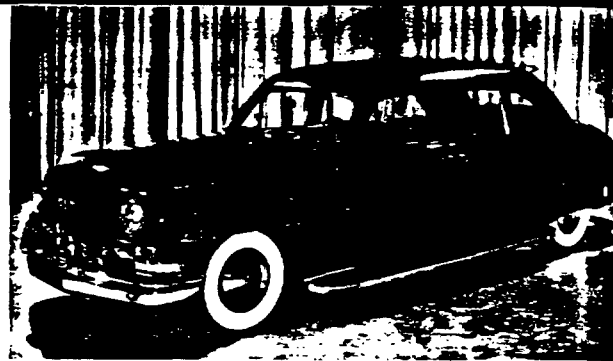
Oddly enough, the automobile industry's mass production system is responsible for the existence of custom body builders such as Derham. The standardization required for volume output causes a "sameness" in production line cars and creates the demand for something different. Detroit manufacturers are so busy satisfying the demand for regular models, however, they rarely can spend either the time or the money required to do custom body work. Special orders they get usually find their way to outfits like Derham.

The auto makers have managed to turn out a few very special orders recently, however. One which brought Detroit small fry out in droves last fall was a black converti-

ble Cadillac delivered to Bill "Hop-along Cassidy" Boyd. Hoppy's 160-horsepower steed was upholstered in white leather with black cording and featured spotted cowskin floor coverings. And from a "New Yorker" chassis, Chrysler Corporation built up a special camera car which its advertising agency uses in filming outdoor sequences for TV commercials. A raised platform on the rear of the car gives the cameraman a 360-degree traverse.

Packard, a few years ago, upholstered a sedan it custom-built for an Indian maharani with material that matched a pink bedroom slipper Her Highness sent in. And when the same fastidious lady asked that a jeweled owl be mounted inside, that request, too, was filled.

Ford's Lincoln-Mercury division delivered 10 new cars for the White House fleet early in 1950. Special body work on the nine closed Lincoln Cosmopolitans was handled by the Henney Motor Co. of Freeport, Ill., and Raymond H. Dietrich of



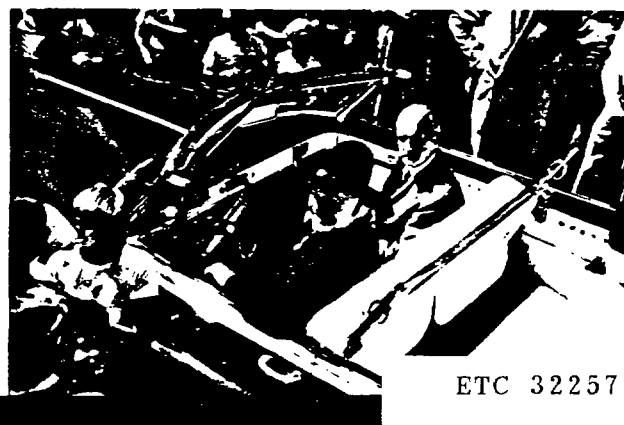
Secret Service men guarding the President ride on the special running boards built on this Lincoln, one of ten added to the White House fleet last year

Grand Rapids, Mich., finished the seven-passenger convertible.

Cowpunchers' work on the fabulous King ranch in Texas has been easier since Buick made them a special utility range car. This four-door convertible cattleman's dream has a wrangler's seat on the right front fender and rifle holsters built into both front fenders, within reach of the front seat, among its many unique features.

And so it goes — cars specially built for all purposes and occasions. The demand for and universal popularity of these custom-made cars seem to depend on the type. Sport models, limousines and utilitarian vehicles are the most common and can usually be re-sold without much trouble. But there is very little market, if any, for second-hand, custom-built armored passenger cars. A California gambler found that he had a sixteen-thousand-dollar white elephant on his hands when the state refused to license his. "Bullet-proof vehicles are only for money-carrying express companies and the like, not gamblers," the California highway patrol officials decided.

When not dashing across movie and television screens on Topper, Hopalong Cassidy, popular American cowboy hero, relies on this special order convertible

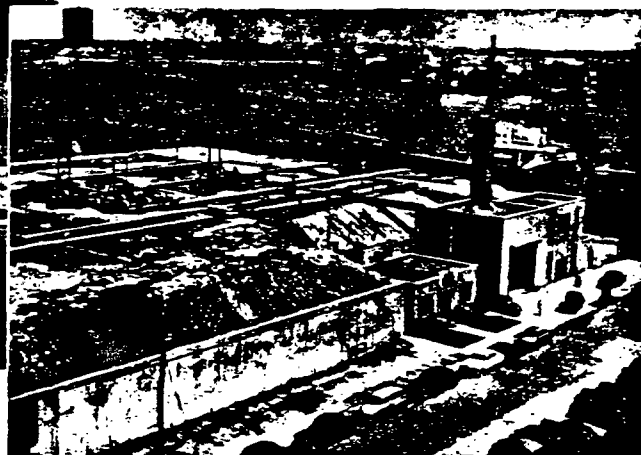
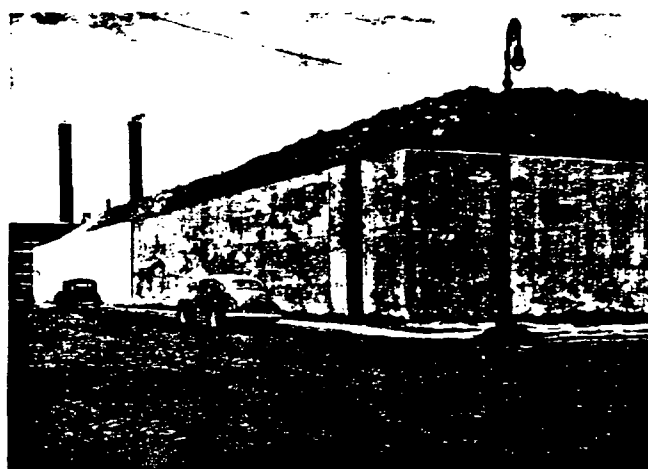


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Warehouse for Oil

The deep-water fuel oil terminal plays a vital part in our complex but highly efficient petroleum distribution system

ONE OF THE WONDERMENTS of modern industry is the complex, yet highly efficient and dependable, system for moving crude oil to refineries and finished petroleum products from refineries to the consumer.

Because the power of petroleum is made available by the action of an oil burner thermostat or the pressing of an automobile starter, people seldom give thought to the long planning and coordinated efforts on the part of many that are necessary to get the oil and gasoline where it is needed. From the time it is pumped from the ground until it reaches the consumer, the story of petroleum is one of constant movement. Around the clock, without

cease, veritable oceans of oil flow to the public via pipeline, tanker, barge, railroad tank car, tank truck, and tank trailer. Last year, an average 240 million gallons of petroleum products were delivered to American consumers every day. That average probably will be even higher this year.

Just one link, although obviously a vital one, in the whole long chain of petroleum distribution is the deep-water terminal that handles distillate and residual oils.

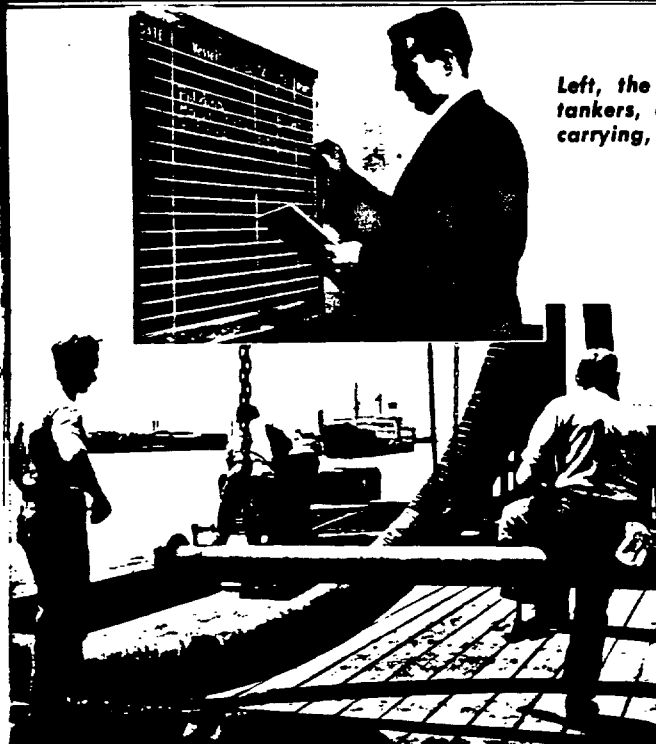
Here, tankers arrive from far-distant ports, loaded to the Plimsoll mark with their cargoes of No. 2 heating oil or No. 6 industrial oil. The most common type of tanker brings in an average cargo of 125,-

Many passers-by at this big-city street corner, above left, don't realize that the ordinary-looking concrete wall encloses the huge storage tanks of a modern deep-water fuel oil terminal, above

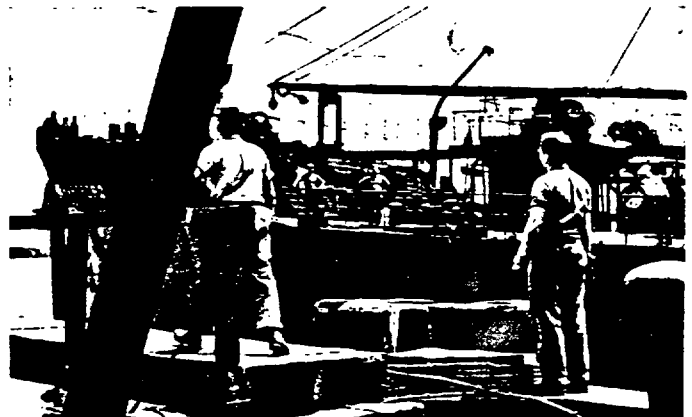
000 barrels, but some of the new supertankers now in service have capacities of more than 250,000 barrels. To transport this much oil in railroad tank cars would require a train eight miles long.

At the terminal, the oil is piped from the vessel into storage tanks. Each shipment is broken down into smaller lots and then transferred from terminal storage to barges, of which the American petroleum industry has more than 2,100 in use. Bearing anywhere from 9,000 to 24,000 barrels, depending upon its size, the barge transships the oil to nearby smaller terminals. At the latter, the oil is picked up by jobbers and retail tank truck operators for eventual delivery to homes and industrial establishments.

The photographs on the following pages show the operations of a typical deep-water fuel oil terminal — some of the final steps in transporting and distributing oil.

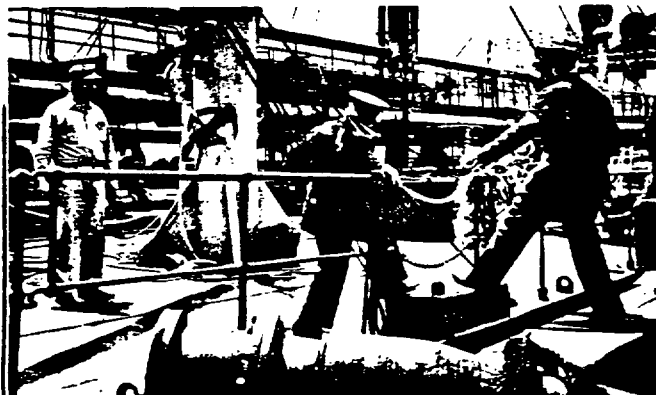


Left, the names and dates of arrival of incoming tankers, and the type and quantity of oil they are carrying, are posted on the terminal's office blackboard

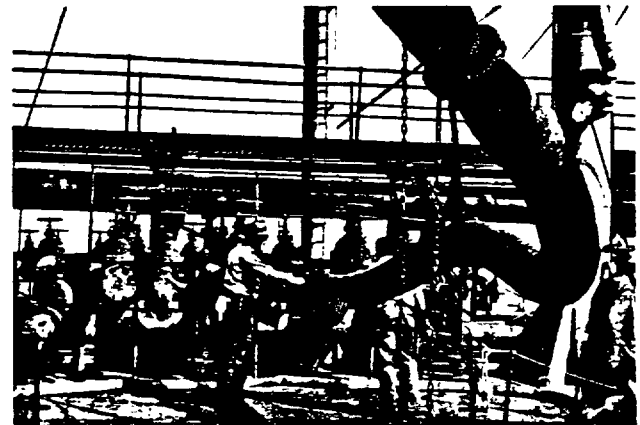


One of the terminal crew starts along a catwalk to retrieve a heaving line from the tanker and start preparations for tying the ship to the dock

After checking their equipment to make sure that it is ready to handle another big shipment, terminal crewmen await an approaching tanker

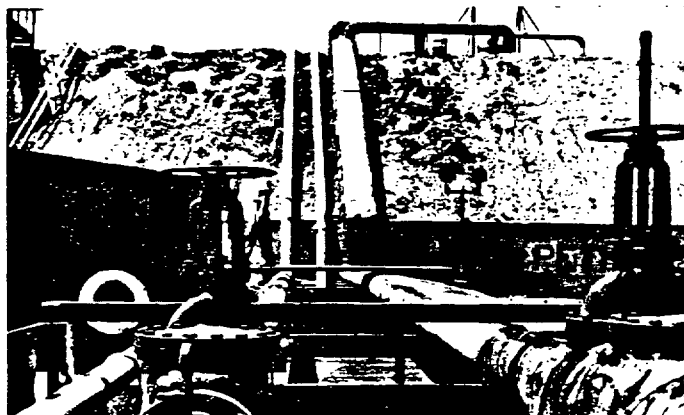


Above, if the vessel is bringing in oil from a foreign country, customs officers go aboard and make their inspection before unloading can proceed



Valves are opened, hose connections checked, and slack in hose adjusted to expected rise of the ship before the cargo is pumped out

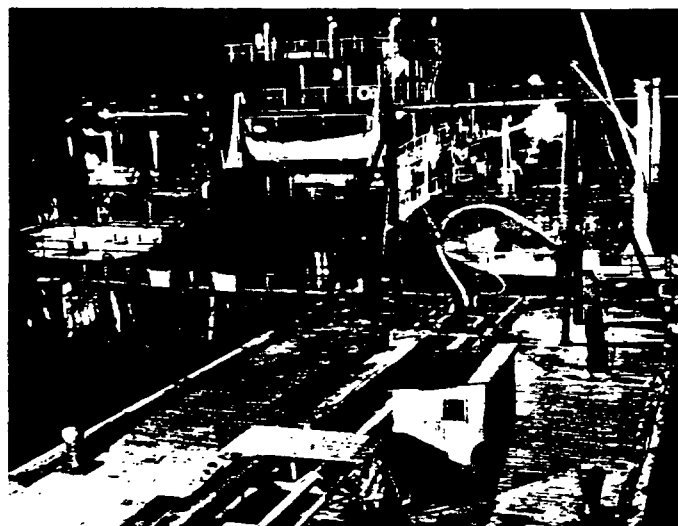
Below, incoming oil reaches the storage tanks through these pipes. Those at right are heated and insulated to facilitate flow of the heavy oil in cold weather



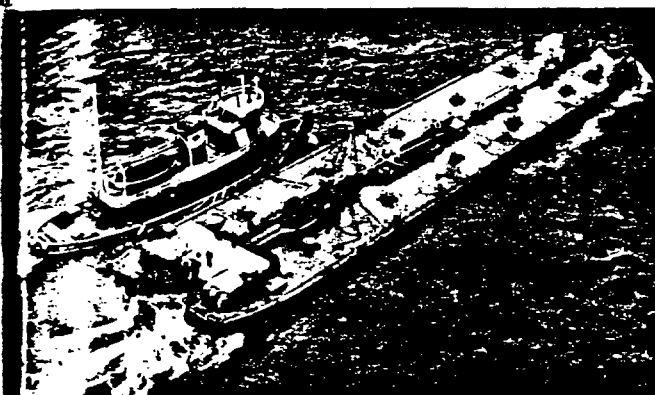
The opening of the big gate valve back on the oil terminal's dock is the signal for the tanker to start pumping its cargo shoreward



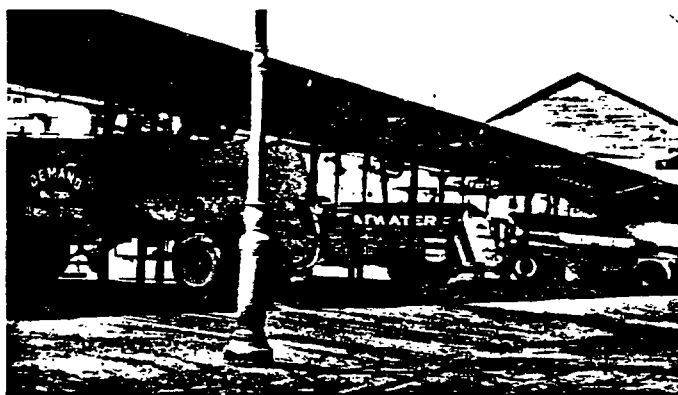
Every shipment of oil must measure up to certain minimum standards. Samples are tested for color, viscosity, gravity and other qualities in the terminal's compact laboratory



Pumping the fuel oil from tankers into the storage tanks is a 'round-the-clock' operation. Most modern vessels can discharge an entire cargo in from ten to seventeen hours



In its role of "warehouse," the terminal doesn't store the oil for very long. Less-than-tanker lots are transhipped by barge to outlets in the same and nearby cities for further distribution



The outlets that are supplied by the terminal are small terminals themselves. There, retailers and jobbers load tank trucks with oil for delivery to domestic and industrial users



Above, efficient heat is no farther away than the thermostat switch in countless homes, thanks to the ready availability of fuel oil. Right, oil-burning industrial heating and power-generating furnaces are in wide use, too, but only because oildom's transportation system can deliver the goods



Tuning into

Solar studies made possible by the coronagraph may result in safer travel, better communications, and new data about vital celestial forces

IF YOU WERE TO ASK the man-in-the-street what he knows about the sun, the chances are pretty good that he wouldn't be able to give you much information. From his school days, he might remember that it's about 93 million miles away, pretty hot, a great source of energy, and necessary to the life and growth of practically all animal and plant life. But aside from that, his only thoughts about the sun probably are confined to missing it when it doesn't shine, reveling in it when it does, and condemning it on those days when it shines too brightly.

And until quite recently, the average person wasn't alone in knowing relatively little about this great celestial body. Even the most learned scientists, astronomers and astrophysicists knew more about the planets and most other stars than they did about the sun. And still today they are devoting endless hours of study in attempting to solve its many mysteries. How to harness the unlimited energy it pours on the earth every day and convert it into usable power is but one of the unsolved problems the sun presents.

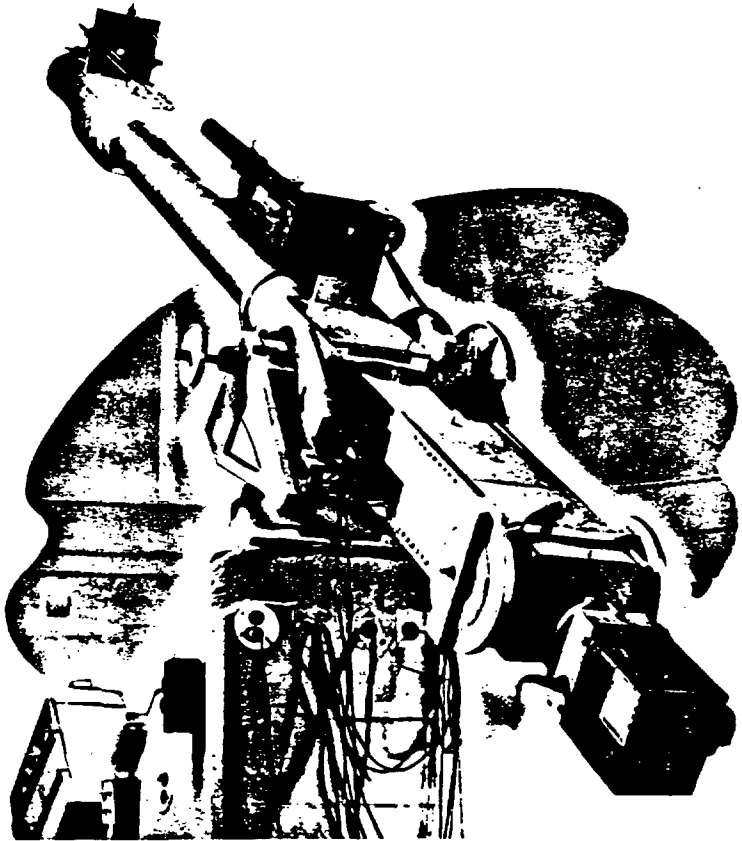
Within the last decade and a half, however, scientific knowledge of

Every 20 seconds since 1942, weather permitting, astronomers have used this coronagraph to photograph the sun's corona and prominences

the sun and some of its effects on the earth has been increased many times. Much of this new information is coming from an instrument located high up among the snow-capped peaks of the Rocky Mountains. There, scientists are conducting studies that promise to make domestic and trans-oceanic travel safer, improve long-distance communications, and perhaps even unfold secrets about strange forces that may be affecting our lives in a hitherto undreamed of fashion.

The scientists' delicate instrument is a coronagraph. This takes pictures of fiery phenomena that play around the outer surface of the sun yet are invisible to both the naked eye and the most powerful telescopes. Its particular targets are the sun's corona, a mantle of glowing gases which surrounds it like a halo, and its prominences, spectacular fountains of crimson flame which explode hundreds of thousands of miles into space.

By observing the luminous corona



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in the Sun

Below, this billowing, fiery prominence is typical of the many that are constantly erupting from the surface of the sun

and the great solar storms that rage in and around it periodically, scientists can warn us when the earth is to be subjected to terrific magnetic barrages. These barrages are known to affect radio reception, long distance telephones, many other kinds of electrical apparatus—perhaps even man himself, although so far the effect on humans is only a theory.

Studied in the coronagraph, the corona appears as a pale, greenish-white aura of varying brilliance. It is inconceivably hot—about one million degrees centigrade, or 166 times hotter than the surface of the sun itself. The cause of such stupendous heat outside the sun proper so far remains a mystery.

Emit "Soft" X-Rays

Despite the fact that it's hotter, the corona's light is still six hundred thousand times weaker than the sun's. And its varying brightness seems to be a major factor in the radio interference that we experience here on earth. The corona, it has been discovered, contains iron and nickel atoms which emit vast quantities of "soft" X-rays, so called because they are longer and not as penetrating as ordinary X-rays. These and other radiations have a marked effect on the earth's ionosphere or outer layer of gases.

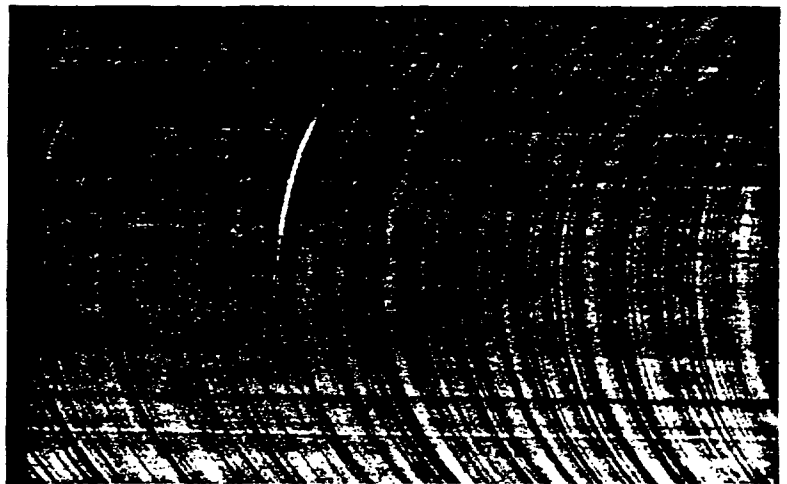
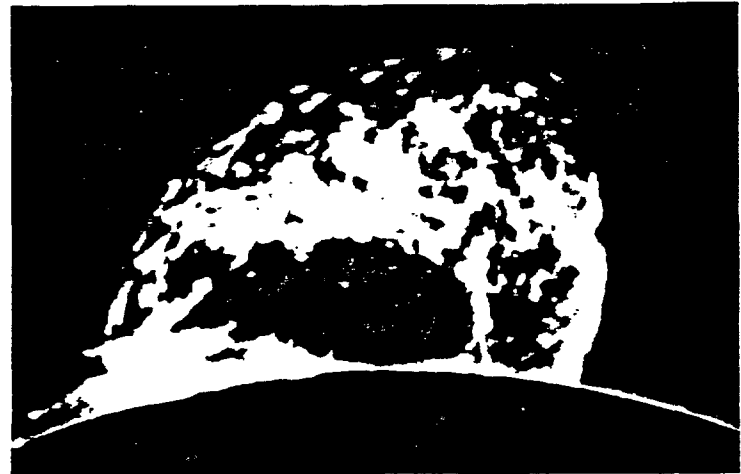
"Normally," explains one coronagraph expert, "our lower outgoing radio waves hit the ionosphere and bounce back to earth. Then our radio receivers pick them up and we have good music, clear speech or whatever is being broadcast. But when the corona is exceptionally

bright, phenomena which we call magnetic storms occur. In some way, these allow the lower radio waves to escape through the ionosphere. Then our radio reception becomes poor and in some cases ceases."

Besides radio waves, the corona's storms play hob with power lines, overseas and overland telephone and telegraph circuits and undersea cable service. Oddly enough, they seem to have no effect on radar.

The sun's prominences interest

the scientists as much as the corona. They still don't know much about them—except that they are spectacular and of incredible magnitude. They appear as huge fiery eruptions which shoot out suddenly from the sun's surface, occasionally reaching



This is a photo of a spectrum of the solar corona and light from the sun. The white streak is a corona light. If it is unduly bright there will be a radio fadeout about four days later

as far as a million miles into space. Their temperature is twenty-five thousand degrees centigrade — much less than the corona's but still more than the sun's surface.

One unique aspect of the coronagraph is its extreme newness. Study of the sun itself, of course, has been going on since the time of the ancients. But until the first coronagraph was constructed a few years ago, a close study of the corona and the fiery prominences wasn't possible except during a total eclipse.

Sun Too Bright

During such an eclipse average folk as well as scientists were able to observe that when the moon blacked out the actual sun disc for a few moments, there was a bright outer light visible around it. This was the corona. And the splashes of brighter light seen through the coronal glow were the prominences. But except for those tantalizing moments during the height of the eclipse, studying the corona was impossible. The brilliant mass of the sun itself simply

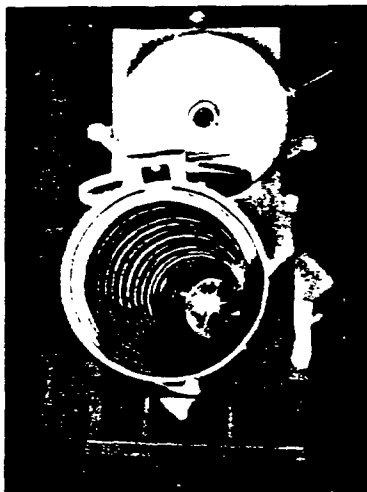
threw far too much blinding light.

At first consideration, making an artificial eclipse sounds easy. Hold up a garden pea, shut one eye and there you have it. By moving the pea back and forth, you can make it correspond exactly to the diameter of the sun and so, presumably, study whatever remains around the sun's edges. Unfortunately, it isn't that simple. Reflected light from the clouds, the atmosphere, the grass, dust particles, or even a white shirt causes too much interference. As recently as 1929, one technical an-

special lenses, the necessary diaphragms, covers, weights, guides, and controls, he completed one of the truly great achievements in astronomy — the first coronagraph.

With it, Lyot could black out the sun and at leisure study and photograph what remained. He had accomplished the first successful artificial eclipse in history.

Despite its potentially great importance, Lyot's invention failed to attract much attention outside of scientific circles. Astronomers, however, immediately tried to improve



The "muzzle" of the "sun gun" — between this and the camera at the opposite end is the occulting disc which hides the sun itself and makes it possible to photograph the enormous solar fires

nouncement stated flatly: "It is completely hopeless to try to photograph the corona, except during an eclipse, even from high mountains."

Such announcements, however, frequently are contradicted in a relatively short time. Sure enough, just one year later, in 1930, a young French astrophysicist named Bernard Lyot proved the author of that statement wrong. Working at an observatory high in the Pyrenees, he constructed a tube that employed the basic idea of holding the garden pea between the eye and the sun, but the pea became an "occulting disc" about the diameter of a 25-cent piece. When he added some

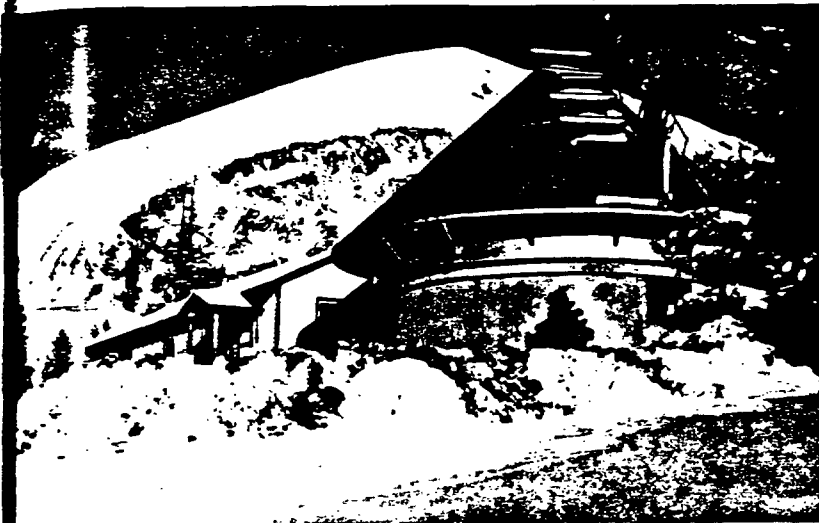
Free from smoke, haze, and dust, Climax, Colorado, makes an ideal site for the Western Hemisphere's first coronagraph observatory

on the new instrument. In America, Harvard College Observatory, which had been working on plans for a similar device for several years, decided to build a coronagraph.

Searching for a site where isolation and high altitude would afford relative freedom from smoke, haze and dust particles, the Harvard astronomers hit upon Climax, Colorado, 11,500 feet up in the Rocky Mountains, astride the Continental Divide. Their observatory, the world's highest, was finished in 1940.

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Construction of the Climax coronagraph at the beginning of World War II proved to be a stroke of rare good fortune for the United States and our allies. The only one of its kind in the Western Hemisphere, the new coronagraph was soon providing valuable information to our armed forces. It had been discovered that when the sun's corona became extraordinarily bright, magnetic disturbances would affect the earth's radio transmission from three to seven days later. To know about this radio interference well in advance gave us a strategic advantage over our enemies. For obviously, we would not launch major operations without assurance of good radio communication.

Throughout the war, the tiny observatory remained one of our valuable military secrets. Each morning coronagraph reports were evaluated and analyzed and the results coded and sent to Washington. There they were correlated with other astronomical data and sent out to our fleets and air bases all over the world. Even the atomic bomb that was dropped on Hiroshima is said to have awaited a coded signal from the Colorado mountain top.

Coronagraph reports from this remote, cone-roofed hut timed the launching of many of the major operations of World War II

Although its contribution to the war effort was an important one, the "sun gun" has really just begun to disclose the secrets of the sun.

Do the sun's activities really affect our lives in ways that we have never before even suspected?

Close Studies Possible

Scientists and astronomers, while cautious about making any predictions, are now bending every effort to find out. The coronagraph is enabling them to make a close study of the glowing corona and mysterious prominences and possibly to reconcile these solar phenomena with events on the earth. Every twenty seconds since 1942, weather permitting, they have photographed the corona and the flaming prominences.

The corona circle is photographed each time in six equal segments and the prominences by motion picture camera. A new electronic sight that can almost "think" keeps the coronagraph on the target while the pictures are being taken.

The future importance of these

photographs may be inestimable. Eager students will probably use them for some important and practical work during the coming decade. Comparing one photograph with another and checking the cycles of solar disturbances with terrestrial occurrences may lead to some amazing discoveries.

"Certain activities of the corona might in time be shown to cause specific weather conditions on the earth, weeks or even months later," one scientist theorizes. "Thus, it may become possible to make accurate long-range weather predictions."

Similarly, other studies by economists, historians and medical researchers may even connect the sun's activities with the record of man's depressions, wars, health and even moral behavior. Primitive men in their worship of sun gods, sensed the great effect of the sun on our physical world. Educated men have now changed vague superstition to scientific fact. The coronagraph may carry them further into the mysteries of the universe.

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OUR COVER: "White Way" was taken near Franklin, Pa., by D. W. Grant, vice president in charge of refining of The Pennzoil Company. **OUR PICTURES:** Pages 3, 4 and 5, courtesy Derham Custom Body Co.; page 6 (top left), courtesy Automobile Manufacturers Assn.; page 6 (top right), courtesy Lincoln-Mercury News Bureau; page 6 (bottom), courtesy General Motors Corp.; pages 7, 8 and 9, by Hervey Heywood through Petroleum Terminals Corp.; pages 10, 11, 12 and 13, through Lewis Larmore; pages 14 and 15, through Wide World and Acme and courtesy Trans World Airline, KLM Royal Dutch Airlines, British Overseas Airways, Northwest Airlines, Pan American-Grace Airways and Pan American World Airways; page 16 (bottom right), courtesy Tide Water Associated Oil Co.; pages 16 (bottom left), 17 and 18, courtesy of and copyright by Brown and Bigelow.



As its name implies, New York International Airport is the arrival and departure point for the huge modern inter-continental airliners that serve the world's largest city

Airports à la Mode

With international air travel now so popular, the air terminals of the world are familiar sights to many Americans

THERE WAS A TIME — and it wasn't so long ago either — when an airport consisted of little more than a narrow bumpy landing strip and a hangar or two.

But as air travel has "grown up," so have airports. Many of the commercial airports throughout the world today are as spacious and self-contained as large railroad terminals. Some even border on the palatial. You can enjoy refreshments on their flight terraces, have your hair cut in their barber shops, buy clothing and gifts in their stores, or see a movie in their theaters. Whatever your mood or desire, before,



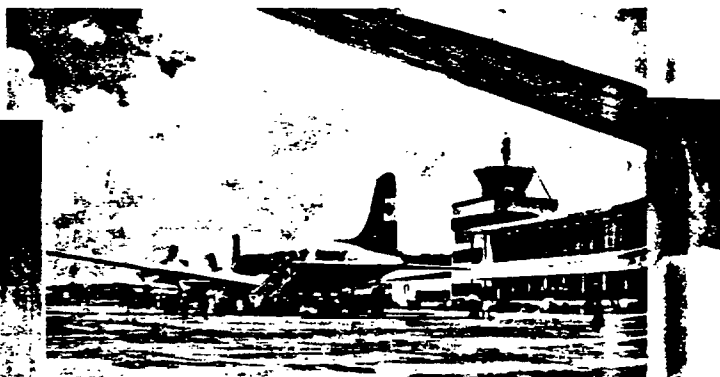
La Aurora Airport at Guatemala City is near the edge of a high plateau. Pilots say setting a plane down there is like landing on a table top



Left, the five-story administration building at Pistarini Airport, Buenos Aires, boasts a casino, nightclub, elevators and escalators, and office space besides waiting room and ticket counters

Below, a couple of thousand passengers troop in and out of this waiting room every day. Gander, the Western Hemisphere's nearest point to Europe, is on the most direct New York-Paris line

GANDER NEWFOUNDLAND



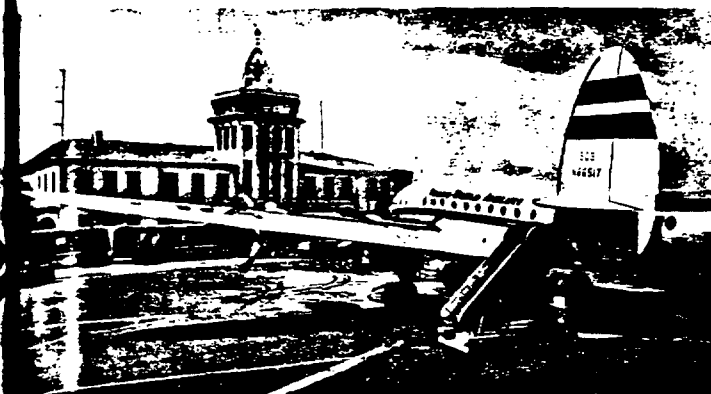
Above, the modern administration building at Curacao's pin-neat Hato Airport in the Netherlands West Indies is familiar to many oil men

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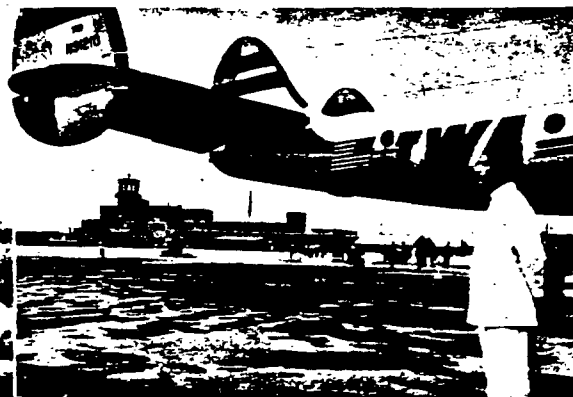
Above, Municipal Airport at San Francisco is the first piece of home soil that many Americans feel under their feet after returning by air from across the Pacific



Above right, the passenger terminal at one of Europe's busiest airports, Orly Field in Paris, at a rare moment when not a person is in sight

between or after flights, the world's modern airports can usually accommodate you.

With international air travel so commonplace today, many passengers have come to know these airports intimately. After winging through the sky for several hours, they step off their planes and into familiar surroundings. On these two pages are shown some of the airports best known to Americans who are frequent global air travelers.



Above, a dusky, white-uniformed figure, complete with Egyptian fez, stands ready to assist passengers at Cairo's Farouk Airport . . . Below, this modern terminal interior at Limatambo Airport in Lima, Peru, is one of South America's finest



Above, many American air travelers to Europe get their first real taste of life across the Atlantic by taking tea on the terrace at London Airport



Left, the Aloha tower and the luxuriant palm trees that border the broad runways combine to tell trans-Pacific travelers that this is Honolulu



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FATHER TIME'S ART GALLERY

Besides serving as a record of days, weeks and months, calendars again this year reflect America's changing taste in art

WHAT HAS BEEN CALLED "America's universal art exhibit" — the colorful paintings and photographs of lovable children, curvaceous girls, playful animals, and breath-taking scenic views that embellish wall calendars — has just had its annual January unveiling in homes and business establishments across the nation.

Those who keep tabs on such things say that 1951 will prove a record calendar-hanging year, with more than 100 million of them in use. Desk, pocket and other special

types of calendars are something else again. Add these to the total number of wall calendars, and there will be enough for every man, woman, and child to have one.

Although calendars have been decorative for several centuries, it was only about 50 years ago that eye-appeal began to receive so much consideration. Since then, calendars are supposed to have reflected American taste in modern art. So much so, in fact, that one calendar manufacturer alone spends about \$1.5 million annually for the original paintings, kodachromes, and etchings of the subjects which intent study has indicated Americans want to see most.

Taste in Art Changing

In scanning the walls of homes, offices, shops, stores and other places where hang the 1951 models, anyone bent on making such a study could not escape the conclusion that America's taste in art is undergoing a very definite transition.

Coming right to the point, the fact is that, collectively speaking, we Americans now prefer calendars that are adorned with outdoor or humorous scenes rather than with thinly-clad girls. So, at least, reports Brown and Bigelow, the world's largest producers of calendars. This company's "best seller" list for 1951 shows only five strictly girl subjects among the first 15 — quite a come-

down from the lofty position the female figure enjoyed in calendar sales in the years before and during World War II.

And those who still prefer girls demand a more demure species than the pin-up type that has been so ubiquitous in recent years. The trend now is to show a sweet and wholesome teen-ager. She may display what one artist calls "an attitude of invitation and understanding," but at the same time she must be "the kind of girl you'd be proud to have for a daughter."

All this is not to say that the provocative miss soon will be the vanished American, so far as wall



Paintings of game birds and animals like those done by naturalist-artist Richard E. Bishop are popular calendar illustrations



Many oil companies advertise their products on attractive calendars that are distributed to customers by local dealers

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calendar art is concerned. Millions of such calendars are displayed annually. But the trend very definitely is toward sporting subjects, landscapes, and inspirational illustrations, with humor also coming up strongly of late as a favorite calendar illustration. No one knows the real reason for this swing to the more serious type of art, but one theory is that everybody, including men, is a little weary of seeing pin-up girls every place they go.

Consequently, more and more you'll see calendars that are illustrated by full-color displays of thoroughbred horses and our principal fresh water and deep sea fish. Also for the outdoor lover are calendars showing wild geese in flight, hunting dogs at the point, a "cowpoke" heading off a stray whiteface and her calf, a mama bear clawing fish out of a stream to feed to her cubs, and views of streams and mountain lakes that are enough to make any fisherman drool.

Variety of Landscapes

For those who prefer landscapes, there is a wider-than-ever assortment of beautiful scenes. These range, geographically and artwise, from a kodachrome of St. Mary's Lake in Glacier National Park to a gallery-quality painting of a homespun wintry scene on a Vermont farm. It is a must that all landscape paintings and photographs contain trees, water, and at least one house. Always, too, American taste dictates that the scene present a homey and secure atmosphere, realistic and genuine down to the last leaf on a tree. If the scene does contain a flaw, the calendar makers can be sure they will hear about it from the calendar-gazing public.

Reflecting the nation's changing taste in calendar art preference, the new so-called Baseball Hall of Fame



This year, as always, the official Boy Scout calendar, with its Norman Rockwell painting, below right, is the top favorite. This girl subject and the outdoor scene are also popular calendar illustrations



calendar is shattering all records for meteoric growth in popularity. Inaugurated only last year, this series will feature annually one of the diamond immortals. Last year it was Babe Ruth. The 1951 calendar shows a schoolboy first baseman stretching for the ball, with the form of Lou Gehrig in the background praising "Atta Boy!" It normally takes a new calendar subject five or more years to hit the Brown and Bigelow "best seller" list. The Baseball Hall of Fame not only did it in its first year, but now is the second most popular calendar in the manufacturer's line of 85 basic subjects.

The top favorite, this year as always, is the official Boy Scout calendar, with its original painting by Norman Rockwell. Usually sponsored locally by a bank, automobile dealer, or lumber company, it is America's most displayed calendar. This year's Rockwell painting is titled "Forward America!" and pictures all divisions of scouting — Cub, Boy, Senior, Air, and Sea.

Another leading favorite of the same type is the 4-H Club calendar, which is distributed on behalf of the 75,000 4-H Clubs throughout the country. Royalties from its sale are paid into a fund for the building of a national 4-H Club camp near Washington, D. C. Ranking right

behind the 4-H Club is the calendar that features the Dionne quintuplets. Since their arrival in the world 16 years ago, the quints have been a top-notch calendar art attraction, and a collection of this series represents a paint-and-brush biography of the famous five sisters. On this year's calendar, the quints, now quite grown up, are "Out for Fun" around a campfire, roasting hot dogs and singing.

Work Ahead

It might be supposed that, in view of the turbulent international situation, calendars this year would be top-heavy with patriotic illustrations. They're not, and for the simple reason that the calendar manufacturers are always two or three years ahead of the times. The 1951 line was introduced a year or more ago, just as the 1952 calendars are being sold right now and the 1953 models

are on the planning board. Most manufacturers, however, offer a variety of calendars with patriotic illustrations each year, war or no war. Banks and financial institutions in particular prefer this type of calendar for distribution to their customers and associates. So, you'll find 1951 calendars with illustrations of Independence Hall, Old Ironsides, the Bill of Rights and other items that figured in the nation's history.

Because they do work years ahead, incidentally, calendar manufacturers constantly have their fingers crossed lest a new national holiday be added, or one changed, before they can get around to making the correction. They remember all too well what happened in 1939-40-41, when President Roosevelt decreed that the governors of the various states could proclaim one of two Thursdays in November as Thanksgiving Day. The result was that some states observed the holiday a full week apart, and in the calendar business you can't print special calendars for each state.

Having two Thanksgivings in one year was bad enough, but calendar manufacturers shudder to think what would have happened if they had been in business back in the 16th Century. That's when it was found that the calendar devised by Julius Caesar had fallen ten days

behind sun time. Pope Gregory XIII created a new calendar that rectified Caesar's oversight and has kept us straight ever since. Even so, many groups are constantly working on what they think might be improvements on the Gregorian version. If any of these come into being, the calendar makers hope they'll have advance notice.

For all the emphasis that is placed on calendar illustrations these days, the art work is not the most important feature of a calendar. The number one requisite is that the figures, showing the day and the date, can be read easily — at a distance of at least six feet for the smallest calendars and 15 feet for the larger ones. Even if it is graced by the most appealing illustration conceivable, a calendar will not be hung and referred to if it isn't sufficiently legible and doesn't furnish all the necessary information about holidays and other special days.

Have Other Uses

In the case of kitchen calendars, a third consideration is that it have a utilitarian purpose, quite aside from keeping one posted on what day of what month it is. In years gone by, a calendar was simply a calendar. But today, if the advertiser expects to get his calendar used, he has to dress it up and toss in a lot of incidental features as well. One survey, in fact, shows that 47% of the housewives interviewed made a special trip to their neighborhood service station, butcher shop, or grocery to get a calendar — presumably the special one they wanted.

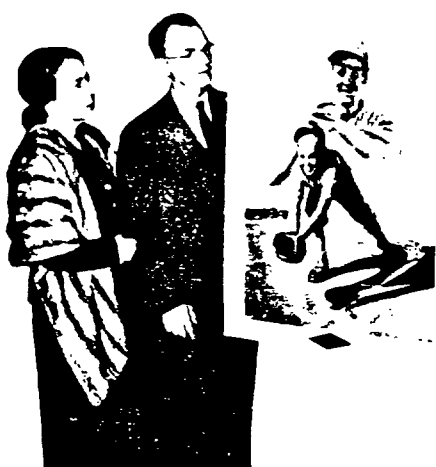
Mrs. Lou Gehrig, widow of the great Yankee baseball star who appears in the nation's second most popular calendar illustration, presented the original to an officer of a New York hospital where the painting will hang



Complete with pencil, recipes and menus, and pockets for receipts and bills, this kitchen calendar meets all utility requirements

The result of this emphasis on utilitarian usage is that the modern kitchen calendar is a virtual encyclopedia of information — most of it wholly unrelated to date-telling. Small and compact, the kitchen calendar today comes equipped with such "extras" as a pocket into which can be slipped the like of laundry receipts, and with a sharpened pencil in its own holder. The reason for the pencil is that this type of calendar also includes a "Things to Remember" space for each month, where dental appointments, PTA meeting dates and other such notations can be written down for future reference. Many calendars also offer such other varied homemaking features as recipes, cooking charts, menu planners, and party tips, to say nothing of a 12-month household budget form and sheet for recording baby's growth.

Business, industry, organizations, and institutions have spent something like \$40 million for the 1951 calendars they have distributed to customers and friends. For that investment, the experts agree, they have received the most decorative and most utilitarian calendars ever to grace a wall.



Published in cooperation with the
OIL INDUSTRY INFORMATION COMMITTEE

SPINDLETOP —where a January morning changed your way of life

At 10:30 A.M. on January 10, 1901—just fifty years ago—the mightiest oil well the world had ever seen roared into being. This well at Spindletop, near Beaumont, Texas, was the first of a series of fabulous oil discoveries that gave America a new vision of what its supply of oil might be.

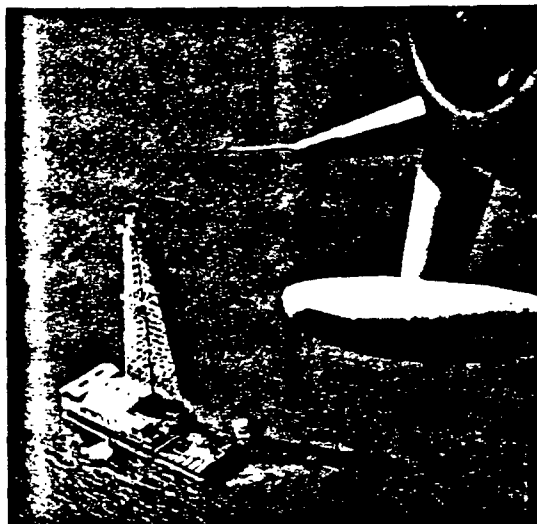
Even more important, the roar of Spindletop was the starting gun in a great race where thousands of oil companies tried to outdo each other in producing more efficient, less expensive fuels for the newly developed automobile and oil burner.

Better, cheaper fuels helped put these “luxuries” within the reach of millions... and helped make popular the Diesel engine, the harvester-thresher combine, the airplane and thousands of other developments that have bettered America's way of life.

In peace or war, America's privately-managed oil companies provide the finest oil products at the world's lowest prices.

The price of gasoline, for example, is about the same as it was 25 years ago but it is so much better in quality that 2 gallons of today's gasoline do the work that 3 gallons used to do.

This amazing progress has come because free men, competing freely, have out-distanced the world in their race to out-distance each other. And the benefits of this race go to you.



OIL DRILLING beneath the ocean floor, as seen from the air. By tapping ocean, mountain and desert sources, America's oil reserves keep us strong. Due to the great competition in the search for oil, America's underground oil supplies today are highest in history, 8 times as large as in Spindletop's day.



CAPT. LUCAS' WELL at Spindletop gushed up 200 feet before it could be controlled. Today's oilmen use an amazing system of gauges and valves which guard against loss. Competition calls for efficiency and the results of this efficiency are passed on to you in finer products at the world's lowest prices.



1951 WILL SEE AMERICA with fifty million passenger cars, trucks and buses—to say nothing of Diesel engines and airplanes. It's an all-time—all-world—high. Thanks to oil rivalry, the price of gasoline today is about the same as it was 25 years ago—but the gasoline is worth 50% more by every measure of automobile performance and economy.



There's a big difference between a

ROBIN . . . and a . . . DOBBIN

- and there is a powerful difference, too,
between gasoline and "Ethyl" gasoline!



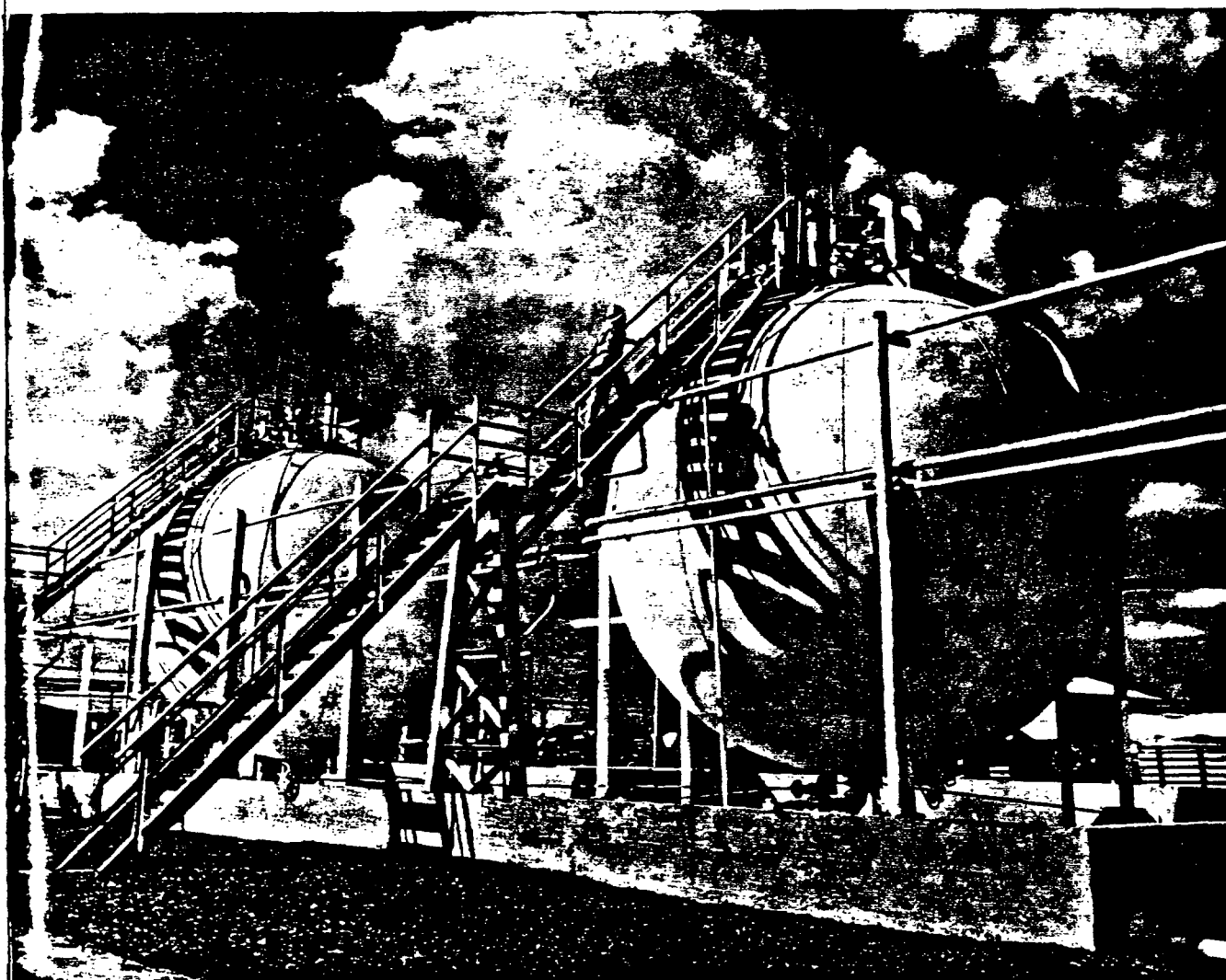
"Ethyl" gasoline is *high octane* gasoline. That's why it brings out the top power of your engine—makes a difference that you can feel on hills, on the open road, and when you need quick power for passing or acceleration.

When you see the familiar yellow-and-black "Ethyl" emblem on a pump, you know you are getting this better gasoline. "Ethyl" antiknock fluid is the famous ingredient that steps up power and performance.

ETHYL CORPORATION...New York 17, New York

Other products sold under the "Ethyl" trade-mark: salt cake...ethylene dichloride...sodium (metallic)...chlorine (liquid)...oil soluble dye...benzene hexachloride (technical)

ETHYL NEWS



FEBRUARY 1941

ETC 32272



IN THE

ETHYL NEWS

FEBRUARY 1951

Michael A. Remondino, who has been associated with Ethyl Corporation research for the past 16 years, has been named Technical Representative for the Eastern region of the United States and Canada. He succeeds Charles B. Kass, who has transferred to the newly-formed Information division at the Ethyl Research Laboratories in Detroit.

Ethyl's Technical Representatives, of which there are four, serve as liaison men between the Ethyl Laboratories and the research and technical personnel of the various oil companies, to keep those companies advised of the research and service work being performed on their behalf by the Ethyl Laboratories.

Mr. Remondino joined Ethyl soon after his graduation from the University of Detroit with a degree in aeronautical engineering in 1934. He was a member of the group of research engineers who, in the spring of 1935, set up the Ethyl Research Laboratory in San Bernardino, Calif. Mr. Remondino remained there until 1942, when he returned to the Detroit Laboratories to work on wartime research projects. He transferred back to San Bernardino in October, 1945, and in 1949 was reassigned to Detroit as a member of the commercial engine and fleet section of the Technical Service department.

Mr. Remondino is a native of Wakefield, Mich. He is a member of the Society of Automotive Engineers.

THANKS BY THE TRUCKLOAD

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Hundreds of truck drivers and more than 40 trucking companies are responsible for new civic improvements in the towns of Irwin, Pennsylvania, and Medina, Ohio. It's their way of saying "Thanks" for hospitality received during last year's Thanksgiving weekend snowstorm.

BUSINESS IN BLOOM

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Behind the tons of seeds which Americans will plant in their flower and vegetable gardens this spring lies the story of a complex and fascinating industry.

HOUSEKEEPING: CONTINENTAL PLAN

10

No small reason why the petroleum industry has such an enviable safety and accident prevention record is the cleanliness of its various units. This picture story shows "good housekeeping" as practiced by the Continental Oil Company.

BLIMPS AHOY

12

The Navy's blimps — or airships, if you prefer — are ready to play their part in sweeping the oceans of any venturesome enemy submarines.

YOU NAME IT

16

Ever hear of Low Freight, Arkansas, or Jiggs, Nevada? Lots of people wonder how such places get their names. Here's the answer.

THE PASSING SCENE IN BARNs

19

The old red barn is a familiar and beloved thing. But it's on its way out. Machine farming and scientific agricultural progress call for barns designed and constructed to fit the 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.

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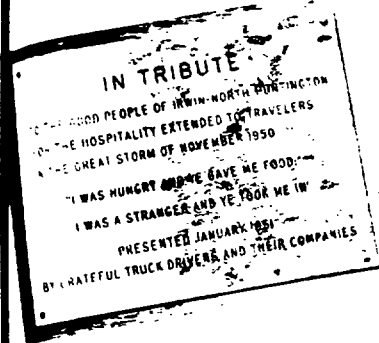
Manufacturer of "Ethyl" antiknock compounds, used by oil companies to improve the antiknock quality of aviation and motor gasoline

Edward L. Shea, president; Stanley T. Crossland, vice president and treasurer;
Herbert A. Savage, secretary

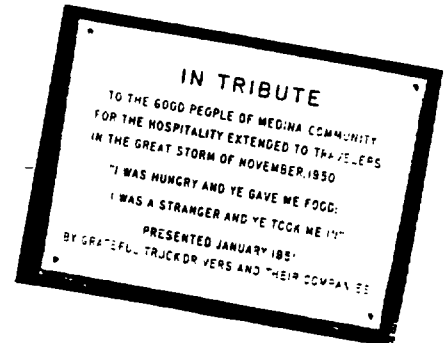
ETC 32273

Thanks by the Truckload

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Each town received a plaque to commemorate the hospitality its citizens showed when scenes like that above were all too common



In a modern tale of two cities, truckers repay Irwin, Pa., and Medina, Ohio, for sheltering them during last November's big storm

THERE WAS NO inkling of what was coming that Friday, the day after last Thanksgiving. The skies were leaden and it had started to snow. But who could say it would turn out to be one of the worst storms Ohio and western Pennsylvania had ever experienced?

Driven by a relentless, piercing wind, the snow piled up. Two feet of snow was common. In many places, it totaled 30 inches or more. Truck drivers, traditionally the "Good Samaritans of the Road," were forced into an opposite role. Along with thousands of stranded motorists, they had to make for the nearest shelter. They found their haven in the homes, the churches, and the lodge halls of the numerous small towns that dot the truck

routes in that part of the country.

Drivers still talk of "those people who couldn't do enough for us, and who wouldn't take a red cent for their kindness."

A few weeks ago, the people who had opened their homes and their hearts to the stranded storm victims had something more tangible than talk as an expression of the truckmen's gratitude. To each of two

towns selected as "representative" — Irwin, Pa., and Medina, Ohio — a check for \$2,100.25 was presented for civic improvements. The money had come from voluntary contributions by grateful truck drivers and added donations by more than 40 motor freight companies. Owen O. Orr, president of Motor Cargo, Inc., of Akron, headed the "Irwin-Medina Testimonial Committee."

Twin check presentation celebrations were held in the two towns on January 17, with local civic officials as the prime movers of the events.

Townpeople by the hundreds turned out for the check and plaque presentation ceremonies in both honored communities



N. Y.

Irwin...



Left, Claude Poling, driver for Motor Cargo, Inc., of Akron, presents the plaque and a check for \$2100.25 to John Rodgers, president of the Irwin library board

Right, Librarian Alice Scheuerle at her desk. The truckers' gift money will be used for the purchase of new books



Above, although most drivers were busy rolling the freight as usual, several did manage to stop off in town long enough to attend the presentation ceremony



Above, signs such as these two in front of the First Evangelical and Reformed Church tell of Irwin's unrestrained hospitality



Left, Councilman William Hurst, Red Cross Chairman William Snyder, and Chamber of Commerce President Stephen Ference discuss plans for the Irwin civic ceremony

Right, all available space, even in churches, was used for sleeping during the storm. Cots were in use 24 hours a day



IRWIN's chief claim to fame, perhaps, is that it is the western terminus of the Pennsylvania Turnpike, at the junction of U. S. 30. But to many truck drivers, the town that harbored a number of storm refugees equal to its own population will always be remembered as "my port in a storm."

For five days surface traffic in the area was bogged down. The storm began the morning after last Thanksgiving and reached its intensity the next day, Saturday. That snowfall was bad enough. Then the storm did an unexpected turnabout as it headed toward the Atlantic Seaboard and dumped a fresh load of snow on the region on Sunday.

Irwin and other communities in the snow belt were unprepared to accommodate so many marooned drivers, but all rose to the occasion. Irwin put every conceivable eating and sleeping place at the disposal of the victims. The First Presbyterian Church alone served 1,900 meals in a single day. At one time, 39 stranded persons were lodged at the home of service station operator Tony Klanchar and his wife. Drug stores and restaurants stayed open all night to feed the snowbound. These were some of the things the grateful truckmen couldn't forget.

Irwin plans to invest the money it received from the drivers and their companies in books for the community library.



Above, one church served 1,900 hot meals in a single day during the height of the storm

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MEDINA, 18 miles northwest of Akron, is the converging point for U. S. 42 and Ohio routes 18, 3, and 57. Small as it is (pop. 5,086), Mayor John Brown likes to think of his town as "the truck crossroads of the nation."

Someday this spring as their trucks roll through Medina, drivers will notice that a stone shelter has been added to the community's recreation park. It is being built with the funds given to the people of Medina by the appreciative drivers and trucking firms at the January 17 ceremony.

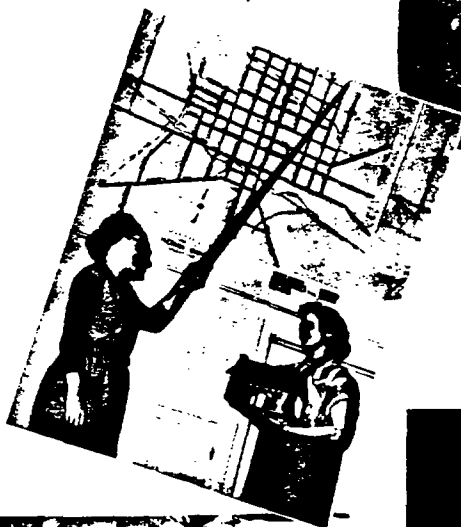
As he views the shelter, the truck driver's thoughts likely will turn back to the Thanksgiving weekend when Medina and so many other Ohio communities went all out to take him in. He will recall that stretch of Route 18 near Medina where 137 trucks were snowbound in a single mile of highway. He also will remember the 100-year-old home where Mr. and Mrs. John Younker put up 40 unexpected, but welcome, guests. The Younkens refused to accept any money for their hospitality, but the truck drivers housed there left \$90 anyway.

Now, many truck drivers flash their lights and honk their horns as they highball past the Younker house. Just an added way of saying "thanks, again" to the thousands of hospitable people of Ohio and western Pennsylvania.

Right, Mayor John Brown accepts his town's \$2100.25 check from Walter Mitchell, veteran driver for Kramer Brothers Lines, of Detroit



Left, in Medina the money will be used to build a shelter in a new park on the edge of town. Here in the mayor's office, Jo Ann Harrington holds a model of the proposed structure while Ella Burke points to the park's location



Above, drivers returning for the Medina celebration carried lighted flares on their trucks to add to the holiday atmosphere around the town square



Above, a youngster plays in what is left of the big snow. The word "Medina" on his hat tells where he's from in case he gets lost

Right, Mayor and Mrs. Brown and G. L. Smith, of Motor Cargo, Inc., talk over plans for the celebration across the counter of the mayor's music store



Above, some of the truckmen who found shelter in Eagles' Hall passed the time playing pool



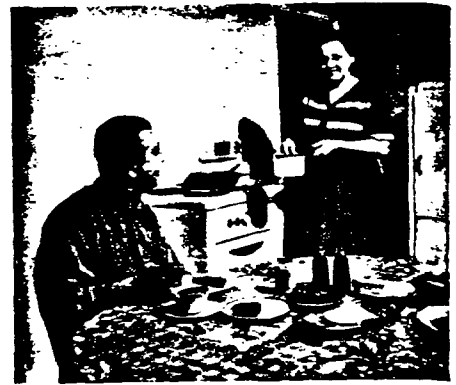
Left, many refugees took turns helping. Here Clark Allen, of Auto Forwarding, dries dishes in a hospitality kitchen while Kenneth Davis, of Midwest Haulers, stirs soup



Above, the Irwin-Medina testimonial fund got started by drivers talking it up at roadside restaurants. Here Donald Ruff, of F. J. Boutell Driveway, Inc., Detroit, prepares to give his contribution to Lawrence Paul, also of Boutell



Above, Mrs. John Younker, whose home on Three-Mile Hill near Medina sheltered 40 travelers, holds the register they all signed



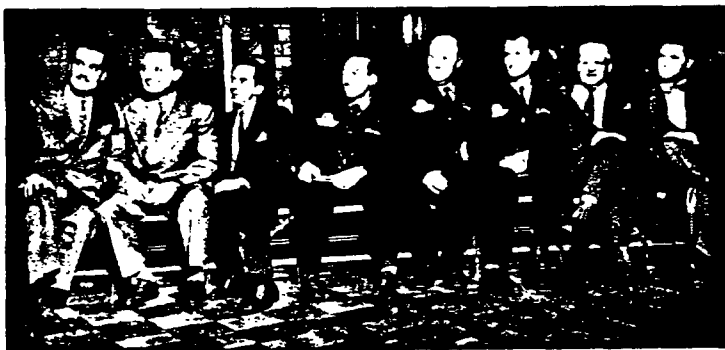
Above, Mr. and Mrs. Tony Klanchar, of Irwin, hosts to 39 refugees, find their kitchen far less crowded these days with only themselves to feed



Left, music by the North Huntingdon Township high school band was one of the features of the January 17 ceremony at Irwin



Above, "The Medinamites," local barbershop quartet, entertained at Medina's presentation ceremony



Left, speakers and guests at Irwin included, from left, Paul Secoy, Fruehauf Trailer Co.; Earl Sowers, Motor Cargo, Inc.; John Rodgers, library board president; Claude Poling, Thomas Wyatt, and Lester Black, Motor Cargo drivers; George Ley, Western Pennsylvania Motor Carriers Assn.; and John Sweeney, Jr., also of Motor Cargo, Inc.

Below, E. A. Howard, Motor Cargo, Inc.; John Smith, United Truck Owners of America; and Don Kipp and Ted Kramer, Kramer Brothers Freight Lines, Inc., took part in the "Thank You" ceremony at Medina



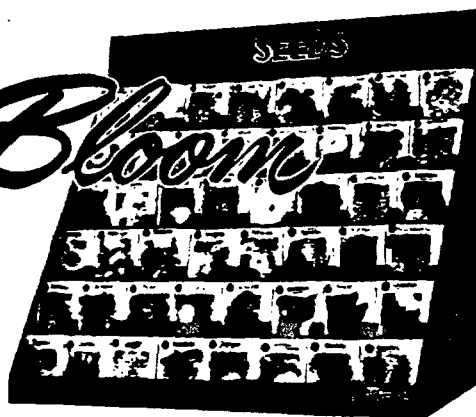
Below, with roads now clear, a big truck rolls through Medina



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Business in Bloom

Garden-minded suburbanites are poring over the seed catalogs these days, little realizing the work that has gone on behind the scenes to make each tiny seed possible



TELEVISION SCREENS are dark and radios are silent in many homes these winter evenings, and on bookshelves the current best sellers are gathering dust. The explanation is simple. The new seed catalogs are out, and traditionally this is the time when green-thumbed Americans mentally plant the flower and vegetable gardens they expect to culture during the coming growing season.

As usual, the catalogs are brimming with vivid color pictures of plump ripe vegetables and flowers that you can almost smell on the page. Any and all of these the home gardener can grow, say the booklets, merely by planting and nursing the appropriate seeds.

It all sounds so easy. But it might not be that way if it weren't for the painstaking labor the nation's seed growers put into every package of seeds you buy from the neighborhood store or via the mail-order route direct from the grower. Delicate and small as seeds are, a large and complex industry has sprung up around them. It's an industry of sprawling seed farms. Of horticulturists, botanists, geneticists and other technicians constantly at work to make gardening foolproof. Of keen rivalry to produce a newer or better seed than the next fellow.

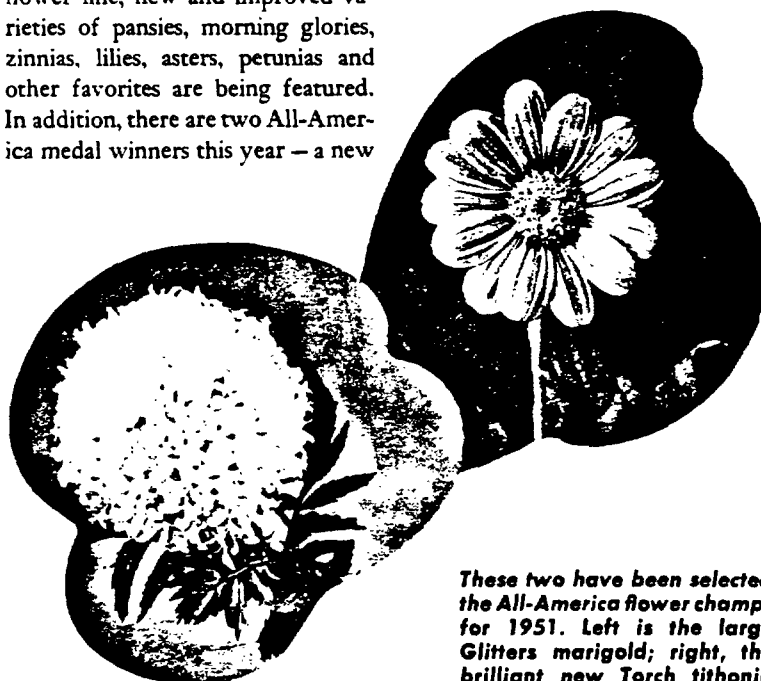
Seed farms occupy thousands and

thousands of acres and are operated in many parts of the country by scores of seedsmen. Their combined yield amounts to many tons every year. But volume alone isn't the only concern of the industry. Most of the research and experimenting — and hence the fascination of the seed industry — stems from its endless efforts to produce new and improved strains of the better-known flowers and vegetables.

The results of this research are evident in the 1951 catalogs. In the flower line, new and improved varieties of pansies, morning glories, zinnias, lilies, asters, petunias and other favorites are being featured. In addition, there are two All-America medal winners this year — a new

marigold and an improved tithonia, or Mexican sunflower, as it is sometimes called.

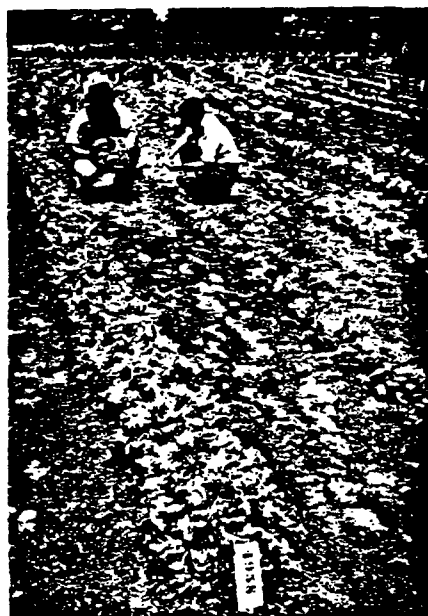
Glitters marigold, the catalog reader will find, looks very much like a chrysanthemum. It bears a large, fluffy, canary yellow flower, and boasts long stems that are particularly adapted for cutting or garden display, according to the experts. The new Torch tithonia promises to be quite unlike conventional tall late tithonia. It is a com-



These two have been selected the All-America flower champs for 1951. Left is the large Glitters marigold; right, the brilliant new Torch tithonia



Above, just one step in the hand-pollination of a plant. This is a tedious process and requires a delicate touch on the part of the skilled seed farm employee



Seed growers pay close attention to their experimental plants at all stages. Here two experts check the progress of a trial batch of lettuce

pact, waist-high plant, bearing brilliant orange-red flowers which should bloom from early August until the first frost.

For the vegetable gardener there are many improved varieties of sweet corn, cucumbers, watermelons, muskmelons, cabbages, and tomatoes.

Few garden enthusiasts are aware of it, but there is virtually no limit to which seedsmen will go to improve their product. Perhaps the classic example is the case of the development of the odorless-foliaged marigold by David Burpee, president of the W. Atlee Burpee Co., of Philadelphia.

Back in 1933, after years of searching for a marigold that did not have an objectionable odor, Burpee bought some seeds from a missionary in China who insisted they would produce plants entirely

free of the usual marigold foliage odor. And they did. The only hitch was that every plant in the entire batch except one produced small and scraggly flowers.

Sound Reasoning

Crosses were made by hand between the odorless-foliaged and the most luxuriant of the marigolds with the typical odor. If odorless marigolds from China could produce one pretty mutation, Burpee reasoned, conventional pretty, though smelly, marigolds growing on his own farms might also produce one odorless mutation.

The next year he planted 30 acres of marigolds and set his employees

to smelling every one of the 554,000 plants. After five weeks of sniffing, one discerning nose detected a whole row of big carnation-like marigolds with odorless foliage. Others were created in succeeding years. Some gardeners like the odor of marigold foliage. So take your choice — with or without odor. No longer objectionable to many, marigolds now are admired by flower lovers the world over, most of whom are completely unmindful of the story behind them. They rank with zinnias and petunias as our most popular garden flowers.

Most seedsmen find that cross-breeding one type of flower with another is not only one of the most fascinating aspects of their business but also one of its cornerstones. Without cross-breeding, the only new varieties would be the mutations that appear infrequently in nature or that may be artificially produced by man.

Cross-breeding can change the color of a fruit or flower, hasten maturity, increase disease resistance, alter texture and size of fruit, or, as in the case of the marigold, remove or improve odor. A new icebox-size midget watermelon and the unusually heavy-bearing cucumbers and

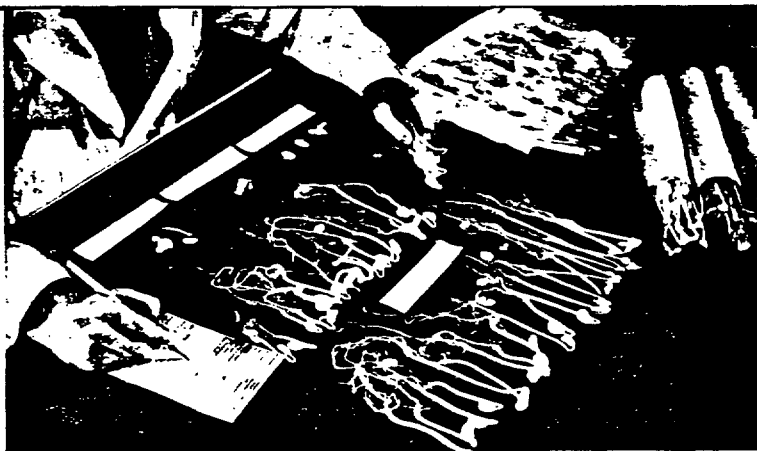
This field is a proving ground for seeds. White muslin cages are placed over certain plants to prevent their pollinization by wind or insects



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Laboratory research is a vital part of seed growing. In this photo, the results of one of a series of germination tests are being recorded

tomatoes are good examples of what skillful breeding can accomplish.

To the amateur horticulturist cross-breeding may not sound particularly difficult. You take several plants, each of which has a characteristic that you want in the finished product, cross-pollinate them, and presto, in a few years you have a strong, bright, colorful, and fruitful plant. But it's not that easy. Years and years of painstaking trial-and-error experimenting on the part of skilled scientists sometimes are required, and even then there's no guarantee of success.

A case in point is the elusive yellow sweet pea, which still hasn't been developed.

"Why don't you put some yellow dye in the ground around your white sweet pea plants? Florists put it in the water their sweet peas stand in and it works for them." That was the suggestion one woman offered to a leading seedsman who was engaged in the search. Unfortunately plants don't assimilate soil dyes.

X-Ray Helpful

If science hasn't come up with the answer to the yellow sweet pea problem, it is solving many others.

It may surprise some people that a human medicine and the X-ray are helping to improve plants. At least one seed concern has used the X-ray to create changes in seeds that result in improved offspring in future generations.

This same company also uses an amazing drug, colchicine, as a means of improving the blooms on many flowering plants. A drop or two on the tips of some plants shocks the cell structure and produces flowers which are larger, more glossy and bright, and often slightly different in form.

The mechanics of cross-pollination are tiresome and tedious and require a delicate touch. They involve transferring pollen from the stamen (male organ) of a flower to the stigma (female organ). When this has been accomplished the fertilized flower is tied up, or the entire plant covered with cloth to prevent further pollination by wind or insects.

Pollinated plants are tagged and watched carefully during the growing season. If they produce the desired result, their seeds are carefully gathered and stored for later planting. Thus they become the parents of thousands of offspring.

If these offspring prove popular with the gardening public, acres and acres of their seeds are planted. And just as in other types of farming, great pieces of power machinery and equipment are used to ready the land, plant the seeds, cultivate the plants, harvest and thresh.

Gardeners can pursue their hobby practically assured of success, thanks to the ceaseless efforts of the nation's seed growing industry

In all these operations, great care is taken that kinds, varieties, and even strains don't get mixed. Each has been developed for its individual qualities. Individuality must be preserved so that the buyer will get the seed of the same plant that he saw in the seed catalog.

Controlled Storage

Once they have been harvested and thoroughly cleaned, seeds are bagged in cloth sacks and shipped to the seedman's warehouses, where they are stored under controlled conditions of light, temperature and humidity. But they still aren't ready for market. Trained and experienced workers laboratory-test any number of sample lots. They allow them to germinate under a variety of circumstances to check their performance. Sample lots are examined carefully for physical defects.

Finally, tested and approved, the seeds are packaged for sale to gardeners who have been waiting impatiently for that first warm spring day so they can get out in their gardens and start digging.





Ponca City is considered one of the cleanest communities in the Southwest. The neat and orderly appearance of the Continental Oil head offices and refinery, above, contributes much toward this reputation

HOUSEKEEPING: Continental Plan

In the oil industry, safety and cleanliness go hand-in-hand. Here's "good housekeeping" as one company practices it

ACCIDENT PREVENTION and all-round safety are no strangers to the petroleum industry. Year after year, it compiles standards of safety that compare most favorably with the U. S. all-industry average. In many cases, oil's record of accident frequency and severity is far superior to that of industries of fewer inherent occupational hazards.

Most petroleum companies—certainly Continental Oil, for one—consider their outstanding safety achievements due, in large measure, to the cleanliness of their refineries, research laboratories, offices and other facilities. It is more than coincidence that Continental, which year-in and year-out comes up with

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Left, lube blending pumps at the Ponca City refinery not only are kept spotless at all times, but are set up on shiny tile bases. None of the pictures shown has been retouched



Above, the mezzanine level of the refinery's main power plant looks like a highly-polished dance floor. Even the turbo-generators glisten . . . Left, every last nut, bolt, fitting, and tool has its proper place in the Continental Oil warehouse



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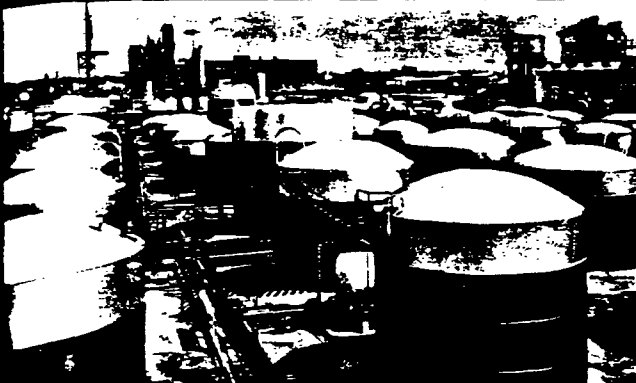
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Refinery's polished
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one of the most enviable safety records in all industry, is recognized as one of the best "housekeepers" in the business.

In an industry renowned for its neatness, Continental's reputation as a good housekeeper is one of long-standing. To the late Dan Moran, Conoco president for so many years, cleanliness was almost a religion. He developed the company's housekeeping program, which is being carried on today by his successor, L. F. McCollum. So far-reaching is this program that even most Continental wells on leases are terraced and kept spotless at all times.

The company's housekeeping rules are unwritten, but each new employee receives a thorough indoctrination in the subject. The result is that—at the Ponca City, Okla., refinery and elsewhere—one often sees a Continental employee stoop and pick up a stray piece of paper or other litter. So housekeeping-minded, in fact, are company personnel that they have been known to complain that the grass around one of

Above, a study in good industrial housekeeping is the run tank area of the refinery's lubricating oil division

the company buildings was too high or that they thought a certain piece of equipment needed repainting.

Aside from the safety angle, there are other key reasons why Continental Oil goes all out in its housekeeping. A spotless work place builds up civic pride and swells employee morale. And it has advertising and economic values. Good housekeeping promotes safety, and a good safety record means lower insurance rates, for example.

The unretouched photographs on these pages give some idea of the scope of Continental Oil's good housekeeping program—a program that has helped one work group at the Ponca City refinery go almost seven years without a lost-time accident and other groups four or more years without a similar mishap.



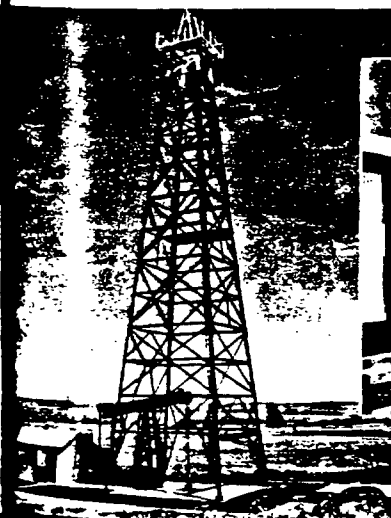
Alleys have a habit of becoming catchalls if not policed. Passageways between buildings at the Continental plant are always kept free of litter



Janitor service vehicles visit the refinery buildings on regular schedule to maintain the appearance for which Continental Oil is noted



Continental's housekeeping program extends beyond the Ponca City plant. Wells are terraced and have aluminum tips. Pipeline pump stations, like that at left, are neat as Dutch towns. Finally, Conoco, like all companies, prides itself on clean service stations



BLIMPS ARMY

Below,
missile
enemy
destroy

Airships have had an up-and-down career, but right now they rate as an indispensable member of the Navy's anti-submarine warfare teams

A THOUSAND or more miles out at sea, a silvery blimp hovers over an aircraft carrier, drops a fuel line, takes on a fresh supply of 91/96 grade gasoline, and heads off into the heavens to resume its prowling for enemy submarines. Or, as more often happens, the airship finds a momentary resting place on the carrier's deck while it replenishes its gasoline load and changes crews before taking off on its sky-roving mission again.

This is the important new development in airships today. A valued member of the Navy's anti-submarine hunter-killer teams in World War II, the cigar-shaped craft now is ready to play an even fuller role should Russia ever send any of the

300 submarines it is supposed to have too close to our shores.

The concept of refueling and re-servicing blimps at sea is not new, but it is only within the past few years that the Navy has perfected it into a science. The result is that blimps, the eyes of the hunter-killer teams, can remain with the fleet a week or longer, instead of having to return to their shore bases after each day's mission.

This "comeback" by the modern airship is the latest chapter in a career that has had its ups and downs—in man's mind, as well as in flight. Ever since two French brothers succeeded in flying the first lighter-than-air craft back in the late 18th century, the airship has experienced alternate periods of favor and disfavor. Right now, its stock is at a new high.

The balloon which the Montgolfier brothers sent aloft over the French town of Annonay in 1783 was a crude affair—a 35-foot ball of

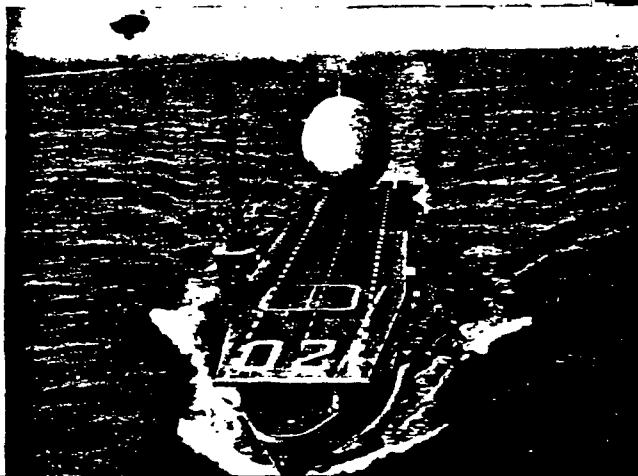
waxed paper with a brazier of coal suspended below it to provide the warm air which lifted the balloon off the ground. But the improved balloons which the Montgolfier craft begat marked the first time that man was able to get into the air and stay there for an appreciable length of time.

In 1906, the balloon became dirigible, or steerable, through use of the internal combustion gasoline engine, and many experts of the time seri-

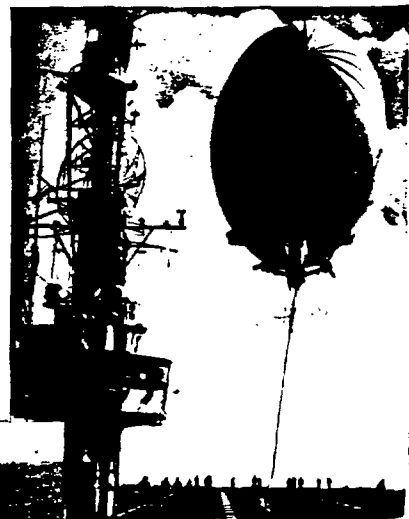
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Because they can put down on the deck of an aircraft carrier, to refuel and change crews, blimps are able to remain at sea a week or more



Above, refueling airships in flight now is a common practice. The blimp hovers over the aircraft carrier while taking on a fresh gasoline supply



Below, it is the airship's mission solely to spot enemy subs. Planes and destroyers do the blasting



ously doubted that the airplane, then a brand new invention, ever would become a serious competitor to the airship. That thinking proved wrong, but the airship made another strong bid for its place in the aeronautical sun by doing yeoman work in the first World War. Then came what everybody called the Zeppelins—the *Graf Zeppelin*, the *Los Angeles*, the *Macon*, the *Shenandoah*, the *Hindenburg*, and the *Akron*. The violent demise of the last four, in the Twenties and Thirties, sent public faith and confidence in the airship to a new low.

But once more the blimp bounced back and earned a Navy "well done" for its World War II service. Even so, the usefulness of the blimp was questioned by those who saw the slow-moving, virtually unarmed craft a perfect target for enemy anti-aircraft fire. Now, however, snorkel equipment permits submarines to remain underwater, and few are expected to surface any more



The forepart of a Navy blimp's car is a maze of electronic listening and detection devices. Even with this modern equipment, the submarine is not an easy target to pick out and kill

than they have to. That being the case, the blimp will be able to stay in the battle against enemy submarines, along with the destroyers, small anti-submarine submarines, planes and helicopters that make up the Navy's anti-submarine teams. Since it carries no armament heavier than the machine gun, the airship's role in the drama of submarine stalking is to detect enemy subs and then hover over the spot until planes and naval vessels can blast them.

In the past, the Navy says, "air search against submarines has consisted of looking good and hard, and discussions have centered around how far down a sub could be spotted. As the submarine and its operation have been improved, so has the fight against it assumed a modern scientific pattern. By guess and by gosh has been eliminated."

Methods Used

Radar is the best method for the initial detection of submarines in all kinds of weather, but it is not the only means at the Navy's command. In limited waters—such as the entrance to New York harbor, the Straits of Gibraltar, and the English Channel—blimps employ magnetic airborne detection. This apparatus usually is carried on a line below the blimp. Limited in range, the magnetic needle nevertheless will register whenever a metal object under-

neath the water is being passed over.

In addition to their main mission of sub-chasing, blimps are called upon to perform several other important wartime functions. Such as locating and rescuing survivors of torpedoed ships, and directing the sweeping of enemy mine fields.

During World War II, blimp members of hunter-killer teams ranged from Nova Scotia to Brazil and covered the Pacific and Mediterranean as well. It is the Navy's proud boast that no vessel escorted by airship was sunk by submarine action in either great war.

Sometimes flying over land in peacetime is as hazardous as anti-submarine patrol duty. No few lighter-than-air craft have been shot at by playful hunters or disturbed rural dwellers. What happens if somebody sends a bullet into an airship? Nothing usually. A bullet hole is too small to cause the loss of any appreciable amount of helium. A far greater hazard is winter flying, when sharp cakes of ice might be shot back by an engine propeller and rip a big hole in the envelope, or bag. When that happens the damage must be repaired promptly or the ship will lose "lift" through the escape of too much helium.

Although until the outbreak of World War II Germany was the leading nation in airship construction and operation, the use of helium

in lighter-than-air craft is strictly a U. S. development. The behemoth German ships that people remember flying the Atlantic on regular schedule only 15 or 20 years ago used hydrogen, the lightest of all gases, as their lifting medium. Hydrogen had the advantage of low cost, but the disadvantages of being inflammable and, under certain conditions, explosive.

Except for small supplies in Western Canada and the Ural Mountains of Russia, non-inflammable helium is found only in the natural gases of the United States. The envelope of any American airship you see today is almost completely filled with helium, usually of about 98% purity. The only other things inside the bag are two, or sometimes four, balloon-like affairs. Called ballonets, these are filled with air. Their function is to counterbalance the expansion and contraction of the helium as caused by changes in atmospheric temperature and altitude.

It was largely Germany's inability to secure helium under our strict government export regulations that brought about its decline as the world's foremost airship nation. Today, according to Navy spokesmen,

only the United States and Russia operate any lighter-than-air craft to speak of. Little is known of how many or what type airships the Russians have. Recent stories in the American press have mentioned "persistent reports" that Russia is constructing giant dirigibles for a possible atom bomb assault. If this is so, the airships presumably are of the rigid type, which means they have a complete metal framework to maintain the craft's shape, whether it is inflated with lifting gas or not. The German Zeppelins and our *Akron*, *Macon*, *Los Angeles* and *Shenandoah* were rigid airships.

No More Rigids

All American airships today—and the best estimate is that we have between 100 and 200 in operation—are of the non-rigid type. These have no metal framework. The shape of the bag is maintained solely by the pressure of the helium inside. The U. S. stopped building rigid ships after the *Macon* crashed into the sea off California early in 1935.

Presently, the Navy flies six different types of non-rigid airships. Two of these are strictly training craft, with envelope capacities of

about 125,000 and 200,000 cubic feet of helium. A combination training-fleet ship has a 425,000 cubic foot capacity, while the KX type, the most common airship now in use, holds 456,000 cubic feet of helium. The U. S. also operates two larger craft, the M and MX, both of which were developed during the recent war.

It is an MX-type ship which holds the world's endurance flight record for airships. One of them took off from Lakehurst, N. J., on October 27, 1946, and didn't put down again until November 3, at the Naval Air Station in Glynnco, Ga. That flight of 170.3 hours surpassed by 35 hours the previous mark set by the Russians. And the craft still had enough gasoline and food aboard for another two days of flight.

The M-ship then was the world's biggest non-rigid airship. But it doesn't hold that distinction any longer. The Goodyear Aircraft Corp. factories in Akron recently completed a new super-ship, identified as the N-type. This craft now is awaiting formal Navy acceptance. The "N" is almost 325 feet long, 74 feet wide, and 95 feet high. It loads 875,000 cubic feet of helium, or

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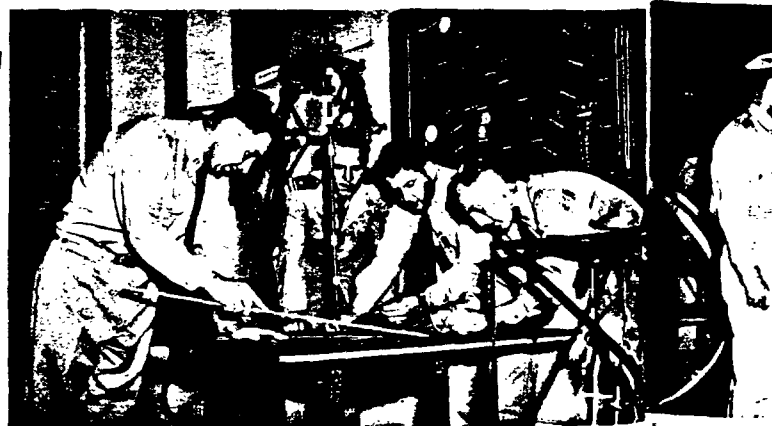
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Many of the surplus airships of World War II were sold by the Navy and used as "aerial billboards" for advertising oil, food and other products



The Navy's training school for pilots and crew members of lighter-than-air ships is at Lakehurst, N. J. There, personnel study everything from the principles of "wings"

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about 150,000 cubic feet more than the M-type contains.

Landlubbers might expect that it takes a heaping amount of gasoline to move an airship through the ozone. Actually, fuel economy is one of the important advantages of the lighter-than-air craft. Generally speaking, an airship requires only one-fifth the fuel needed by an airplane to carry the same load.

25 Gallons an Hour

Consumption of gasoline by the Navy's smaller training blimps averages about 25 gallons an hour at normal cruising speed of about 50 knots. By paring air speed to something around 37 knots an hour through the use of only one of the ship's two engines, fuel usage is cut in half.

The larger the airship, of course, the greater the gasoline consumption. But even the M-type craft consumes only about 36 gallons an hour while flying at normal cruising speed on both its engines. Normal fuel loading for non-rigid airships is 800 gallons, which represents a reserve of from 50-100%.

Because they never have been too common, airships have pretty much remained a curiosity to most people.

OUR COVER: Limned against a fleecy Louisiana sky are two of the many storage tanks at Ethyl's manufacturing plant in Baton Rouge. These tanks, among others, store ethyl chloride prior to that chemical's use in the final reaction to produce tetraethyl lead, the active antiknock ingredient of "Ethyl" antiknock compounds. Each tank shown has a capacity of about 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'Arazen.

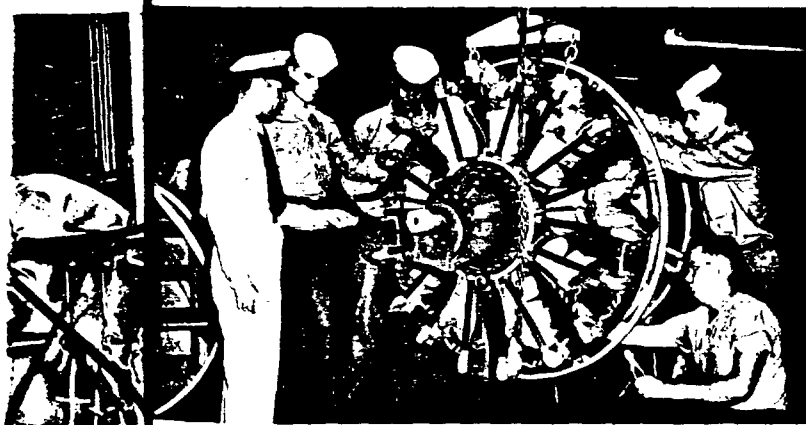
OUR PICTURES: Page 3 (top center), Acme; page 4 (bottom left), Flude Studio; page 4 (bottom right), courtesy American Trucking Assns.; others on pages 3, 4, 5 and 6, Camera Associates, Bud Eble or Datz Studio; page 7 (bottom right), All-America Selections; page 9 (bottom), Philip Gendreau; all others on pages 7, 8 and 9, courtesy W. Atlee Burpee Co.; pages 10 and 11, courtesy Continental Oil Co.; page 14 (left), courtesy Douglas Leigh Inc.; all others on pages 12, 13, 14 and 15, official Navy and Department of Defense photos; pages 16, 17 and 18, illustrations by Robert Greenhalgh; pages 19, 20 (lower), 21 (bottom) and 22 (two upper photos), courtesy Libbey-Owens-Ford Glass Co.; page 20 (upper), courtesy Standard Oil Co. (N. J.); page 21 (box), A. Devaney, Inc.; page 22 (bottom), courtesy U. S. Dept. of Agriculture Extension Service.

But in recent years residents in several large U.S. cities have grown used to hearing the lazy drone of a blimp overhead, as it flashed the message of an oil company or food product concern in bright lights on its vast side. The Navy was glad that its World War II surplus blimps were put to this use. Otherwise they likely would have been dismantled and sold for raincoat material.

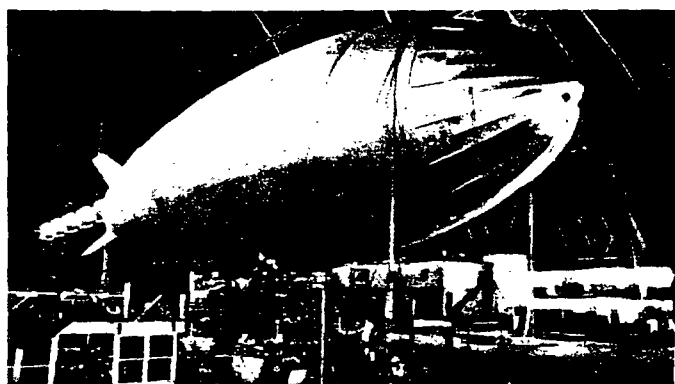
Now, with these advertising blimps called back into active service, the Navy finds itself with its airship fleet virtually intact. That's a

much happier situation than existed in 1940, when there were only five usable blimps in the whole country.

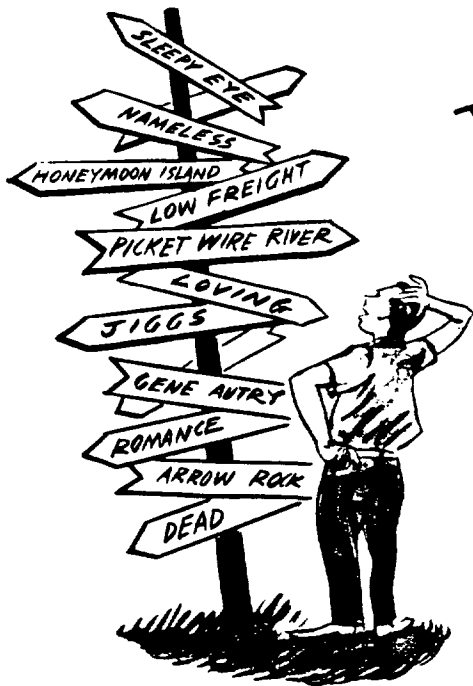
Enemy submarine reaction to the Navy's airships is bound to be much like that of the Englishman, who after watching an advertising blimp go through its paces, remarked, "Really, it's deucedly clever, but isn't it a bit conspicuous?" Now that it can refuel at sea, the airship intends to be more conspicuous than ever—calling the shots for the more lethal members of the Navy's anti-submarine warfare teams.



For pilots and mooring (above left) to the mighty engines (above right) that power the modern airship. A blimp pilot must first have won a principles of this "wings" as a heavier-than-air-pilot



Largest known airship in the world is our "N," shown here under construction. Now awaiting Navy acceptance, the "N" carries 875,000 cubic feet of helium gas



By Shirley H. Scheibla

BESIDES SEEING THE SIGHTS, part of the fascination of traveling around the country is encountering a variety of unusual place names. In almost every one of the 48 states, travelers who take time to notice such things are intrigued by cities and towns and even mountains and rivers whose names are anything but commonplace.

The chances are that you yourself have seen such names as Sleepy Eye, Romance, Low Freight, Hohokus — and wondered about them. Surprisingly enough, and Shakespeare notwithstanding, there's a lot in these odd names — a good reason for almost all of them despite their apparent strangeness. And if it's any consolation, most of them have passed the scrutiny of Uncle Sam's eagle eye. As a matter of fact, it's not a good idea to try naming a place without an okay from Washington, no matter how well-intentioned you may be.

But this is no new evidence of government regulation. It's been going on for about 60 years — and with good reason, too.

You Name It

America has more than its share of unusual place names, but, believe it or not, there's an explanation for most of them — even the most bizarre ones

As America grew and became more and more a nation of travelers, place naming attained a great deal of importance. In some cases, strangers were torn between two or more places in the same state with the same name. And the poor map-makers who were supposed to guide them sometimes found several spellings for the name of one town, and nobody to say which was official.

The federal government recognized these and many other name problems, and in 1890 President Benjamin Harrison established the Board on Geographic Names.

Problem Still Acute

Today, with large segments of our population constantly on the move, the problem is more acute than ever. And the Board is turning out decisions at a rate of about 500 a year, saying when it's all right to name a new place, when an old one can have a new name, or which name is the accepted one when a location is known by several.

Actually, anyone with a hankering to do so can name a place. But if you decide to try it, you'll find that approval by the Board on Geographic Names is a prerequisite to government recognition of a name. To get its approval, you must write directly to the Board and give a good reason for selecting the name you'd like to bestow. Then you'll have to prove that the location does not have a name, is known by more than one name, or that the present name is not appropriate.

Key to the Board's success over the years has been the fact that local acceptance has nearly always followed its approval of a name. Once the government recognizes a place name, that name is then used in federal maps, reports, records and for general identification.

Of course, there are almost as many reasons for place names as there are names themselves. The Board on Geographic Names recently approved the name Honey-moon Island for a piece of land a



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storm separated from Caladesi Island, Fla., in 1922. A philanthropist had made the place locally famous when he built a village of cottages and invited honeymooners to use them without charge. Natives referred to the place as Honeymoon Island for years and got tired of hearing strangers call it Hog Island. So they sought and obtained permission to make Honeymoon Island the official name.

Names which hint of romance aren't always inspired by Dan Cupid, however. Loving, Texas, was named for Oliver Loving, an early pioneer, and Romance, W. Va., was named for Romance Parsons who settled in the area just when the townsfolk were seeking a name for their settlement.

Quick Approval Unusual

It rarely happens, however, that local groups think up strange names spontaneously and get quick approval. Usually the Board approves an odd title only when it has been in popular use for several years.

In the less than 100 years of its existence, the oil industry has been directly responsible for the names of quite a few towns. Scattered from coast to coast are four Petrolias, three Petroleumums, two Oil Citys, two Oil Centers, and a long list that includes Oildale, -ton, -ville, -mont, and others. There was a Gasoline, Texas, until the post office there was discontinued several years ago. There still is an Auto, W. Va.

One of the strangest names, Nameless, was acquired by a Georgia town because the city fathers were unable to agree on a name. While the bickerings of ranchers over an appropriate name for a location in Nevada reminded someone of the quarrels of the comic strip characters, Maggie and Jiggs, and resulted in calling the place Jiggs.

The influence of Indians often is discernible, too. Sleepy Eye, Minn., is said to be named for a tribal chief. Dead, Nev., reportedly is so called because it contains a mountain the Mohaves thought was the resting place of departed spirits. Arrow Rock, Mo., according to a popular tale, boasts a rock which Indians once considered excellent for making arrow heads.

Some strange names are a corruption of foreign ones. Low Freight, Ark., stems from clumsy American attempts to pronounce the French words *l'eau froid* (cold water). The name of the Picket Wire River in Colorado comes from a garbling of the French *purgatoire*. Even the well-known Brooklyn is said to be a corruption of the Dutch word, *breuckelen*, meaning marshy land.

Many names are, or were, descrip-

America's love for movie stars is reflected in at least two place names, Gene Autry, Okla., and Tarzan, Texas. The former dates from 1941 when Gene Autry was planning to establish a rodeo headquarters at Berwyn, Okla. Natives started calling their town Gene Autry and it stuck. Though it dislikes having places named for living persons, principally because they still might do something to discredit their name and cause a mad scramble to rename, the Board bowed to popular usage and approved Gene Autry.

A deceased person must have made an outstanding contribution to society in order for the Board to approve naming a place for him. And its regulations say that his achievements and fame must be more than local. Too, the importance of the public service or



tive of the places they designate. Speckled Trout Lake, Minn., for example, really does contain trout. While Chicago, according to legend, comes from the Ojibwa Indian word *shekagong*, signifying a wild onion place with a bad smell. Yellow Jacket Pass, Col., actually was once infested with bees, but no one remembers whether or not insects inspired the name for Mosquito Island, New York.

achievements of the person whose name is proposed should be commensurate with the importance of the thing being named.

The Board on Geographic Names thought James Kyes earned such an honor and in 1947 approved naming Kyes Peak, Wash., for him. A naval officer in World War II, Kyes gave his life jacket to one of his men when their destroyer was torpedoed and drowned when the ship sank.

Frequently, the Board is faced with the problem of settling which of several variations of an old name should be used. This year, for instance, it decided that it's to be Opa-locka, Fla., not Apalocka, Opa Locka, Opa-Locka, or Opalocka. And it's also an authority for spell-



ing run-of-the-mill names. According to the Board, it's "-boro," not "-borough," "center," not "centre," and "-burg," not "-burgh." In the latter case, however, it has made an exception for Pittsburgh, Pa., and Newburgh, N. Y.

As a general rule the Board frowns on having two places in the same state with the same name. Otherwise, however, it has no hard-and-fast policy against duplications. On this matter the Post Office Department, which names about 200 new post offices a year, takes the same stand.

Board approval is not necessary for the naming of a new post office or changing the name of an old one. The Post Office Department has the authority to determine for itself what it shall call both old and new post offices, just as a railroad can name the stations on its line. However, if a post office name in-

volves a place name on which the Board has already acted, the Board's decision governs.

In some instances general acceptance does not follow naming of a post office. Such was the case with Savage, Md. Local citizens petitioned the Department to change the name of the post office to Santa Heim. Santa for the man with the long white whiskers, and Heim for a local Christmas tree ornament manufacturer. But postal authorities refused on the grounds that they could not approve names that could be used for business promotion. The majority of the residents, however, still call their town Santa Heim.

Confusion in New Mexico

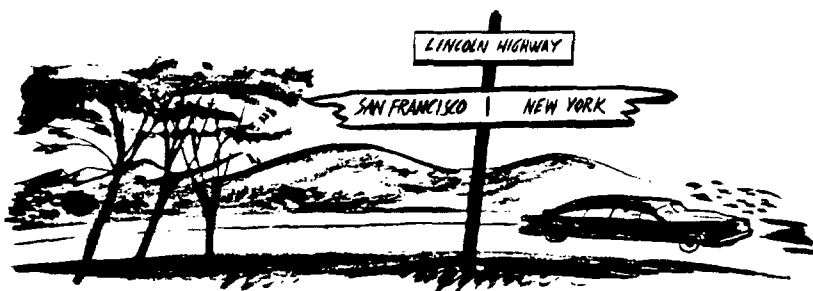
Truth and Consequences, N. M., has experienced plenty of difficulties for the same reason. Following a broadcast of the Truth and Consequences radio program from Hot Springs, N. M., early last year, a municipal election was held and the citizens voted to rename their town Truth and Consequences. However, a judge later ruled that the election was illegal and the post office refused to go along with the change. A second plebiscite was held on Election Day, however, and the people again voted in the change — this time to stay, they hope.

The naming of highways is another matter. The Bureau of Public Roads uses the number system exclusively and has done so since

early in the 1920's because at that time several names for many roads was causing plenty of confusion. Various civic, state and other organizations still go in for highway naming, but each thoroughfare also has a number which is usually used to guide travelers.

The Lincoln Highway which runs from coast to coast is perhaps the best known of the "name" roads and was one of the first to be named. Sponsors of the road picked the name as one they thought would attract public support. And ever since their successful venture, groups advocating particular highways have tried to pick similarly popular names, witness the Lee Highway, the Jefferson Davis Highway, the Will Rogers Highway, and others named for Franklin D. and Theodore Roosevelt, General Pershing, and Daniel Boone.

When the Board on Geographic Names has the say on approving a name, however, one of its guiding principles is this: "Where names have been changed or corrupted, and such changes or corruptions have become established by local usage, it is not generally advisable to attempt to restore the original form." Perhaps this explains some of the strange names you see and will continue to find reflecting this country's sense of humor and preserving the memory of its heroes, early settlers, natural beauties and struggles with foreign tongues.



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The PASSING SCENE IN BARNS

Long a traditional American landmark, the red barn is giving way to structures adapted to modern machine farming

By Robert West Howard

HAROLD HUNT'S BARN looms up on a rocky hill in central Massachusetts like a stranded Noah's Ark.

But — outward appearance to the contrary — it is no ordinary barn. Where the haymow used to be is now a windowed chicken house. The barnyard is covered with a concrete sun area where his Brown Swiss cattle can promenade in the wintertime. Inside the barn, the cattle have their own dormitory and feeding room, and both are luxuriant in fresh air, sunlight, and clean straw. Finally, the horse stalls have been transformed into a combination milking parlor and farm workshop.

Like the Ark, Harold Hunt's barn presages a new order of things. The beloved "red barn," having undergone no major architectural changes in the 250 years it has been an American landmark, now is inescapably out of date. Its doom was sealed when the gasoline high compression tractor began to replace the horse in such great number. Then its functional values, like those of the covered wagon and the icehouse, began to pass into history. Now, a new and more efficient type of barn is coming into being — a barn adapted



to machine farming and scientific agricultural progress.

There are, as nearly as can be determined, some 15 million barns and farm work buildings in the United States. The vast majority are from 50 to 100 years, but many along the Atlantic Seaboard are 150 or 200 years old. According to government statistics, more than half of these buildings are in need of major repairs. Viewed technologically, from the standpoint of 1951 farming methods, 90% of our farm buildings are outmoded and so in need of replacement or drastic redesign.

A 1920 Dream

Until recently, Harold Hunt's barn was in that category. Built 30 years ago, it is one of those eye-filling jobs so typical of the American farmer's "era of bigness." Solid wood . . . gambrel roof . . . sheer

One type of modern "loose-housing" barn is that above, designed by Prof. S. A. Witzel, of the University of Wisconsin

siding . . . and the over-all proportions of a battleship. The original idea was to build an all-purpose barn that would house horses, dairy cows, harness, rigs, hay, feed, and a milk cooler, with the final grandiose gesture of two 50-foot silos in left field. That's what every farmer dreamed about in 1920.

Last winter, still with the same outer frame and proportions, the barn was remodeled to fit the times. Farewell to the horse stalls. Farewell also to the haymow . . . and the harness room . . . the milk stool . . . the cooling vat . . . the open-faced wagon shed . . . the dilapidated hog house . . . the mud-sucking bestenched cowyard . . . the louse-infested poultry house.

"That cow stable in the basement," Hunt told me, "had been laid for 40 stanchions and box stalls to hold 20 head of cattle. Then I decided to keep beef cattle, so it was never finished off. At the extreme left of the barn and running crosswise of it was a harness room

silo received a machine age come-uppance. The stanchion space, with steel supporting posts still intact, was left unfloored and turned into a cow "bedroom." Fresh bales of straw are supplied to it every other day. Beyond that, the Swiss do their own bed-making. Once or twice a

midstream between the red barn tradition and the unknown shape of the future, is Harold Hunt's barn — a pilot plant for the transitional stage in America's rural architecture.

The architectural pattern of the traditional red barn and hayloft was created to give shelter to horses, wagons, harness, oat bins, and haycrops. Such barns were adequate in their day, but that was before the era of the tractor, the truck, and the automobile. Today, four million tractors and some eight million motor vehicles have all but replaced the 21 million horses and mules which our grandfathers depended upon to do their farm labors. Moreover, the average farm has increased in size considerably.

Still, until World War II, the barn responded only by increasing its

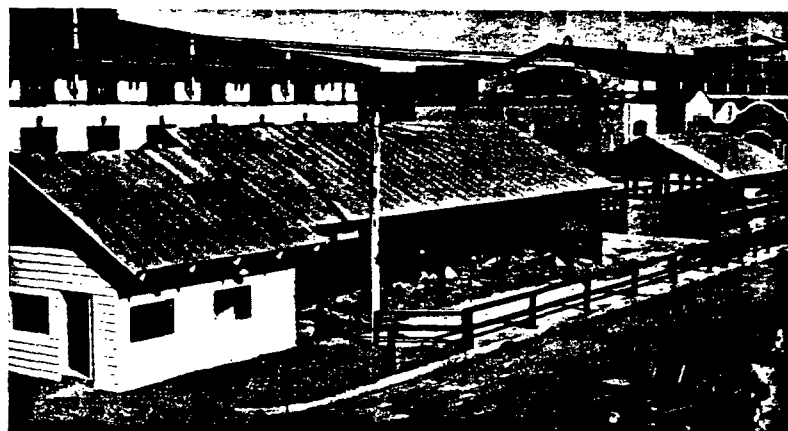


Most of America's barns are at least 50 years old. The author says 90% of our farm buildings are now outmoded

and three box stalls for horses. To the right was a barn floor with high enough ceiling and big enough doors to admit and shelter the biggest load of loose hay. At the right of this floor were more box stalls and a row of standing stalls for the horses."

When it came time to adapt this floor for the mechanized production of milk, the harness room was converted into a milk cooler room. The box stalls became a combination grain room and farm workshop. The standing horse stalls were rebuilt into a milking parlor with four elevated stalls above the pit where the hired man handles the milking machines at eye-level. The milk, untouched, is pumped through chrome pipes across the barn and fed into cans in the cooler room.

Simultaneously, the unfinished cowstable, the barnyard and the



year, the bedroom is power-cleaned with a tractor.

In front of the big bedroom doors, the barnyard has disappeared beneath a monolithic concrete pavement that has become the cow's sun area and winter promenade. The doors are kept open all year, since they face the south and away from prevailing winds. The animals wander in and out at will.

So there, swimming hugely in

In cognizance of the modern barn design trend, the New York State Fair exhibited this model barn arrangement

size. The basic structural pattern remained the same, despite substantial effort by other interests to break down the "wood tradition." All too often machines that can't be fitted on the old haymow floor are either parked in the open to rust, or are sheltered in carriage sheds.

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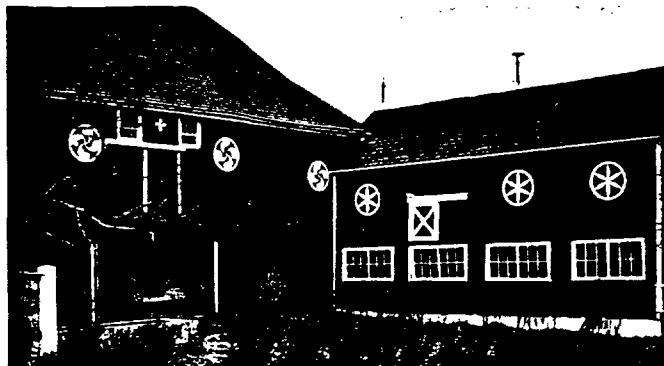
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The contemporary American barn was conceived and first built sometime before 1680 by German farmers in New York and Pennsylvania to meet the specific needs of their horse-powered economy. The bank barn was originated by the Mennonite farmers of Lancaster County, Pa., about 1700.

The Mennonites, Swiss and German religious refugees, had an instinct for land values and livestock development. They purposely selected the hardwood forests west of Philadelphia for settlement because they knew that hardwoods grow on limestone. Used to hilly country in their old homelands, they combined the hardwoods with hereditary knowledge to evolve the bank barn. The structure is still "standard" for the American farm.

Invariably, the bank barn was nestled into a hillside, or against a wooded bank, for obvious reasons of weather insulation and power limitations. When possible, it faced south. The second floor, accessible from the hilltop, contained the wagon floor, haymow, and grain storage rooms. Here, harvests could be drawn in by wagon and stored for the winter. The ground floor, its north end buried protectively in the hillside, housed the livestock.

Both Yankee and Southerner adopted — and adapted



Pennsylvania Dutch farm building with "Hex" signs

— the "Pennsylvania Dutchman's" barn. Haymow, wagon floor and dairy basement became standard — and moved on across the Alleghenies, the prairies and the Rockies during the 19th Century. The Yankee's major contribution to the basic pattern was a covered runway between the farmhouse and barn, to provide a snow-free path in winter. The Southerner evolved a similar idea, but left the sides off the runway.

But, all in all, significant improvisations upon the centuries-old barn design pattern have been amazingly meagre.

If the red barn is to disappear from the American skyline, what is to be its heir? Taking a cue from the times, one can point to many design and construction features that almost certainly will be found in the barn of tomorrow.

Its shape, height and even construction materials will be a matter of debate for another generation at least. But it's a generally accepted premise that metal, concrete and plastics will replace wood, that the barn will be low-slung, and that it will not be erected just any place, but rather built to fit into land contours. It's conceivable that the towering silo will disappear into the hillside, or perhaps be placed underground. And it's not too Buck

Rogers-ish to visualize tomorrow's farmer directing the operations in his barn and on his lands via two-way electronic communication, as he sits in a control room and scans all activity by television or through an ultra-violet picture window.

Foldaway Doors

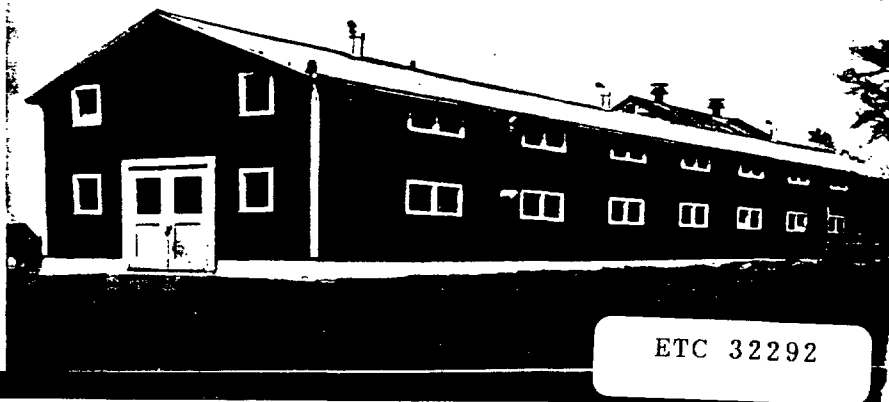
The doors of tomorrow's barn will be huge balanced affairs that fold away against the ceilings to permit the entry of any size machine, from the smallish garden tractor to the behemoth harvester. Very likely the doors will open and close by remote control. Doorsteps

and ramps, the experts tell us, will be precast from concrete or metal and will be portable from one farm building to another.

The barn floors more likely than not will be concrete or a plastic material under which will zigzag coils to provide radiant heating. Animals, particularly cattle, will live in a style to which they certainly have not been accustomed in the past.

Barns in dairying territory can be expected to incorporate features of the new "loose-housing" system of cow herding, such as Harold Hunt employs. It provides a concrete sun area for daytime airing of cattle

Modern farm structures, like this broiler house, feature several large insulating windows to provide better "daylighting"



ETC 32292

In the barns of tomorrow, farm animals will enjoy new comfort. Below is seen a new cow milking parlor, and at the right is a recently-built Illinois hog house



during the winter months, a dirt-floored sleeping room, a milking parlor where the animal stands in a small paddock while she is being milked, and a separate feedroom where the cattle are routed to eat after morning and evening milkings. Tests indicate that cows which have freedom of movement produce more milk than cows that do not enjoy the same liberty.

One snug room in the new barns will be set aside as the farmer's office and work headquarters. Here insecticides, medicines, and chemicals will be stored, and here the farmer will keep his indexed files of animal

and land records, as well as his reference library. Intricate machinery repairs will be made at the workbench along one side of the room. At the "office" desk—complete with telephone extension, radio, and maybe even television—crop plans will be worked out and the all-important contacts made with county agents, machinery salesmen, and the various distributors.

The list of features one might expect to find in our new barns runs on through dozens of items. But as Dr. Walter Gropius, director of the Graduate School of Design at Harvard University, has put it,

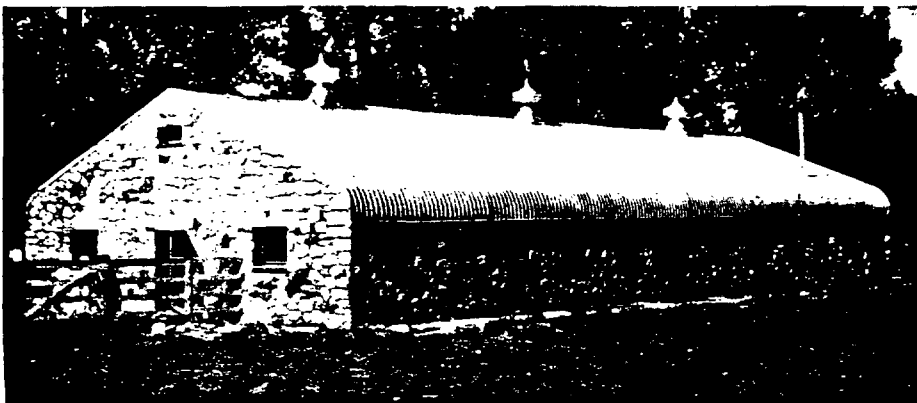
the final shape of the rural buildings of the future will emerge slowly, regionally, and only from the will of the people.

"I cannot visualize them. No man can visualize them, for they will come from the people, as study and experience evolve them. It is wrong to think that we can invent an indigenous building that is preconceived. Biological factors involving race, religion, weather, climatic conditions, and special interests of local groups are all incorporated into the eventual pattern and design. This means long and arduous human study.

"Then, too, at all times we must give way to nature. Over millions of years nature has evolved her own building designs and patterns in grasses, trees, rocks, and river beds. These are functional patterns, admirably suited to their needs. If we try to imitate them, we will be on the right track for the buildings best suited to man and his intricate needs of today and tomorrow."

Just as Harold Hunt's does now, somewhere up the hill into tomorrow stands the barn of the future. It won't have the legends and the sentiments of the cherished old red barn, but it will be the last word in human comfort and farming efficiency.

Left, while no one can yet predict the final shape of our "new" farm buildings, experts agree most will be constructed of other than wood



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ETHYL EXHIBIT AT SPINDLETOP OBSERVANCE

Within the past month millions of people have heard about an important event in the oil industry — the 50th anniversary of Spindletop, the field "where oil became an industry." Radio broadcasts, news stories in the daily press, and articles and comment in general magazines have reached into almost every nook and corner of the country.

Celebration of the anniversary year got under way on January 6 with the unveiling of a Lucas gusher replica and modern power rig in Sunset Park at Beaumont, Texas, site of the famous well. The observance will not conclude formally until October, when the Anthony F. Lucas Engineering building at Lamar (Texas) State College of Technology is dedicated.

One of the features of the commemorative program at Beaumont is the Spindletop Hall of Exhibits at the South Texas State Fair Grounds. At the request of the Spindletop 50th Anniversary Commission, appointed by Governor Allan Shivers of Texas and chairmaned by John W. Newton, vice president of Magnolia Petroleum, some 40 oil and related companies arranged exhibits.

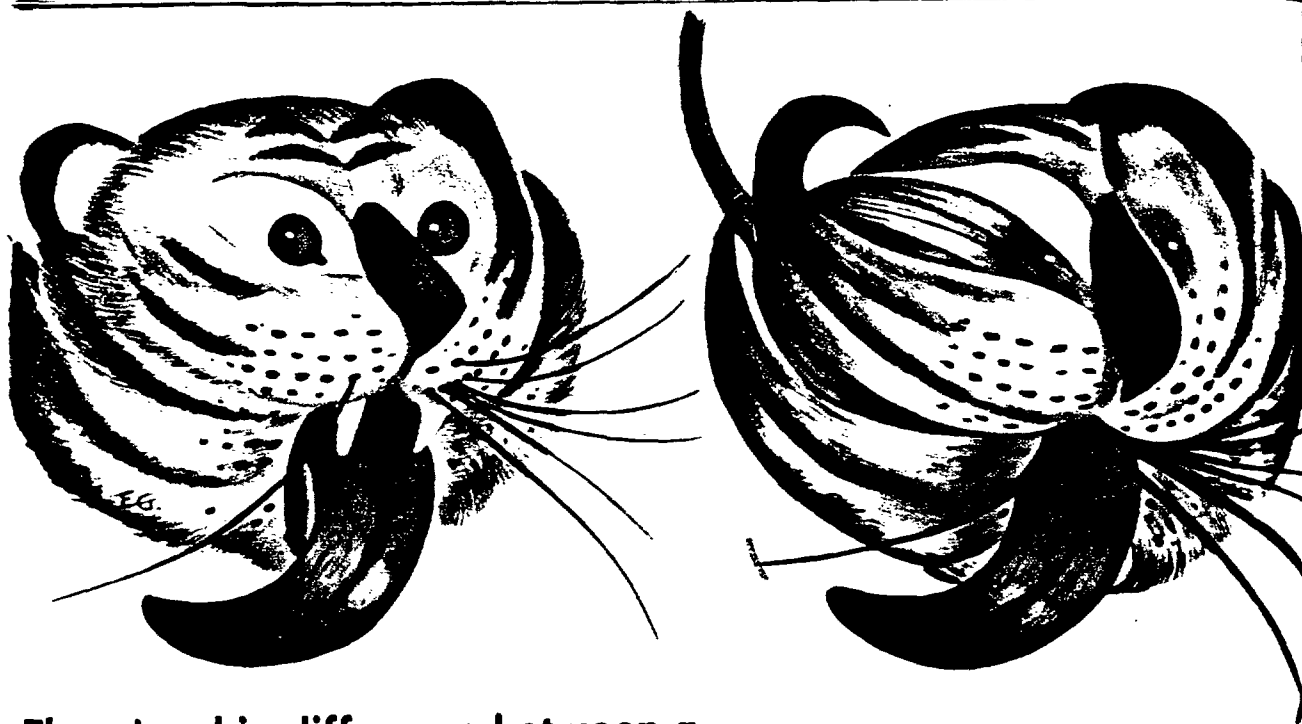
As part of the "Progress in Petroleum" theme of the Beaumont exhibit, a presentation staged by Ethyl Corporation dramatically portrays a fact developed by Ethyl several months ago — that two gallons of present-day gasoline will do the work of three gallons of 1925 motor fuel, and

yet the price per gallon, excluding taxes, is about the same.

As can be seen from the accompanying photo, the Ethyl exhibit employs a modern automobile and service station and an old-fashioned car and station to emphasize the vast improvement in gasoline quality that has accrued to the nation's motorists during the past quarter-century. In the center of the exhibit is an Ethyl demonstration engine, and behind this is a slide projection screen.

Before the assembled visitors at the Spindletop Hall of Exhibits, the demonstration engine operates on representative 1925 and 1950 gasolines and at the average 1925 and 1950 automotive compression ratios. As the demonstration progresses, the audience is able to witness the low power output of an equivalent 1925 engine as it operates on 1925 fuel, the loss in power due to knock when the engine operates at present-day compression ratio but on 1925 fuel, and the great increase in power when modern fuel is used at modern compression ratio. This gain — the audience learns in graphic fashion — is 50%, which is another way of saying that two gallons of gasoline today do the work of three gallons of 1925 gasoline.

The Hall of Exhibits display was open in its entirety from January 6 to 14. However, the Ethyl exhibit and others will be shown every Friday, Saturday and Sunday through March 31 for school groups and other Beaumont visitors.



There's a big difference between a

tiger...and a...tiger lily

- and there is a powerful difference, too,
between gasoline and "Ethyl" gasoline!



"Ethyl" gasoline is *high octane* gasoline. That's why it brings out the top power of your engine — makes a difference that you can feel on hills, on the open road, and when you need quick power for passing or acceleration.

When you see the familiar yellow-and-black "Ethyl" emblem on a pump, you know you are getting this better gasoline. "Ethyl" antiknock fluid is the famous ingredient that steps up power and performance.

ETHYL CORPORATION, 100 Park Avenue, New York 17, N. Y.



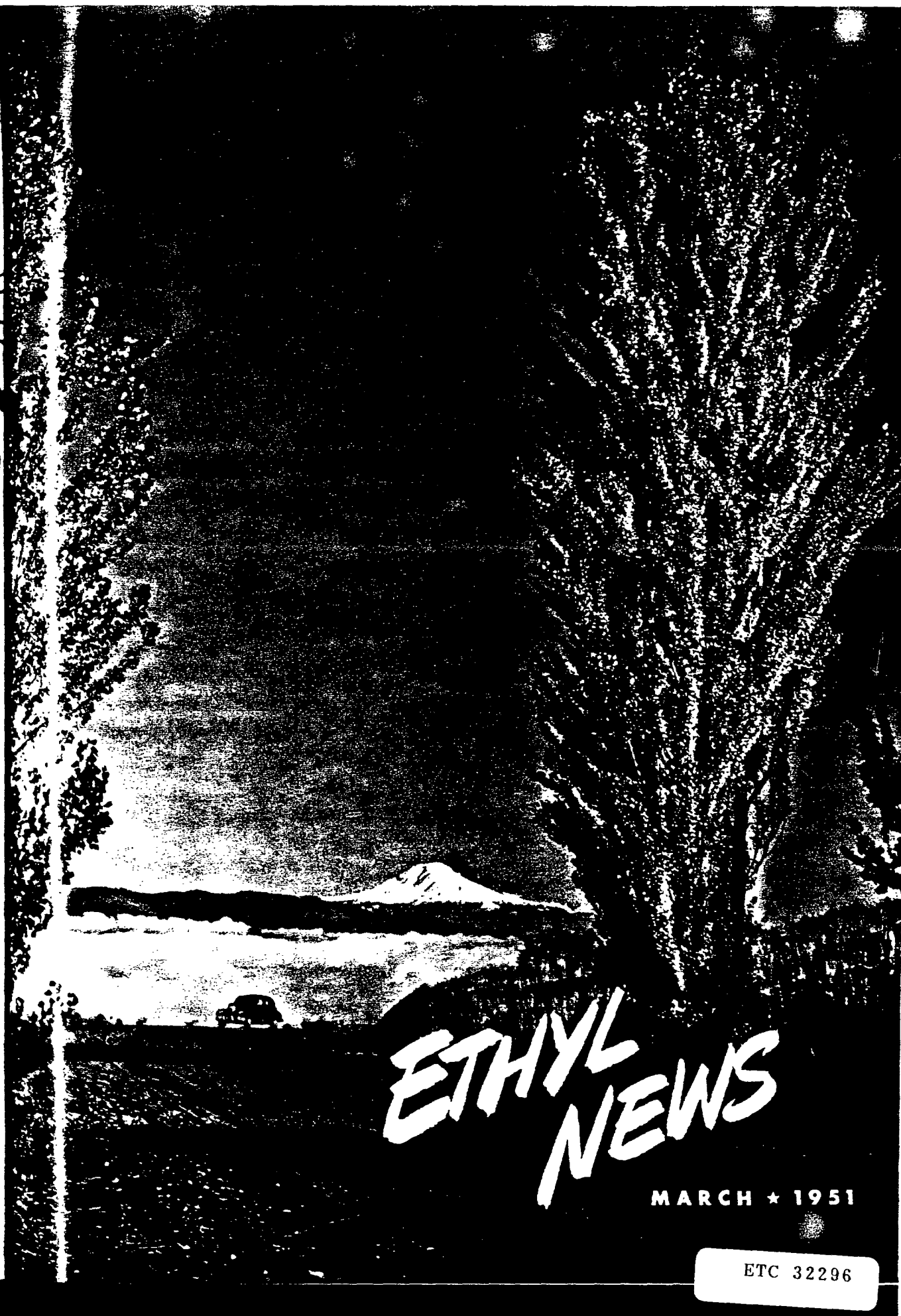
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ETHYL NEWS

MARCH ★ 1951

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IN THE

ETHYL NEWS

MARCH 1951

Among the newly-elected members of the board of directors of the Rocky Mountain Oil and Gas Association is John S. Cole, Ethyl Corporation safety engineer and account representative in the Western Region.

Mr. Cole joined Ethyl in 1933 as a field representative in Baltimore and later became a safety engineer in that Division. He transferred to the Casper, Wyo., office of the Western Region in 1940 as a safety engineer, and remained there until 1948, when he moved to Salt Lake City to take his present position.

A native of Brooklyn, N. Y., Mr. Cole was graduated from Stevens Institute of Technology in 1924 with a B.S. degree in mechanical engineering. Before joining Ethyl nine years later, he was a research engineer with The Texas Co. and with Socony-Vacuum Oil Co.

He has been active in the Rocky Mountain Oil and Gas Association for some time, and last year was chairman of that group's permanent general refining committee. Mr. Cole also has been an active Oil Industry Information Committee member in the Rocky Mountain area.

An inveterate sportsman, he belongs to the Rocky Mountain Gun Club and the Izaak Walton League. His other memberships include Phi Alpha Sigma fraternity and the Lions Club.

TECHNIQUE IN TRACTOR SERVICE

3

To acquaint farm machinery dealers' mechanics with the latest tractor engine service practices, Ethyl Corporation has developed a twofold program consisting of an educational motion picture and mobile classroom instruction.

REVOLUTION IN VERMONT

6

Modern farmers like Trafton Hoisington are introducing significant changes in the art of making maple syrup. One such innovation calls for the use of oil instead of wood to heat the big evaporators in which the sap is boiled.

A WORLD OF SPORT

10

We may go mad about baseball or basketball, but give the Englishman his cricket and the Spaniard his bullfighting. Here's a picture report on some of the games that are popular in foreign countries.

FIGHTING FUEL

12

Add some napalm to a barrel of ordinary gasoline and you have a fire bomb that is the bane of the enemy's existence in Korea. Napalm, or jellied gasoline, is a literal illustration of the World War II slogan "Oil Is Ammunition, Use It Wisely."

ACCIDENTALLY YOURS

16

As this roundup of unusual mishaps illustrates, the strangest things can happen to people at the strangest times and under the strangest circumstances.

DASHBOARD TELEPHONES

19

Mobile telephone service has grown by leaps and bounds since its introduction five years ago. With it — whether you're riding along a highway, or traveling on a boat or train — you can call practically any telephone in the world as quickly and easily as you can from your own home.

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, 100 Park Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compounds, 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;
Herbert A. Savage, secretary

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Technique in Tractor Service

Ethyl has produced a motion picture and is sending three special mobile classroom units through the Midwest as part of a program to encourage precision tractor engine service

IN THESE DAYS, when the American farmer is expected to feed not only his countrymen but the famished people of many foreign lands as well, it is more important than ever that his equipment be kept in the best operating condition. To help and encourage tractor mechanics to render precision engine service, therefore, Ethyl Corporation has instituted a twofold program that is intended to reach into every nook and corner of agricultural America.

A new sound motion picture, entitled "You're the Doctor," is one part of the dual program. The other is a mobile Dealer Service Demonstration, which is conducted right at the tractor dealer's shop by Ethyl

engineers as on-the-spot instruction for mechanics in the latest farm engine service techniques. Together, the film and the portable demonstration will be seen by a vast percentage of the mechanics who are charged with keeping the nation's tractors in the best running order.

A Special Service

Arranged as a special service to the farm machinery and petroleum industries, the Ethyl program actually got under way last summer. At that time, the Company distributed to tractor dealers, through their manufacturers, some 50,000 copies of an instructional wall chart and an accompanying booklet entitled "A Good Valve Job Pays."

Before launching the full program, Ethyl sought the suggestions and reactions of key personnel in the farm equipment and petroleum industries. Guided by these conversations, Ethyl engineers transformed plans into realities. The movie and the dealer demonstrations were developed as the most effective ways of taking the message of precision tractor engine service to the greatest possible number of farming communities throughout the country.

The Dealer Service Demonstration is, in effect, a postgraduate course for tractor mechanics. For this purpose, Ethyl has created streamlined mobile classrooms — three specially designed house trailers, each of which has been fully equipped with modern engine service and tune-up equipment. Itineraries of the demonstration units are being planned in cooperation



The new Ethyl film, in sound, is entitled "You're the Doctor" and runs about one-half hour. Shown at the left are a fact sheet about the movie and a final scene from the film

Before beginning the instruction session, the Ethyl engineer reviews the need for precision workmanship in servicing a tractor engine. Maintenance of close tolerances, correct angles, and strict adherence to manufacturers' specifications are by-words of a successful overhaul. This, the instructor points out, is particularly true in the case of valve reconditioning.

"Just as a man's life depends upon proper functioning of the valves in his heart," the assembled mechanics are reminded, "so must an engine have 'healthy' valves if it is to deliver full power and performance. Good valve jobs are important to the farmer, who depends upon smoothly operating equipment. They are equally important to the tractor dealer as a means of enhancing his service reputation. Besides keeping old customers satisfied and happy, quality service work attracts new business, thus boosting sales of engine replacement parts and new equipment."

Using a tractor which the dealer has taken in for an overhaul, the Ethyl engineer-instructor then demonstrates the latest techniques in precision engine service. After stressing the importance of proper installa-

tion of the reconditioned parts, the engineer concludes the instruction session with a review of the latest accepted modern engine tune-up procedures.

Here, he discusses in detail the other factors which affect engine performance. Speaking of ignition timing, he cites the need for selecting spark plugs in the correct heat range. He emphasizes the need for proper carburetor adjustment to obtain the best performance and economy balance, and points out that the cooling system should be flushed and the air cleaner serviced in accordance with the manufacturer's recommendations.

Movie Booklet

The "You're the Doctor" sound movie, which supplements the Dealer Service Demonstrations, was prepared so that the precision maintenance story could be repeated before the widest possible mechanic audience. A 32-page pictorial service booklet is being distributed as a "takeaway" to those who attend the film showings.

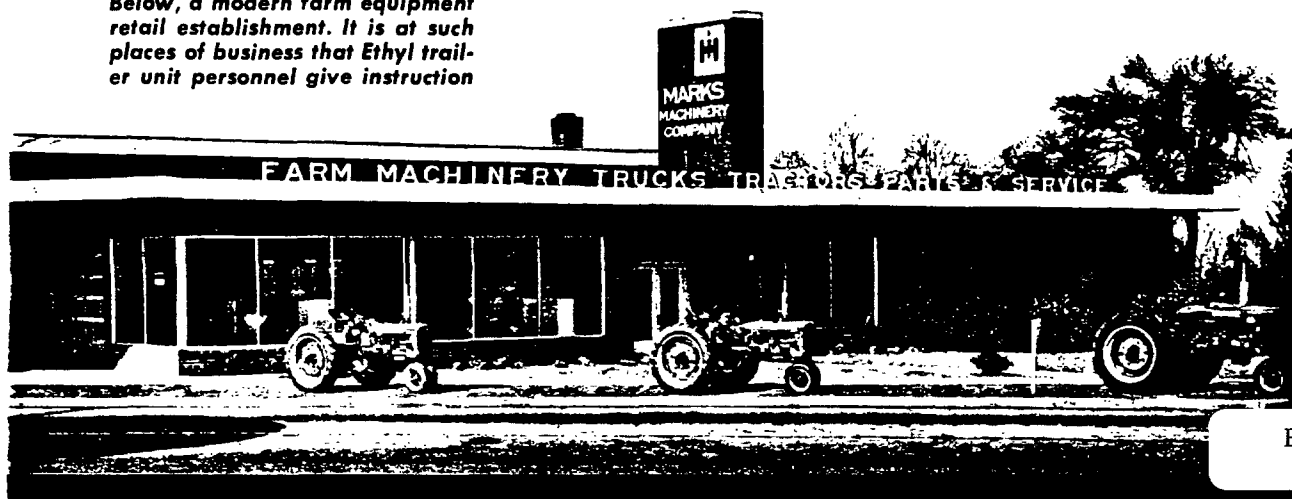
"You're the Doctor" has been reviewed by the farm machinery manufacturers and by the National Retail Farm Equipment Association. Through the affiliated associations of the NRFEA, the movie is being shown to small groups of tractor dealers and mechanics throughout the country.

The majority of these groups will

with branch service personnel of the various tractor manufacturers. The three trailers are now working through the Central states. Tractors are most numerous in the Midwest, and petroleum marketers and farm equipment manufacturers feel that it is in that region where the Ethyl program can render the greatest degree of service.

When the trailer unit arrives at the tractor dealer's place of business, its right side wall is swung open and a 16-foot section is raised and locked into position. This provides an unobstructed view of the demonstration for as many as 30 mechanics.

Below, a modern farm equipment retail establishment. It is at such places of business that Ethyl trailer unit personnel give instruction



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Ethyl's special Spartan Aircraft trailers are completely outfitted with modern engine service and tune-up equipment

have had an opportunity to see the film by the end of May. It is also being made available to farm equipment manufacturers so that they can use it in their own dealer service programs.

In the pre-tractor era, horses and mules which received the best of care and feed repaid the farmer by doing more work per day. Now, al-

though gasoline has replaced oats, a parallel "service requirement" still exists. For, now and always, the key to successful power farming is reliable equipment, operating at peak efficiency.

Simultaneously with the volume production of high compression tractor engines which Ethyl helped to promote in the 1930's, manufac-

turers began mounting their field vehicles on rubber tires. These two improvements did much toward raising our agricultural output to the highest levels in history.

Since 1930, the nation's tractor population has quadrupled to nearly four million, and 95% of the tractors now sold in the United States are equipped with high compression gasoline engines.

Constant Interest

Because of its role in furthering the mechanization of agriculture, and its interest in assuring farmers a maximum return on their equipment and fuel investments, Ethyl Corporation has constantly stressed the importance and value of proper engine service.

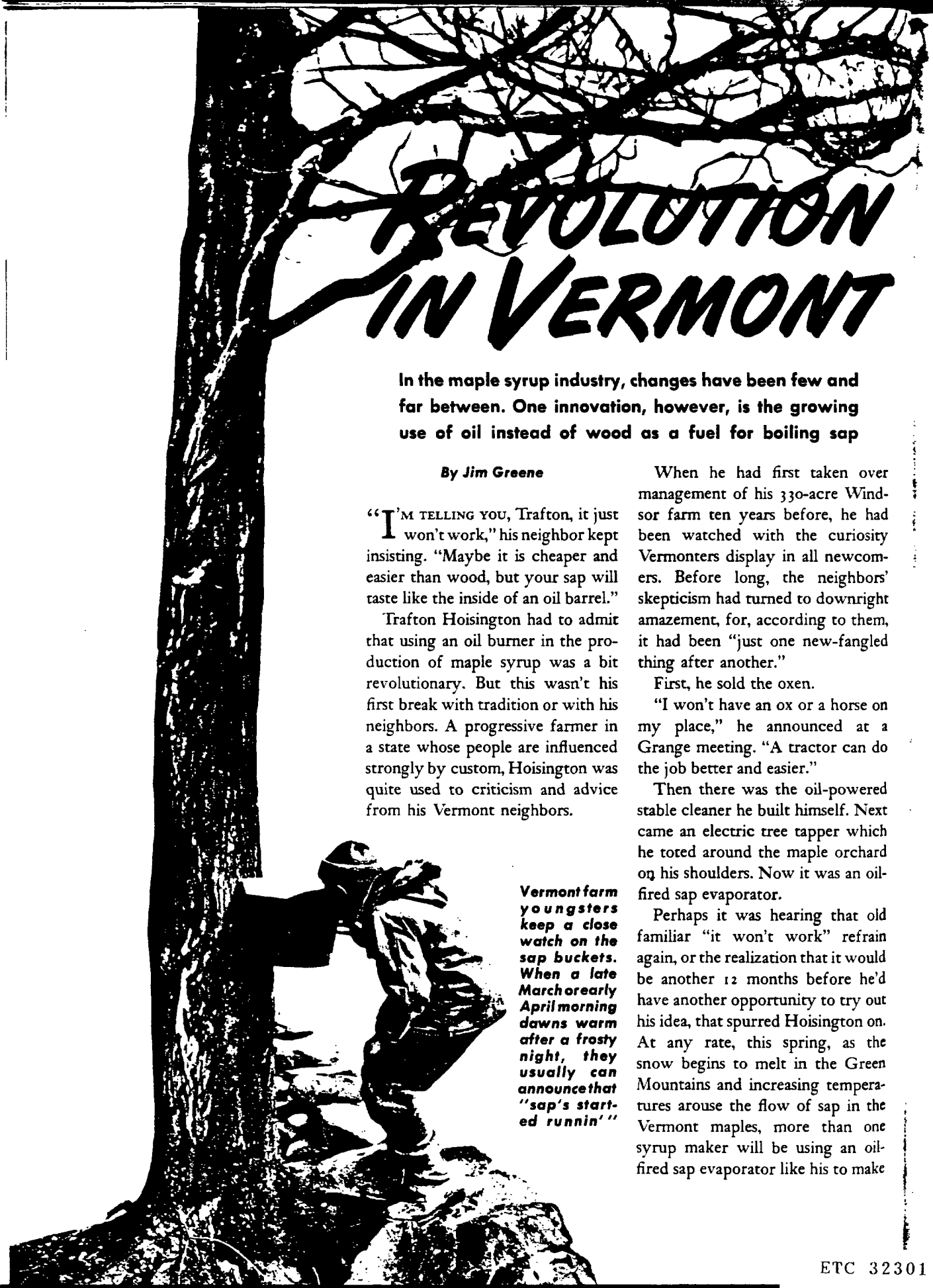
While emphasis has sometimes been shifted to accomplish intermediate objectives, certain basic work has been carried on through the years. An example of this is the liaison mission which Ethyl's Agricultural section has performed between the farm equipment and petroleum industries.

Augmenting these efforts, Ethyl agricultural engineers have worked in the field with petroleum marketers and farm machinery service personnel to foster the growth of power farming. Although these activities have generally supported the company's long-range efforts on the farm front, the encouragement of high standards of engine service — precision workmanship in the tractor dealer's shop — remains the chief objective. Ethyl believes that its latest educational program will help further that aim.



Above, Ethyl engineer Charles Welch shows a Michigan tractor mechanic how to employ a device for determining the valve spring load. Right, use of an electric grinder in proper valve seat reconditioning is demonstrated by Grant Scott, another Ethyl engineer





REVOLUTION IN VERMONT

In the maple syrup industry, changes have been few and far between. One innovation, however, is the growing use of oil instead of wood as a fuel for boiling sap

By Jim Greene

"I'M TELLING YOU, Trafton, it just won't work," his neighbor kept insisting. "Maybe it is cheaper and easier than wood, but your sap will taste like the inside of an oil barrel."

Trafton Hoisington had to admit that using an oil burner in the production of maple syrup was a bit revolutionary. But this wasn't his first break with tradition or with his neighbors. A progressive farmer in a state whose people are influenced strongly by custom, Hoisington was quite used to criticism and advice from his Vermont neighbors.

Vermont farm youngsters keep a close watch on the sap buckets. When a late March or early April morning dawns warm after a frosty night, they usually can announce that "sap's started runnin'."

When he had first taken over management of his 330-acre Windsor farm ten years before, he had been watched with the curiosity Vermonters display in all newcomers. Before long, the neighbors' skepticism had turned to downright amazement, for, according to them, it had been "just one new-fangled thing after another."

First, he sold the oxen.

"I won't have an ox or a horse on my place," he announced at a Grange meeting. "A tractor can do the job better and easier."

Then there was the oil-powered stable cleaner he built himself. Next came an electric tree tapper which he toted around the maple orchard on his shoulders. Now it was an oil-fired sap evaporator.

Perhaps it was hearing that old familiar "it won't work" refrain again, or the realization that it would be another 12 months before he'd have another opportunity to try out his idea, that spurred Hoisington on. At any rate, this spring, as the snow begins to melt in the Green Mountains and increasing temperatures arouse the flow of sap in the Vermont maples, more than one syrup maker will be using an oil-fired sap evaporator like his to make

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syrup. And their syrup won't "taste like the inside of an oil barrel." It'll be as sweet and clear and pure as Vermont syrup has been for centuries — if not even better.

When he pressed the button that started his first oil burner fire under a batch of sap, Hoisington had no way of knowing that at the same

found that it enabled them to produce higher quality maple syrup at considerably less cost.

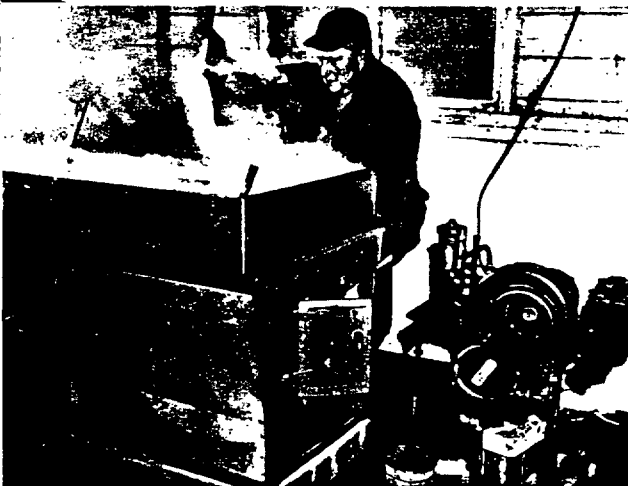
To the uninitiated millions who encounter maple syrup only at the breakfast table and who connect it more with wheat cakes than trees, a different method of boiling sap may mean little or nothing. But to Ver-

credit to Moqua for making the first maple syrup. The story intimates that the squaw was a lazy house-keeper who one day cooked some moose meat in "water" from a tree near the family wigwam rather than walk several hundred feet to a brook. When her spouse returned from a hard day of hunting in the hills, he found that she had let most of the "water" cook away and was forced to serve meat covered with a thick sticky syrup.

In any case, so the legend goes, the story of the candied moose meat



Right, Trafton Hoisington, one of the first maple syrup producers to use oil heat under an evaporator, stirs some boiling sap. He claims that it produces better syrup at less cost than the wood fire method illustrated above



time, in other parts of the state, other attempts were being made to modernize the age-old maple syrup industry. As far as he was concerned, his was a simple attempt to make his own operation more efficient and less expensive — and at a small investment. He'd bought his burner secondhand from the minister of one of the Windsor churches for just \$45.

Soon, the young Windsor farmer was one of four or five progressive producers using oil instead of hard wood to fire sap evaporators. Last year, more and more syrup makers discovered the value of an oil burner in the evaporation operation. They

monsters, where the genesis of syrup making is part of the state's legends and folklore, the increasing use of oil burners has been termed nothing short of revolutionary.

As far back as the hardiest old-timers can remember there have been only one or two innovations in syrup making and these were relatively unimportant. In fact, there have been few changes since the legendary Indian hunter, Woksis, and his squaw, Moqua, first stumbled on the golden brown sweetening centuries ago.

The discovery fable, retold each year at hundreds of New England "sugaring off" parties, gives little

spread among the Indians and the making of maple syrup became a common practice.

History does not record a more factual account of the discovery of maple syrup. The Indians are known to have made it prior to 1673 and it was from them that early white settlers obtained it — the only form of sweetening then readily available.

The Indian method of tapping trees was to make a diagonal incision low on the trunk and insert a concave piece of birch bark through which the sap could run into a trough. The Indians boiled the sap by continually dropping hot stones into vessels containing the liquid.



Early Vermonters, like the Indians, gashed the trees with their axes, but substituted wooden spiles for bark spouts and used iron kettles for the boiling process. As time went on, the kettles were replaced by sheet iron pans set on stone fireplaces in the orchards.

These iron pans were the fore-



Freshly made syrup, hot from the evaporator, on clean cold snow, makes the delicious confection that is the center of attraction at the hundreds of "sugaring off" parties held at syrup-making time

runners of today's direct wood-fired, steam-heated, and oil-burning evaporators which are now sheltered in sugar houses, and are improvements on models used years ago. However, it still takes about 40 gallons of sap to make one gallon of syrup and the processing principle is the same — heating sap so that the water content will evaporate and leave a gradually thicker and thicker syrup.

It's because they have speeded up the evaporation process that today's oil burner devotees claim they can turn out the Green Mountain product better and cheaper. According to Farmer Hoisington and others, they make an appreciable saving in both time and money.

They maintain that an oil burner can bring cold sap to a boil in eight minutes and can double wood fire production figures of one gallon of syrup an hour. "It's the constant flame and heat that does it," they say. "All we have to do is press a button and the evaporator immediately goes into operation."

Production under the old method is slower and requires the full-time services of an extra man. He is

Buckets are emptied regularly to prevent them from overflowing and wasting any of the valuable sap, for, despite modern methods, it still takes forty gallons of sap to make one gallon of maple syrup

needed to gather and maintain an adequate wood supply and stoke the fire, the temperature of which is uneven at best. The oil burner simply uses an average of five or six gallons of No. 2 oil an hour while the evaporator is operating. All in all, it produces syrup with far less expense and effort.

The replacement of wood fires by oil burners isn't the only progress Vermonters have made recently in producing one of America's oldest and most neglected native crops. Encouraged by the Vermont Maple Sugar Makers' Association and federal and state agricultural agencies, sugar makers are now looking forward to the possibility of starting new orchards of high sugar-yielding maple trees.

This departure from the lack of



A Vermont county forester analyzes a maple sap sample in his refractometer. If the sap has a low sugar content, the tree from which it was taken may be culled to make room for a "sweeter" one

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conservation methods of yesteryear promises to enhance property values and contribute greatly to the state's heritage. Definitely a step in the right direction, it is a long range proposition. Most maple trees will continue to produce after their two-hundredth year, but they aren't suitable for tapping in the first place until they're at least 40 years old. Thus, only the younger farmers will live to tap the trees now being planted, but all planters are helping to assure that there will be a plentiful supply of Vermont maple syrup for a long time to come.

Sugar content of sap is being checked, too. This by means of re-

fractometer tests. A small, innocuous gadget that might pass for a miniature telescope, the refractometer is used by foresters to test for sweetness the sap of even the smallest saplings. As a result, orchard owners, getting the drop on nature, are able to cull maples that have little sugar content in their sap before such trees have become full grown.

Foresters can't estimate and farmers hesitate to guess how many millions of sweet maples, potentially high-powered sugar producers, have been cut down for lumber or firewood during the last couple of centuries. Both groups agree, however, that the refractometer will save an

untold number of "sweet" trees and millions of gallons of syrup.

Many Vermonters are showing keen interest in the recent changes in the maple syrup industry. Once they questioned whether any good would come of such changes, but progressive men like Trafton Hoisington have shown them how advantageous "new-fangled" things like oil-fired sap evaporators can be. Now they're becoming less cautious about accepting new methods.

"Doesn't hurt to keep your eye on a neighbor who wants to make a darn fool of himself," they say. "Never know when he might stumble on something good."

... BUT FEW ARE CHOSEN

Everyone aspires to a niche in the Hall of Fame. But no one need feel badly if he doesn't quite make it. Of all the great leaders that America has turned out in the many fields of endeavor, a mere 83 thus far have been so honored.

The Hall of Fame is a semi-circular granite colonnade that looks down on the northern limits of New York City from a hilltop position on the uptown campus of New York University. It was established in 1900 from a monetary grant by Mrs. Finley J. Shepard (Helen Gould), and was dedicated the following year, with 29 outstanding Americans honored. The simultaneous selection of so many notables to the Hall is a feat that will never be accomplished again. At the most, only seven men and women may now be chosen at any one time.

Fame, the poets tell us, is fleeting. This would seem to be true of more than one person whose bust you'll find in the Hall of Fame. No one has to be reminded why the likes of George Washington, Daniel Webster, John Paul Jones, James Whistler and Stephen Collins Foster have earned niches. But it might call for a little head-scratching to remember that Asa Gray won his place as a botanist, that James Kent was the jurist whose judgments "form the basis of American equity jurisprudence," or that Simon Newcomb was one of the great astronomers of the past century.

Any citizen of the United States may nominate a fellow-American for a place in the Hall of Fame. All that is required is the filing of a formal nomination with the Hall of Fame, which is administered by New York University. The only restrictions are that the person nominated must be a U. S. citizen who has been dead 25 years or more. Selections are made every five years by a College of Electors, composed of 100 or more prominent Americans from every state in the Union. Hall of Fame nominees must win a majority of the Electors' votes in order to gain a niche.



The Hall of Fame Colonnade

In the most recent five-year election last October, six outstanding Americans were voted to places in the Hall. They were former Presidents Theodore Roosevelt and Woodrow Wilson; Susan B. Anthony, the reformer; Alexander Graham Bell, inventor of the telephone; Josiah Willard Gibbs, the mathematical physicist; and William C. Gorgas, conqueror of yellow fever. Even so, it might be quite some time before the Hall of Fame visitor can see busts of most of these chosen few. Lacking funds for this purpose, the Hall must depend on individuals or associations to donate these. The Bell and Gorgas busts will be unveiled this May. The other busts have not yet been donated.

The open air colonnade contains only 100 niches, which means all will probably be assigned by 1965 or 1970. Officials are not worried by this prospect, however. They promise to find an appropriate spot for any and all named to the Hall of Fame after that time.



Lacrosse, one of the big games in Canada, originated among North American Indians. It is played by a few Eastern U. S. colleges

A WORLD OF SPORT

Athletic pastimes quite different from most American favorites claim the attention of sports lovers in foreign countries



Australian football, the most important winter game "Down Under," is characterized by fast, open play and high scoring



Left, cricket, one of the most popular sports in England, is played throughout the British Empire. Unlike baseball, with which it has been compared, there are 11 men on a team



Left, jai alai began in Spain's Basque country in the 17th century. The speed of the game, in which balls are thrown and caught with a cesta (basket), demands great skill and endurance

WITH NEWS of baseball training camps, basketball tournaments, and hockey playoffs currently filling the sports pages, few Americans realize that entirely different athletics claim the attention of both fans and participants in many foreign nations.

Games like Switzerland's hornussen, Scotland's curling, Japan's sumo, and the jai alai and bullfighting of Spanish-speaking lands have seldom been seen, and in some cases never heard of, by the average sports enthusiast in this country.

Reproduced on these pages are pictures of some of the favorite sports of a number of countries throughout the world.



Newsreel pictures invariably show group calisthenics being practiced in totalitarian countries. But many freedom-loving peoples, the Scandinavians in particular, are fond of this form of recreation

Hornussen spectators enjoyed some fun

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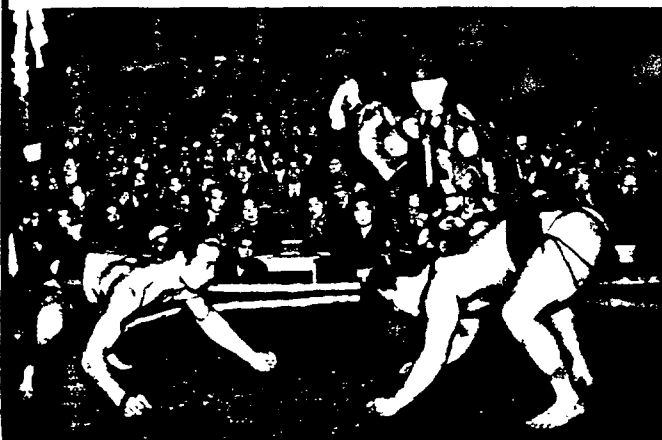
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Hornussen, which attracts huge crowds of spectators in Switzerland, is particularly enjoyed by Bernese peasants. It combines some features of golf, tennis, and baseball



Much of Japanese sumo wrestling is pure showmanship. Opponents may get in positions like those shown seven or eight times before the crowd's urging prompts them to jump at each other

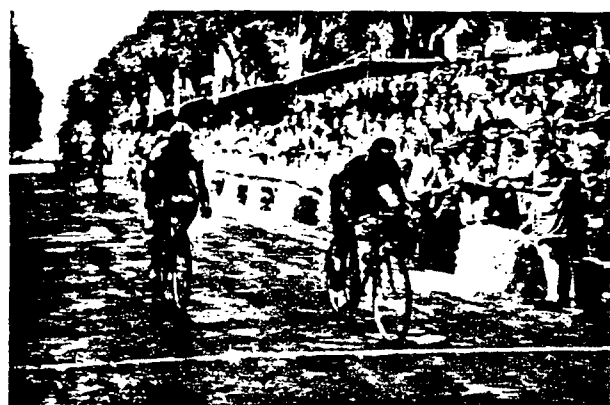
Below, curling, a game in which large rounded stones are propelled across ice towards a mark called the tee, is the national pastime of Scotland



Bullfighting is the most popular spectator sport in Spanish-speaking countries. The colorfully-costumed picadors and matadors have their fans just as do American athletic stars



Soccer is the most popular sport in several European countries. Crowds of well over 100,000 at the big games are not at all unusual



A capacity crowd of cheering Frenchmen watches bicycle riders cross the finish line at the end of a long road race. Next to soccer, bicycle racing is probably France's No. 1 sport

FIGHTING FUEL

In addition to powering our machines of war, gasoline is also an essential ingredient of the napalm fire bomb



TIME WAS when many people probably would have guessed that "napalm" was one of those crossword puzzle words meaning "a rare Malayan fruit tree" or something of the sort. Today, everybody knows that napalm — or, more specifically, the napalm fire bomb — is one of the most devastating and most effective weapons in our Korean campaign arsenal.

The current version of this aerial bomb is the latest entry in the field of petroleum warfare — the use of gasoline and oil to overcome an enemy. The full story of napalm's role in the Korean struggle will not be unfolded for some time yet. But, both officially and unofficially, it has been heralded as one of the significant developments that made the push to the Manchurian border possible, and that enabled the Allied armies to hold fast after the big Communist counteroffensive.

Everyone is mindful of petroleum's conventional role in warfare — to fuel our mighty bombers and other aircraft, and to propel tanks, trucks, jeeps, and many other pieces

of battle equipment. In this respect, it is impossible to fight a modern war without gasoline.

But the use of gasoline as an actual munition, or weapon, of war is something not familiar to all civilians.

Developed several years ago at the request of the military, the napalm bomb has proved invaluable in the current campaign. Aside from its effectiveness, one of the chief reasons for its widespread use in Korea is that the bomb can be hand-made at forward air bases or any other place where the necessary ingredients — the napalm thickening agent and gasoline — are available.

How It's Made

There's little about the bomb's construction or effectiveness that is secret. It's just about the simplest, least expensive missile in our repertoire. A layman's recipe for making such a bomb would go something like this: Take a barrel of Army all-purpose gasoline. While stirring the gasoline vigorously, slowly add from 6 to 13% of napalm, or gasoline

thickener, depending upon the consistency desired. Let stand for about 24 hours, until the entire mixture acquires a homogeneous appearance and becomes a sticky mass somewhat resembling raspberry jelly. Transfer the mixture to one jettisonable extra fuel tank, such as many of our military aircraft normally carry under their wings. The tank should be filled to within 10 or 15% of its capacity. Instead of the usual gasoline tank filler cap, attach a white phosphorus igniter.

When you've done that, you've got a napalm bomb, such as is being dropped by the thousands in Korea right now. The only confidential item is the exact formula for the napalm itself.

Since the first public disclosure of the napalm bomb's use in Korea, there have been frequent frontline reports of what havoc and devastation the missile has wrought.

You read such exploits as that of one Air Force jet pilot who skidded napalm bombs into a tunnel and saw the fire from the bombs reach the other end of the tunnel by the time

This dramatic close coordination carrying troops. A jet has just been an enemy

his rapid reports tell of ports tell of wrecked by hundreds destroyed or bombing in. Napalm, as well. There's the a band of Communist a strategic watched to an enemy's planes then enemy-held Communist

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This dramatic photo shows the close coordination of napalm-carrying planes and Allied troops. A jellied gasoline bomb has just been dropped to blast an enemy target on a hillside

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his rapid jet got there. Other reports tell of an entire train being wrecked by two fire bombs, and of hundreds of buildings being destroyed or damaged in a single bombing mission.

Napalm has become a psychological, as well as a physical, weapon. There's the case, for instance, of a band of Communists which, from a strategic hilltop position, had watched two fighter planes napalm an enemy convoy into oblivion. The planes then swooped toward the enemy-held hilltop, upon which the Communists put out a white flag.

Among our troops and in the press, the napalm missile goes under a variety of names. It's alternately, and accurately, termed fire bomb, oil bomb, and jellied gasoline.

Whatever name you apply to it, the napalm bomb is the scourge of Korea. Land-based Air Force and

carrier-based Navy and Marine fighter planes all carry them. The jellied gasoline, packaged in extra fuel tanks, is dropped from strafing level, which is low altitude. None is ever a dud. The fuse is such that it will detonate no matter how the bomb lands. Because the gasoline is jellied, it more or less rolls along the ground while burning, instead of creating an instantaneous blast such as gasoline which had not been thickened chemically would do.

Within seconds, the deadly fire bomb burns over a pear-shaped area not too much smaller than a football field. The heat of the flaming liquid is terrific, ranging anywhere from 1,500 to 3,000 degrees Fahrenheit.

Basically, the napalm bomb is not an anti-personnel weapon. Tanks, trains, motor convoys, and gun emplacements are its principal targets.

Less Accuracy Needed

Two factors are credited by the Department of Defense with making the napalm bomb more effective than rockets and other missiles where it is used. First, being jellied, the burning gasoline fastens itself to whatever it hits and sets concentrated fires that burn long after the fuel is expended. Second, less accuracy is required in dropping a napalm bomb than other types. It is possible to miss a tank or other target by up to 100 yards and still score a "kill." In the case of a near miss, the tank is set aflame either by the intense heat generated by the burning gasoline or through the rolling momentum given the flames by the bomb's drop from the plane. There are cases on record where two, and even three, enemy tanks in close column have been knocked out on one bombing run.

As magic as the name has become in recent months, napalm is not new. Nor, for that matter, is there

anything revolutionary about so-called incendiary warfare. The early Greeks and Persians used flaming oil, pitch, and asphalt effectively in both land and sea fighting.

With the advent of gunpowder, incendiary warfare, or the use of fire against an enemy, died out. Except for the development of magnesium type fire bombs, no notable advances were made in this type of warfare until World War II.

Just before America's formal entrance into the war against the Axis, the military felt a need for a missile that would be as effective as the magnesium bomb, but which would not require the scarce magnesium to make it burn. The task was turned over to the petroleum industry and other groups, and within three months they came up with the answer. Jellied gasoline.

Gasoline yields something like 8,000 more British thermal units per pound than magnesium. When jellied with what we now call napalm, it became a munition that would maintain an intense flame for several



Waiting to be filled with jellied gasoline mixture at a U. S. airbase in Korea, the napalm drop tanks look like oversize pickles. A smaller, but more effective, tank has just been developed



The photos on this page show a Russian-made tank getting the napalm treatment. Above, the bomb hits



Within seconds, the flames have rolled across the ground and completely engulfed the immobile tank



Smoke darkens the area as the jellied gasoline flames eat away at the tank's combustible parts

Taken several minutes after the bombing, this photo shows the tank a smoldering mass



minutes, all the while sticking to the target. Before the war was over, some 37,000 napalm bombs were dropped, mostly in the Pacific theater. These fire bombs were used in raids against Tokyo and did more total damage there than the atom bomb created in Hiroshima.

Used in Flame-Throwers

Jellied gasoline also was adopted for use in American flame-throwing equipment. Flame-throwers had been employed in World War I, and those models in use at Pearl Harbor time still had the limitations of their predecessors. They would project a flaming mixture of gasoline and fuel oil a distance of 20 yards or less, but approximately 90% of the fuel burned en route to the target. Also, there was the constant danger that a sudden gust of wind might blow the large billow of flame back.

The use of jellied gasoline overcame these disadvantages, and gave the Allied soldier a suitable weapon for silencing enemy strongpoints and for flushing out a wily foe. The new flame-thrower was used at distances up to 50 yards and spent only about 30, not 90, percent of its fuel in reaching the target.

After countless experiments with such gasoline thickening agents as crepe rubber, other polymers, and aluminum soaps, the present gel was arrived at. Napalm is a mixture of aluminum naphthenate and the aluminum soaps of coconut fatty acids. The formula also calls for a goodly amount of oleic acid.

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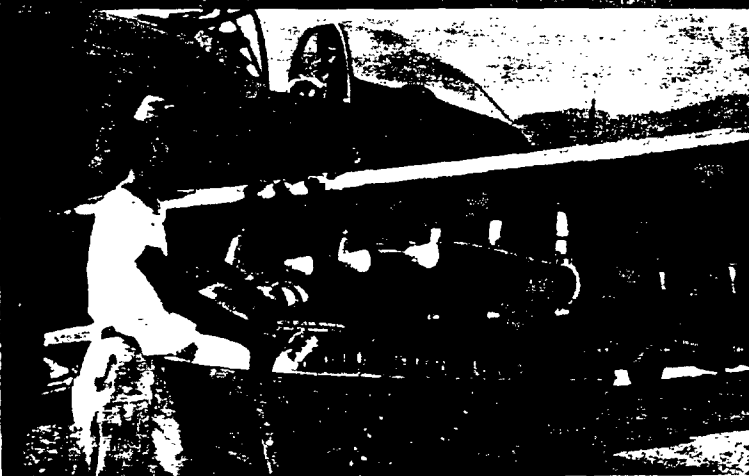
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Above, loading the napalm drop tank of a fighter plane. Right, jellied gasoline is a sticky substance somewhat resembling raspberry jelly



It is from the formula that the name "napalm" comes. According to one version, the "nap" part of the name is for naphthenic acid and the "palm" for the coconut fatty acids. Another version is that the first two letters of the word stand for Na, the chemical symbol for sodium. Napalm is prepared by co-precipitation from a mixture of the sodium soaps of the acids.

Manufactured napalm is an off-white granular powder. It is now the military's only standard thickener for the fuel used in flame-throwers and the fire bomb. While napalm itself cannot be made in the field or at war zone airstrips, the

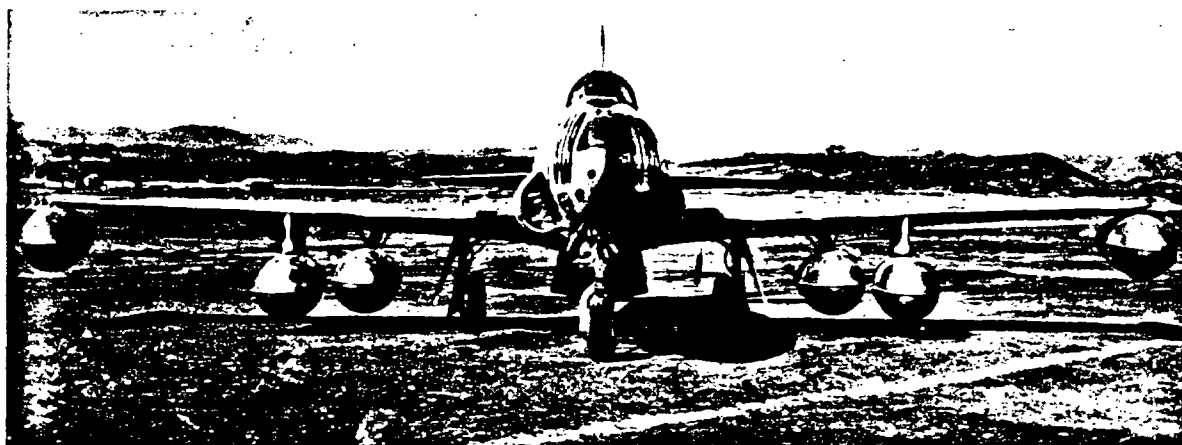
bomb can be — and often is. For that reason, no one can do more than roughly estimate how many have been dropped in Korea thus far. Any such estimate runs into the hundreds of thousands, as it must when you remember such feats as that one early in February when a flight of 38 fighter planes dropped 80,000 gallons of the jellied gasoline in a single operation.

To say the enemy fears the oil bomb is to put it mildly. Soon, the Chinese Communists and North Koreans will have to put up with a smaller, but even more effective, model of the 120-gallon job that has been giving them so much woe. A

new 90-gallon bomb casing has been developed. This will hold one-fourth less jellied gasoline than its bigger brother, but will scorch an even wider area than the present bomb after it hits the ground. This greater coverage will result from welding the new bomb casing vertically instead of horizontally. That seemingly slight change, says the military, will give the 90-gallon bombs a greater "spill" area.

In this age of swiftly-moving scientific developments, tomorrow's headlines may proclaim the development of a newer weapon than the jellied gasoline bomb. But as of now, gasoline, in its dual role as a fuel and as an incendiary material, ranks as one of the prime requirements of our war machine.

Some jet fighter planes now carry up to six napalm bombs under their wings. As can be seen, the bomb casings are nothing more than ordinary droppable fuel tanks



Accidentally yours

It's amazing, if not downright alarming, what a variety of out-of-the-ordinary mishaps can befall the innocent bystander

By Paul Jones*

WHAT SHOULDN'T HAPPEN to a dog shouldn't have happened either to a gentleman in Graham, Texas. But it did. The fella was just standing there minding his own business, when his dog sidled over to a gun that was handy, sniffed it, glanced contemptively at his master, and then pulled the trigger with his paw. Result: dog shoots man in the arm.

Consider, too, the plight of a certain war veteran in Beverly Hills, Calif. This chap, who had seen active duty in two war theaters without suffering a scratch, was out hunting one day when a companion shot down a goose. The bird struck the ex-GI in the chest, knocked him flat, and inflicted injuries that hospitalized him for 45 days.

These incidents sound silly — and they are. But they really happened, just as do hundreds of other freakish accidents every year. Many times, as in the instances above, the victims are innocent enough. But

there are plenty of cases where a little precaution and some safety first practice would have meant a happier ending.

A young Detroit policeman can tell you all about unhappy endings. Not long ago, he was out strolling with his girl friend on his night off, when what does his service gun do but accidentally let go and shoot off the seat of his pants.

Another member of the "hot seat" fraternity is a 13-year-old East Oakland, Calif., sandlot outfielder. Every ballplayer dreams of the day when he will be hot as a firecracker, but

few attain that status as literally as this young ballhawk. He chased a fly ball so vigorously that the friction of his pants ignited some matches in his pockets. The matches touched off a pocketful of firecrackers he had been hoarding. A less calm player might have blown up along with the firecrackers. But not this boy. He banged his way spectacularly across the outfield and caught the fly. The only damage was to his dignity.

Or take the case of another ballplayer, this one at the University of Cincinnati. When his nose was hit and broken by a grounder, he retired disconsolately to the bench. A little later a batter hit a ball so hard the bat broke. A piece of the

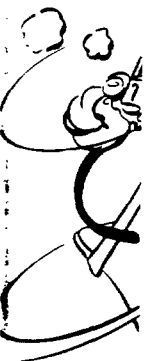
"Hot as a firecracker" is the only way to describe a young California baseball player. He put so much pep into chasing a fly ball that some matches in his pocket ignited and touched off a pocketful of firecrackers the youngster was totting around



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* Director of Public Information, National Safety Council.

bat struck the bench-ridden player smack on his aching nose. He gave up and went to the hospital — only to find that the latest blow had knocked his nose back in shape. He went home while he was ahead.

By now, everyone is well aware that more accidents happen in the home than anyplace else. You can avoid household disasters by keeping cellar steps uncluttered, putting matches out of the reach of little children, not using pennies to replace blown fuses, and so on. But sometimes people grow a little careless about such things, or are just plain forgetful.

Like a housewife in Cedar Rapids, Ia. She's quire used to hearing her neighbors say that her biscuits are

For instance, a nine-year-old boy in Bow, N. H., wound up to blow a hot cadenza on his trumpet and instead blew out four teeth. Inhaling prodigiously for a final triumphant blast to a stirring march, the young trumpeter swallowed a denture he had been wearing since an accident two years before.

Things happened just as unexpectedly for a motorcyclist as he was purring along a New England parkway. Startled a bit at the appearance of a deer on the edge of the highway, he swerved the motorcycle and the next thing he knew the deer was seated, but clumsily, on the handlebars. This, of course, just couldn't last and a minute later the motorcyclist, his motorcycle

be a record catch. And it would have been, except for one thing. They landed so many mackerel that the weight of the fish sank the boat.

Everybody knows how firemen slide down that polished pole whenever the fire bell sounds. One Houston, Texas, vamp thought he did, too. But he missed the pole and landed kerplunk on the first floor 20 feet below. Sure enough, the call was a false alarm.

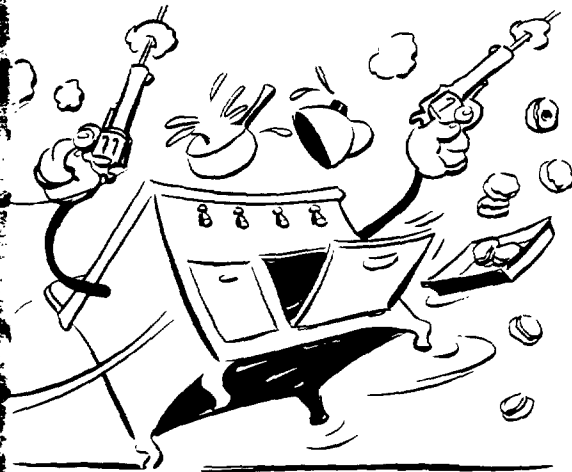
Fully aware that things are tough all over, the Sacramento, Calif., police nonetheless were quite surprised to get a report that an automobile had picked the pocket of a pedestrian and escaped with \$102. It seems the victim had walked too close to a moving car. His coat pocket — wallet and all — was ripped off by the auto and carried away.

Water Hazards

But men hold no monopoly as freak accident victims, as one Chicago miss vacationing at Lake Geneva, Wis., can attest. She was thrown into the water when the speedboat in which she was riding made a sudden turn. Apparently contrite, the boat swerved again, hit the struggling swimmer, tossed her 10 feet in the air, and then caught her neatly on its prow.

Water — only frozen this time — is the reason a St. Louis woman made the accident reports. She was standing on a sidewalk when an ice cube, which had slipped out of an upper-story window, hit her on the head and knocked her cold. She was treated at a hospital with — you guessed it — an ice pack!

At the other extreme is the woman who quite understandably was bewildered when two women and a man suddenly began beating her on the head as she walked along a downtown Philadelphia street. The woman was a little burned up at



Forgetfulness is the cause of many unnecessary accidents. An Iowa family, for instance, hid two revolvers in the kitchen stove upon leaving for a vacation. Things really popped when the wife, back from the trip, started to bake without removing the guns

always sure-fire. Nevertheless, she was startled when shots rang out from the hot oven into which she had just popped a pan of dough. Then she remembered that before leaving on a recent vacation the family had hidden two revolvers in the kitchen stove.

In the home or outside, freak accidents can and do hit people in the oddest places, both physically and geographically.

and the deer were sprawled along the highway. That was an odd mishap in itself, but the deer supplied the payoff when he picked himself up, glared balefully at the man, and, with quiet dignity, walked over and kicked him in the pants.

All of which makes a man wonder where and how to be safe. Two West Coast fishermen thought they had smooth sailing when they loaded their boat with what appeared to



When it comes to making things hot, a box of cookies in Connecticut takes the cake. It actually set a house on fire

this, but not so much as if they hadn't beat her. A cigarette, carelessly tossed from a nearby building, had set fire to her hair.

A Bridgeport, Conn., family undoubtedly practices all the safety rules, but how could it guess that a box of cookies would set fire to its home? What happened was that the box toppled from a kitchen shelf onto the handle of a water faucet, turning on the water. The cookies spilled out and clogged the drain. The sink overflowed and the water seeped through the floor. A short circuit resulted, and a damaging fire broke out.

He Was Collared

It isn't often that a man hurts himself while in the act of getting dressed, but a Virginia state official once got bruised enough that way to have to go to the hospital. It all happened while the gentleman was struggling into a dress shirt he was going to wear to an important dinner. He fought so fiercely with the collar that he had to have emergency treatment for the severe bruises inflicted on his fingers by the collar button.

Even so, that was nothing com-

pared to the incidents experienced by New York and Massachusetts men in the supposed sanctity of their homes.

The New Yorker, who obviously lived along the shore, heard a loud noise at the door. Answering it, he found that a sea-going tanker, complete with cargo and crew, had

dropped in on him. It had — quite obviously — been blown off its course by extremely high winds.

The Massachusetts resident made news because instead of waving a flag he got waved himself. Watching a holiday parade from a third-story window, he leaned out too far. On his way earthward, he caught on the top of a flagpole jutting from a window on the second floor. Old Glory dipped in deference to the man's weight, but he managed to hold on until he was pulled back to safety.

If this article has any moral, it is don't do what one Philadelphia lady did. When she heard a certain program coming in on her radio, she hurried across the room to turn up the volume. As she did, she tripped on a rug and fell, suffering minor injuries. What program did the lady fall for? Why, none other than a broadcast on home hazards sponsored by the National Safety Council.



A man watching a parade really let himself go — right out a third-story window — and ended up as a flagpole sitter



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Dashboard Telephones

Mobile telephone service has reached the point where you can call virtually any place on earth while riding in a vehicle along almost any important highway in this country

LOCKED IN HIS GARAGE when wind blew the door shut, a Pennsylvania man climbed into the front seat of his car, picked up a mobile telephone and called his home phone number. Within seconds, his wife was at the garage doors with keys to liberate her distressed spouse.

In another state, agents of a detective bureau — alerted by mobile telephone — achieved the ultimate in solving a robbery. They not only got to the scene in time to catch the thief, but were able to take a photograph of the crime actually being committed.

The engineers who developed mobile telephone service probably did not have such specific situations in mind, but the experiences of the locked-in car owner and the on-the-spot detectives point up the flexibility and varied usefulness of this system of communication that has come into use since World War II.

First introduced in 1946, mobile telephone service now has reached

the point where a person can call from almost any spot on earth and carry on a conversation with a properly-equipped mobile unit driving in virtually any major U. S. city or on a number of highways in the East, Middle West and Southwest. The service is not limited to automotive vehicles, either. On any number of crack trains, a passenger can place a call to, or receive one from, any city in the world. Mobile telephone service also is in extensive use on our inland waterways and in the big harbor areas. It even has been demonstrated from airplanes.

Won't Be Commonplace

There still are some gaps to be filled in, but the day is not far off when no matter where a traveler is, or what means of conveyance he is riding, he will be able to pick up a telephone and place or receive a call as quickly and as easily as he can in his own home or office.

This is not to say that telephones

soon will be commonplace in the average American's automobile. Far from it. The telephone industry cites two big factors that militate against any such widespread installation in private vehicles — lack of radio frequencies and the comparative high cost of mobile telephone equipment.

Thus far, the Federal Communications Commission has allotted only six channels in the 152-162 megacycle range and seven in the 30-44 megacycle range for mobile telephones. There are few frequencies left to be assigned, and there is strong competition for these. If no further frequency allocations are made, mobile telephone service, although barely five years old, may already be nearing its peak.

The mobile telephone system has two main parts. First of all there is a 250-watt transmitter. Because high frequency waves have a limited range, the transmitter's antennas must be as high as practicable above buildings and other obstructions. Like their glamorous cousins that work for television, the waves employed by mobile telephone skid off and do not follow the curvature of the earth, thus setting the communication limit at 25-30 miles. Associated with the main transmitter are

one or more auxiliary receiving stations. These are spotted at strategic locations within the main transmitter's area, to pick up signals from the relatively low-powered transmitter which the bus, truck, or automobile carries.

The second part of the mobile telephone system is the mobile equipment itself. An FM radio transmitter of from 20- to 25-watt output and the receiver are generally installed in the trunk of an automobile or in any suitable place on the truck, bus, boat or train. The antenna, a single one for both sending and receiving, is placed on the outside of the vehicle, as high as possible.

There is nothing complicated about placing a call to or from a mobile phone. Anyone calling an equipped vehicle merely asks the regular long distance telephone operator for the mobile service operator and gives the latter the telephone number of the vehicle being called. The operator reaches the mobile unit by radio, dialing the number in the usual way. The radio

signal simultaneously flashes a light and rings a bell in the vehicle, and the conversation can begin once the person in the vehicle picks up his phone set and starts talking. His voice travels by radio to the nearest land station, and thence by regular telephone wire to the caller.

If the call is unanswered, because the driver happens to be away from his vehicle at the time, the light remains on to indicate that the number was signaled during his absence. Upon noticing the light, the driver signals the mobile service operator, who rings back the party who originally placed the call.

Calls Placed Easily

In placing a call from a mobile unit, the user simply presses a button on the telephone handset itself. This switches the set from receiving to transmitting. He then gives the mobile service operator the number he wants and waits for the call to go through.

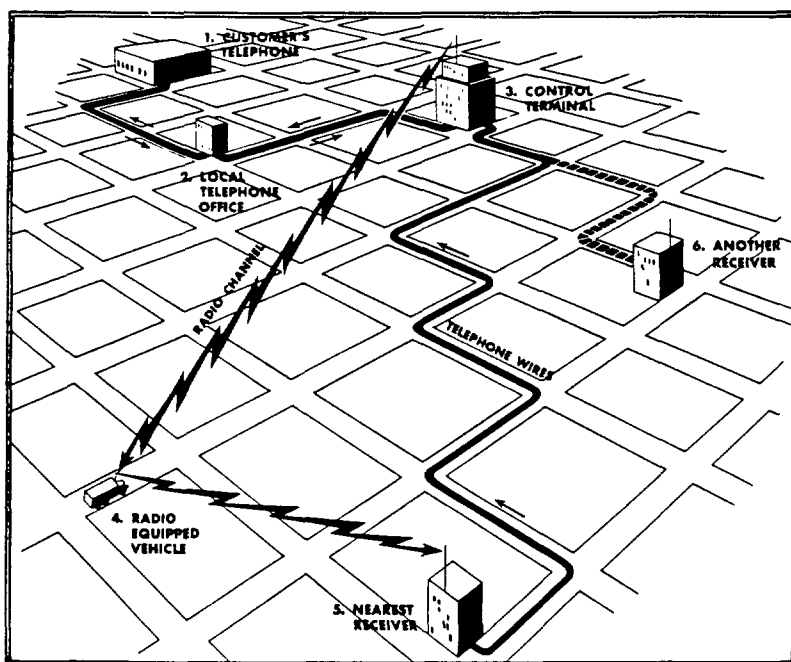
In the interest of highway safety, mobile phone subscribers are urged

to stop and park whenever they place or receive a call. If the call is made in a "dead spot" or out of range, it sometimes is necessary to drive ahead for a short distance. Other times, the condition can be remedied merely by turning the vehicle around and facing it in the opposite direction.

Cost, the second major factor given as limiting the use of mobile telephone service in private cars, varies according to type of service, number of calls, and other items. Two general types of service are available. One permits calls between two equipped vehicles or between an equipped vehicle and any regular telephone. The other type is a one-way signaling service, to notify the driver that he should comply with some pre-arranged instruction, such as "call the office from a nearby telephone after you get this signal."

Many police departments, trucking firms, taxicab companies and other commercial enterprises have their own mobile telephone transmitters and other equipment. In fact, the bulk of the equipment in use today belongs to such users. Bell telephone companies rent out the remainder, just as they do home and office telephones. Generally, two-way mobile telephone service costs renters \$15 a month equipment rental fee, plus a monthly service charge of \$7 which includes 15 to 20 local service messages. The installation charge usually is \$25.

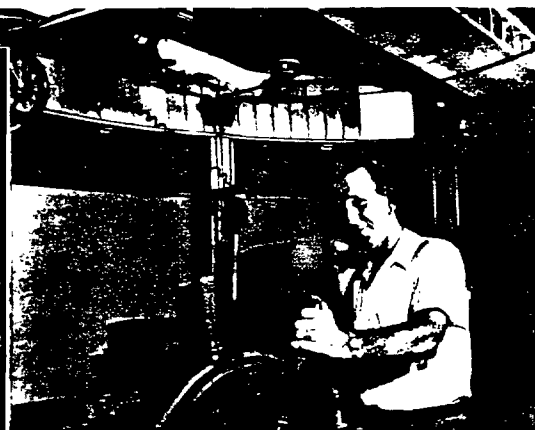
Left, the area covered in this diagrammatic explanation of a mobile telephone system's operation is actually 25 to 30 miles. A call originating at a conventional telephone goes to a control terminal on regular wires and is then radioed to an equipped vehicle. The voice of the person in the vehicle goes by radio to the nearest land station and thence by regular telephone wire to the caller



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Specially trained mobile telephone service switchboard operators handle calls between trains, ships, and automotive vehicles and regular wire telephones in almost any part of the world

Installation and rental charges for one-way signaling equipment are half that for two-way equipment, and a minimum monthly message charge which includes 27 to 40 signaling calls is \$5. Thus, a motorist employing one-way service would pay at least \$12.50 per month, while the minimum for two-way service would be \$22 monthly. Where a customer has more than one mobile unit equipped for certain types of service, the monthly service charge is less for the additional mobile unit.

The cost of three-minute messages in excess of the guarantee within a local mobile service area ranges from 30 to 40 cents, depending upon the location of the wire telephone being called. On long distance calls, the charge is the regular day person-to-person rate, with a minimum charge of 45 cents.

These charges may put mobile

telephone service in the "luxury" class for individual motorists. But to commercial firms, trucking and bus companies, fuel oil distributors, doctors, and the like, the mobile telephone more than pays its own way in speeding up service and reducing backtracking and delays. The obvious advantage is that drivers can receive instructions and directions while en route, without having to return to their base or office, or, at best, stopping to "check in" via wire telephone.

Variety of Vehicles Equipped

At the end of 1950, there were more than 9,000 vehicles of all descriptions equipped for the service. The requirements of some concerns are such that a private mobile system best meets their needs. The telephone companies will provide the equipment for such systems and install and maintain them for a monthly charge. As of the end of 1950, the telephone companies had under contract approximately 5,000 mobile telephones on a private system basis.

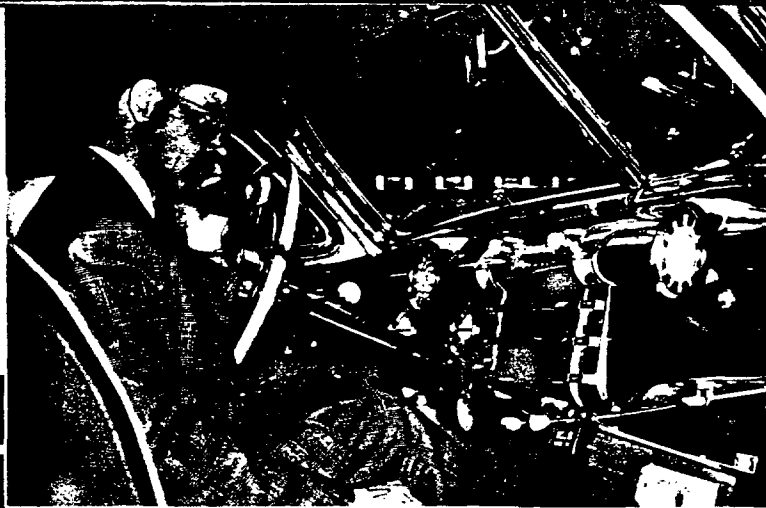
Behind the hundreds of thousands of calls made each month to and from mobile telephones lie stories of saved lives and improved business efficiency.

A doctor tells how, via mobile telephone, he was directed to the home of one of his patients, a pregnant housewife. The woman required an emergency appendectomy. "Had I not received the call on my car telephone," the doctor related, "I would have delayed my visit to this patient until after my office hours. Consequently, two lives, the woman's and the baby's, might not have been saved."

A utility company office calls one of its service trucks whose men are repairing storm damage to wires in a rural area, and directs them to fix a break in the lines a half-mile down the road. In former days, the repairmen would have returned to their base, only to start out again for the same vicinity.

To those trucking and bus lines which use it, mobile telephone service is proving to be invaluable in speeding up shipments and maintain-

Right, in all automobile installations, handsets are within easy reach of the driver, but in the interest of safety, subscribers are urged to stop their vehicle when receiving or making calls. Below, in passenger cars, the FM radio sending and receiving equipment usually is installed in the trunk



ing time schedules. Phone-equipped ambulances are a boon in emergency situations. In cases where minutes count, an attendant can call ahead to the hospital, so that everything will be in readiness to treat the patient as soon as the ambulance arrives. Reporters covering news stories, particularly in remote sections of their circulation area, employ the mobile telephone to call back on-the-spot dispatches to their city desks. The list of subscribers to

the service goes on and on, and is an imposing one.

Still, some five years ago, mobile telephone service was just a dream yet to be realized. The first commercial installation of such phones was made in St. Louis on June 17, 1946. Once that happened, the service literally took wings. A month later, the first telephone call from a moving automobile in the U. S. to a point overseas, from St. Louis to Honolulu, was completed. Then, the

following January, came one of the most important milestones of all — the opening of the first highway mobile telephone service system.

At the beginning, mobile service was generally available only in urban areas. The first highway system put into operation was the 300-mile stretch between Chicago and St. Louis early in 1947. Other highway systems, such as New York to Buffalo, Boston to Washington, Cleveland to Cincinnati, soon began to open up. Now, mobile telephone service is available in most major cities and along thousands of miles of main highways in almost every section of the country.

Parking Lot Problem

In querying subscribers on their attitude toward mobile telephones, the telephone industry frankly admits that it came upon one person who viewed the service with some misgivings. He was a parking lot attendant, and was looking ahead to the day when many automobiles might have mobile communication. "First thing you know," he protested, "I'll be expected to run all over the lot answering car telephones all day."

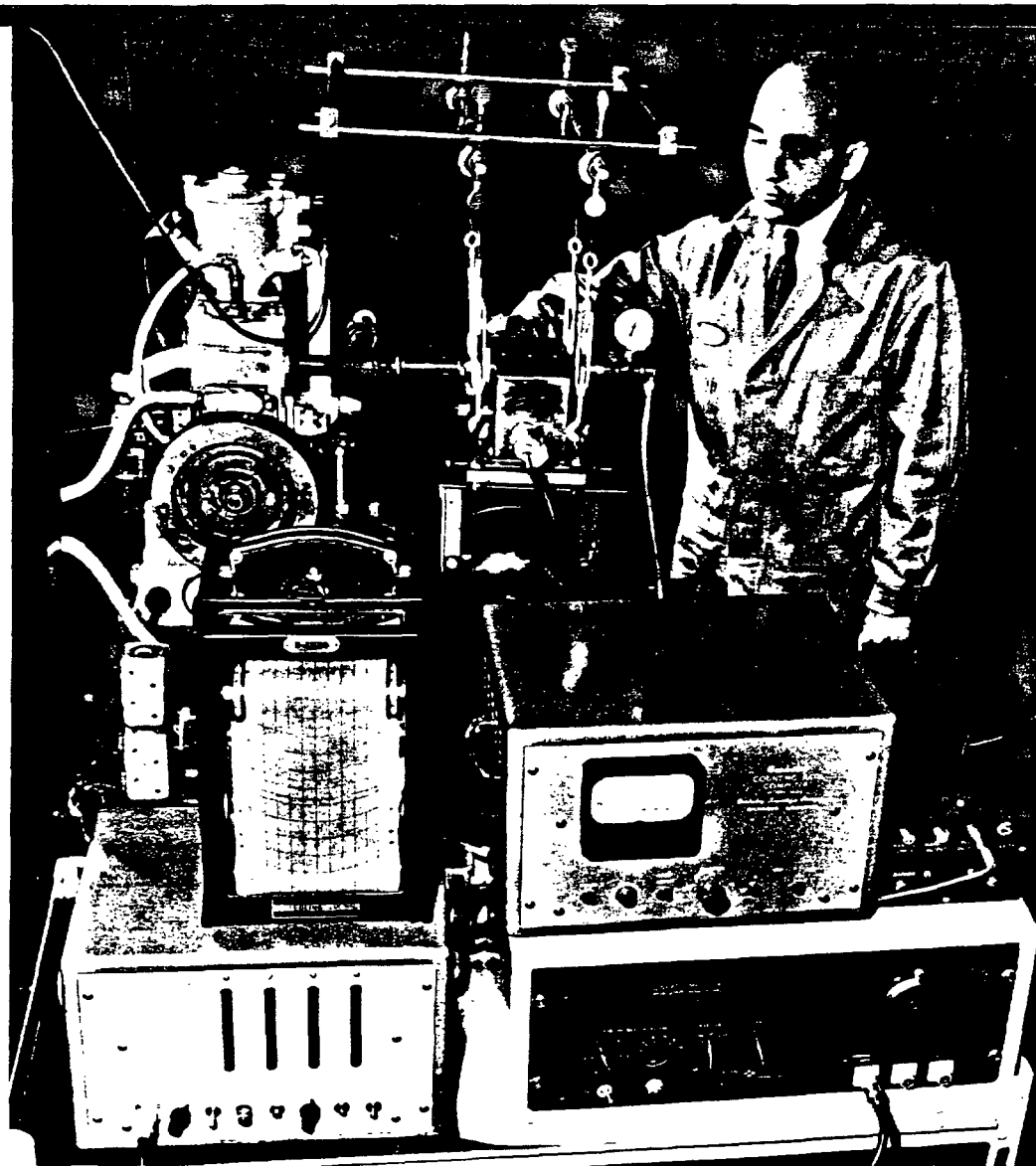
It will probably never reach that point. But no one can say for sure. After all, mobile telephone service — in highway vehicles, boats, trains, and aircraft — is young yet.

OUR COVER: The snow-capped peak of Washington's Mount Adams, photographed from the Mount Hood Loop highway. Kodachrome by Ray Atkeson from A. Devaney, Inc. **OUR PICTURES:** Pages 6, 7, and 8 (bottom right), Aubrey P. Janion; page 8 (top and bottom left), Frederic Lewis; page 9, A. F. Sozio, courtesy Hall of Fame, New York University; pages 10 and 11, Black Star, Wide World, French Embassy (Press and Information Division), Australian News and Information Bureau, Swiss National Tourist Office, and Trans World Airline; pages 12, 13, 14, and 15 (top), official Air Force and Department of Defense photos; page 15 (bottom), Acme; pages 19, 20, 21, and 22, New York Telephone Company and American Telephone and Telegraph Company; page 21 (bottom left), courtesy Consumers Power Company.

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ELECTRONIC PARTICLE COUNTER

If any one word can be used to describe the new set of equipment pictured above, it is "sensitive." Collectively known as an electronic particle counter, these instruments can detect and record the presence in exhaust gas of solid particles as small as two- or three-thousandths of an inch in diameter. The equipment is now being used in combustion research studies at the Ethyl Corporation Research Laboratories.

Chief use of the particle counter is in studying engine scavenging processes. It is believed that information obtained with it will help establish relationships between chemical scavenging (removal of combustion by-products by fuel additives) and physical or mechanical scavenging (an engine "cleaning itself"). The particle counter will also be employed in evaluating potentially useful fuel additives and in studying the effect of varying concentrations of scavenging materials.

Briefly, the equipment works like this: A portion of the exhaust gas from the engine (left rear) is drawn off through a small tube and sucked through a glass jet by a vacuum pump. As the gas rushes through the jet and into a small brass chamber, it is traveling at the speed of sound and any

solid particles in it accumulate a small electrostatic charge.

Thus charged, the particles set up electronic pulses as they strike a copper wire in the chamber. These pulses are transmitted by a specially shielded cable to vibration-free amplifying and high-speed counting instruments. A pre-amplifier (suspended by wires) multiplies the voltage by 20, and the main amplifier then multiplies it by 10,000. Pulses with an original charge of 1/10,000 of a volt thus emerge with one of 20 volts.

From the main amplifier (lower right), the pulses travel to the "discriminator," where they are sorted. Research personnel, in operating the equipment, can set the discriminator so that it rejects all pulses generated by particles smaller than a given diameter. The "chosen" pulses then go to the "scaler," where small indicator lights flash as it counts and registers them in units, tens, hundreds and thousands.

Finally, a rate computer takes the pulse count from the scaler and converts it to "pulses per minute." This instrument can compute at rates as high as 200,000 pulses per minute. Connected to the rate computer is a continuous pen recorder which provides a record of each test run.



There's a big difference between a

FOX... and a... PHLOX

- and there is a powerful difference, too,
between gasoline and "Ethyl" gasoline!



"Ethyl" gasoline is *high octane* gasoline. That's why it brings out the top power of your engine - makes a difference that you can feel on hills, on the open road, and when you need quick power for passing or acceleration.

When you see the familiar yellow-and-black "Ethyl" emblem on a pump, you know you are getting this better gasoline. "Ethyl" antiknock fluid is the famous ingredient that steps up power and performance.

ETHYL CORPORATION, 100 Park Avenue, New York 17, N. Y.

Other products sold under the "Ethyl" trade-mark, salt cake... ethylene dichloride... sodium (metallic) chloride (liquid)... oil soluble dye... benzene hexachloride (technical)



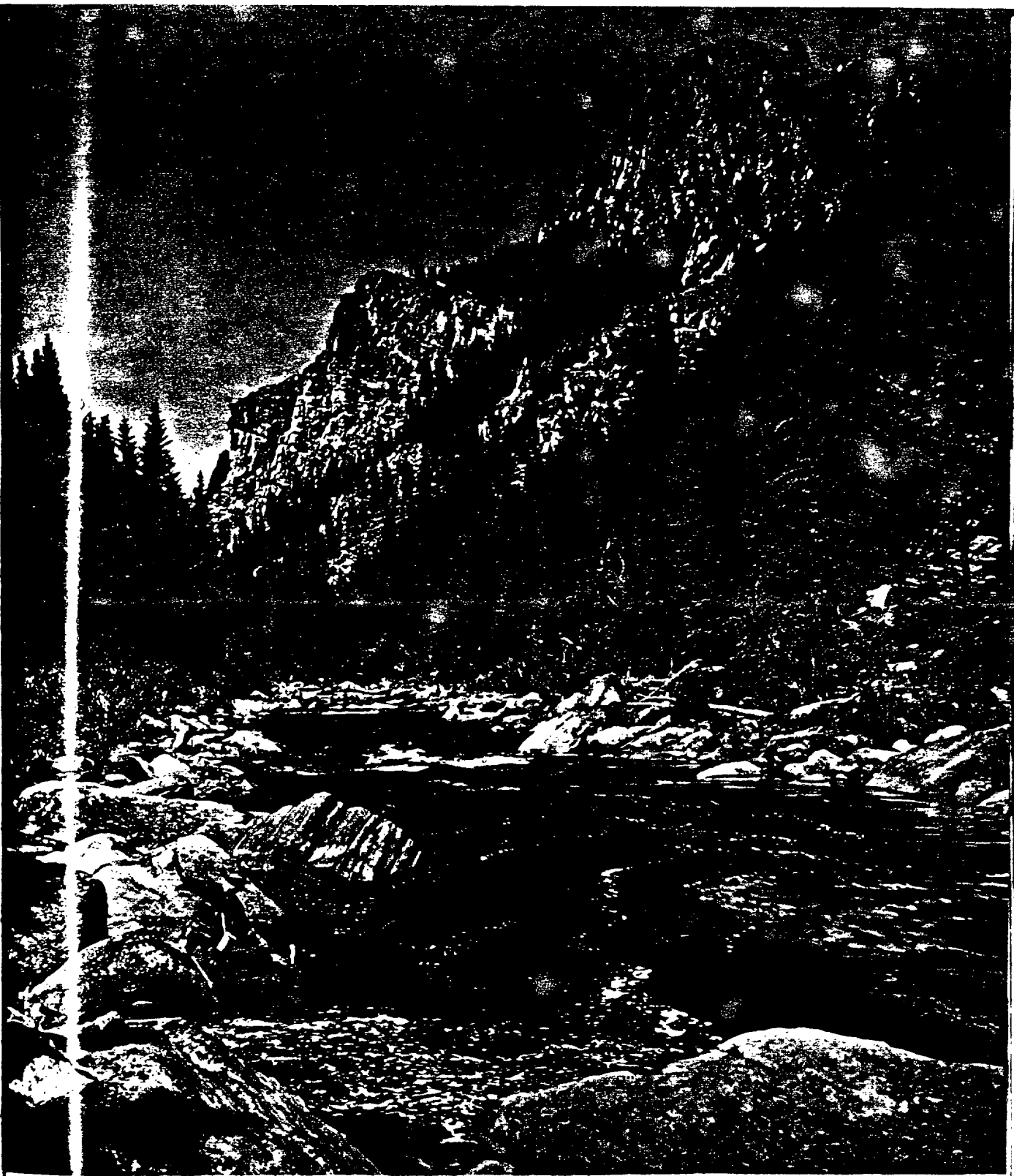
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ETHYL NEWS

APRIL ★ 1951

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IN THE

ETHYL NEWS

APRIL 1951

Merritt Collins has been named Manager of Marketing Analysis, a position which was created recently when a new plan for decentralized organization of Ethyl Corporation's sales department went into effect.

A veteran of almost 23 years with Ethyl, Mr. Collins joined the company immediately upon graduation from the University of Nebraska in 1928. He holds bachelor's degrees in both electrical and mechanical engineering.

Mr. Collins' first assignment with Ethyl was as manager of the gasoline testing laboratory in Omaha. From 1930 to 1938, he held a similar post at the North Kansas City laboratory, and from 1938 to 1941 was manager of the gasoline testing laboratory in San Bernardino. In the latter year, he transferred to Yonkers to be assistant manager of the company's entire gasoline testing division, a position he continued to fill until his recent selection as head of marketing analysis.

Mr. Collins was born at Ord, Nebraska, but attended high school and college in Idaho before taking up his studies at the University of Nebraska. He has been active in civic affairs in the cities in which he has been stationed, and is a member of the Society of Automotive Engineers and Sigma Xi and Sigma Tau, honorary science and engineering fraternities.

GEARED TO FIGHT

3

Mobility is the cornerstone of today's battle force. Here is a report on the great number and wide variety of petroleum-powered vehicles required to keep our Army in the fight.

THERE IS A DIFFERENCE

7

It is important that service station operators recognize that, because no two people are alike, a personal relationship must be established with each customer. That is the message of a new Ethyl Corporation film, produced for use by the oil industry.

THE FISH AND I

10

Other anglers can believe that fish don't bite during a thunderstorm, or that they relish only a certain kind of lure. But not the author. He labels such stories pure bunk, and explains why.

METERED PROGRESS

13

Along with the vehicles they feed and the gasoline they dispense, service station pumps have undergone many improvements through the years. This picture story depicts some of the milestones.

OCEAN FREE DELIVERY

16

The turbulent seas serve as postoffices for the many messages that are stuffed into bottles and set adrift. Among other things, waterborne bottles help keep our specialists posted on oceanic tides and currents.

FOUNTAIN OF YOUTH

19

To those who think the present young generation is interested only in the latest hit tunes and "hot rods," this article should prove reassuring. There is more than one budding Edison and Einstein in our teen-age set.

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, 100 Park Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compounds, 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;
Herbert A. Savage, secretary

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It still takes ground troops to win battles, military experts agree, but the foot soldier can't do it alone. He depends on a vast array of combat, supply, and maintenance vehicles

G^{to} geared Fight

WHEN THE DAILY newspapers banner the news that a U. S. infantry division has slugged ahead for new gains, most civilians think of an action involving a fighting unit of 18,000 men.

But men alone are not the whole story.

As in Napoleon's day, an army still travels on its stomach, figuratively speaking. But literally speaking, the modern army gets where it wants to go because of its preponderance of petroleum-powered vehicles and equipment. Although he daily sees tanks, trucks, and jeeps by the score, probably even the combat soldier doesn't realize just how many, and how many varied, pieces

of equipment it takes to keep today's army in the fight.

Each full-strength U. S. infantry division, for instance, has assigned to it about 2,600 self-propelled land vehicles of almost endless description. If you count the personnel of a division at 18,000, that figures out to one vehicle of some type for about every seven men. That vehicle may be one of the 149 tanks normally assigned to an infantry division. It may be a massive wrecker truck for towing disabled vehicles. Or maybe it is a field bath unit, which enables front-line soldiers to enjoy a real scrubbing down every

now and then. Name a job to be done, and undoubtedly there is a special vehicle to help do it.

What is true of the infantry division also holds for other types of units. Armored divisions, with their 373 tanks and 2,900 other self-propelled vehicles, are the most completely mechanized fighting groups, of course. But what of an airborne division? Most of us visualize this as made up almost exclusively of airplanes, gliders, and thousands of paratroopers. Yet, the airborne division's table of organization and equipment calls for some 2,278 ground vehicles, ranging from a

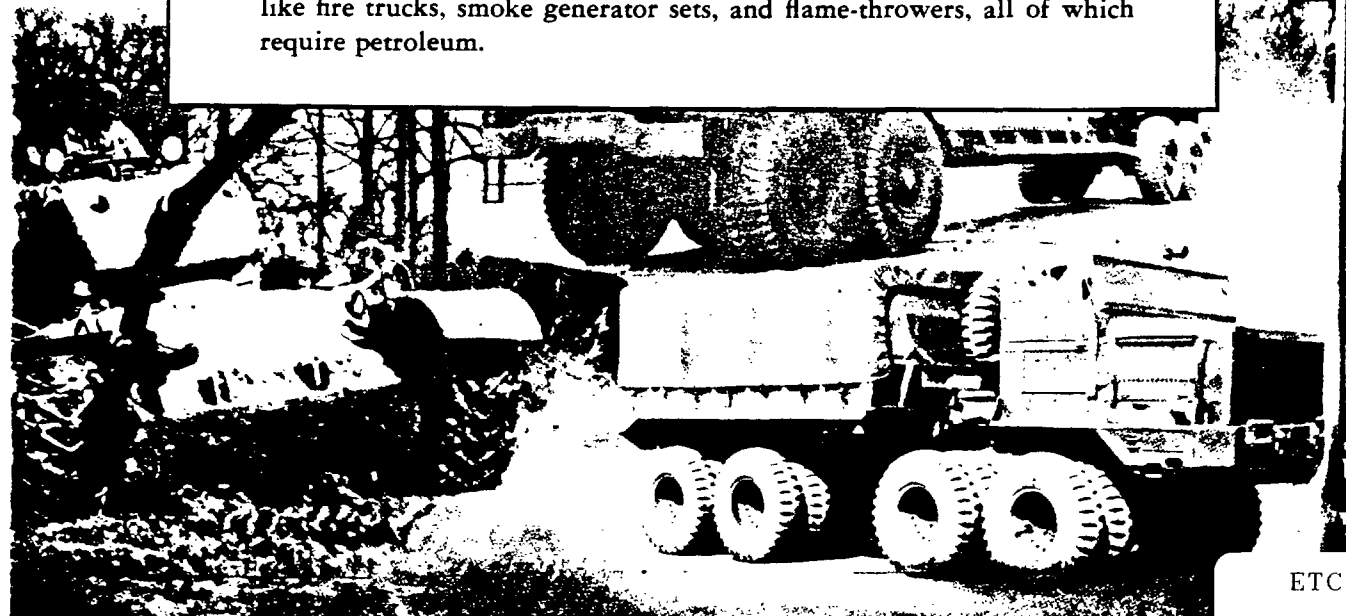




You get some idea of the tremendous role the automotive and petroleum industries play in modern warfare when you review the vehicular make-up of an Army division. Each full-strength infantry division has assigned to it:

1,020	¼-ton trucks (jeeps)	9	light tanks
744	2½-ton cargo trucks	6	motorcycles
336	¾-ton weapons carriers	6	tractors with bulldozers
140	medium tanks	5	air compressor units
75	2½-ton dump trucks	4	Signal Corps repair trucks
64	anti-aircraft gun carriages	3	small arms repair trucks
52	heavy trucks	3	truck-mounted cranes
40	armored vehicles	2	motorized road graders
38	ambulances	2	electrical repair trucks
30	truck tractors	2	instrument repair trucks
18	liaison airplanes	2	machine shop trucks
18	6-ton cargo trucks	2	artillery repair trucks
17	wrecker trucks	1	shop equipment truck
11	tank recovery vehicles	1	five-passenger sedan
9	4-ton cargo trucks		

The above listing does not take into account the many other vehicles and pieces of equipment which are operated by special groups, such as Engineer brigades and Chemical Corps battalions. These include items like fire trucks, smoke generator sets, and flame-throwers, all of which require petroleum.



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five-passenger sedan to cargo trucks and motorcycles. So tremendous and widespread is the Army's mechanization that you'll find few, if any, horses even in a modern cavalry division. Mechanical horsepower has completely replaced the four-legged variety throughout.

Mobility Counts

Without the trucks, jeeps, and other like equipment, no force could hope to win a war, even if it boasted superior manpower and firepower. In fact, very often, it is an army's great mobility which gives it the edge. It may have a vast numerical advantage over the enemy in both men and equipment, but if it can't get its troops and guns into position, and the enemy can, this potential superiority soon vanishes.

But because of the automotive industry, which produces the vehicles, and the petroleum industry, which fuels them, the United States ranks second to none in mobility. Not only do we have a great number of military vehicles, but we have the most advanced machines.

Consider, for instance, a new $2\frac{1}{2}$ -ton truck capable of traveling under water. This vehicle can ford streams or shallow rivers up to a depth of seven feet with the same ease that other trucks ride through a rain puddle. In a recent manufacturer's test run, a driver donned a special breathing mask and took the test truck completely under water to a depth of 11 feet, riding on the river bottom. Entirely sealed and water-proofed, the truck will make seven miles per hour and can remain submerged for hours.

The truck's breathing device consists of two pipes which protrude above the water's surface. A "snorkel" tube leads air into the engine,

while the second pipe, the "snorter," is for exhaust. The Army presently has thousands of these trucks on order, and obviously plans to use them to speed supplies to the front without having to wait until bridges are thrown across streams, and to shortcut, by water, circuitous land routes.

While the submarine truck is a new development, jeeps have been submersible up to certain depths for some time now. The jeeps, which also employ the snorkel device, have proved especially handy to have around in amphibious operations.

Another petroleum-powered item which recently had its unveiling is the new T41 "Walker Bulldog" light tank. The Army terms this the world's best light tank, and cites it as "an example in cold steel of scientific research, top engineering talent, and American ingenuity, all applied with care and foresight." Equipped with automatic transmission and what the Army calls "finger-touch" steering, the Walker Bulldog packs more than twice the horsepower of its World War II predecessor and can top a speed of 40 miles per hour on its air-cooled engine.

Existing Vehicles Improved

These are just a couple of the new items that Uncle Sam is constantly adding to his list of mobile military equipment. All the while, existing vehicles are being improved, to keep America the best equipped and most mobile fighting force in the world.

The Army considers specific vehicle petroleum consumption figures classified information. However, the petroleum requirements for moving an infantry division 100 miles under combat conditions are known. To send an entire division this distance, the Army figures it needs 68,500

gallons of vehicle fuel; 1,690 gallons of engine oil; 1,440 pounds of gear lubricant; and 1,340 pounds of miscellaneous grease. Even when not on the march, the division would consume 4,000 gallons of fuel daily in operating administrative vehicles, field kitchens and gasoline-powered equipment. Armored divisions require 146,000 gallons of fuel, and airborne divisions about 54,000 gallons, to move 100 miles in combat.

Compare the striking mobility of today's army with that of the AEF in the first World War. During that conflict, we shipped overseas more than 26,000 bicycles and almost 29,000 horse-drawn combat and non-combat vehicles. Today, a bicycle or a horse in Army service is an exceptionally rare sight.

World War I Experience

In April, 1917, the month we entered the war, the Army owned only 12 truck tractors, 437 automobiles, 670 motorcycles and 3,039 trucks. History records that many scoffed at the idea of motorized equipment doing the work of horse-drawn vehicles, but the die had been cast. At the Armistice, 85,000 trucks were wearing khaki, and Detroit was turning out these vehicles at such a pace that this number would have been increased to 185,000 had the war continued another seven months. At that time also, the Army would have owned 30,000 ambulances, 40,000 passenger cars, and 70,000 motorcycles.

It was the punitive expedition into Mexico in pursuit of Pancho Villa in 1916 that marked the real beginning of the use of motor transportation for the Army. As early as 1904, however, a few progressive officers at West Point had made some preliminary tests of $1\frac{1}{2}$ -ton trucks.



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Except that they indicated the truck would undoubtedly be of value in military operations of the future, these tests created no particular stir. The Army meanwhile acquired a few trucks, but, in one manner of speaking, let their engines idle until 1912, when the military really got down to brass tacks on the matter of studying its motor transportation needs and problems.

As vital as they were to victory, the trucks of World War I obviously were a far cry from those of today. It goes without saying that so, too, was the gasoline of the day vastly inferior to modern fuel.

Fuel Improvement

The first great world conflict marked the debut of the airplane, the tank, and the truck and automobile in major warfare. The fuels of the time suited the engines of the time. Still, the average aviation gasoline of World War I wouldn't begin to be adequate for even the lowest compression vehicles on the highway today. We know now that most aviation fuel used at the time had an equivalent octane rating of only about 55. Modern aircraft gasoline, of course, has long since "run off" the octane scale, far surpassing in antiknock quality the 100 that is the top of the scale.

In the intervening years, the automotive and petroleum industries, marching together, have traveled fast down the road of progress. One

result is that the American combat soldier, through mobile equipment, is without a peer as a well-cared-for fighting man. For instance, fully equipped dental, optical and other mobile medical laboratories follow him into battle to make certain that he receives the utmost in health care, even under the most trying conditions. Field bath units and laundries, both on wheels, also contribute to his well-being.

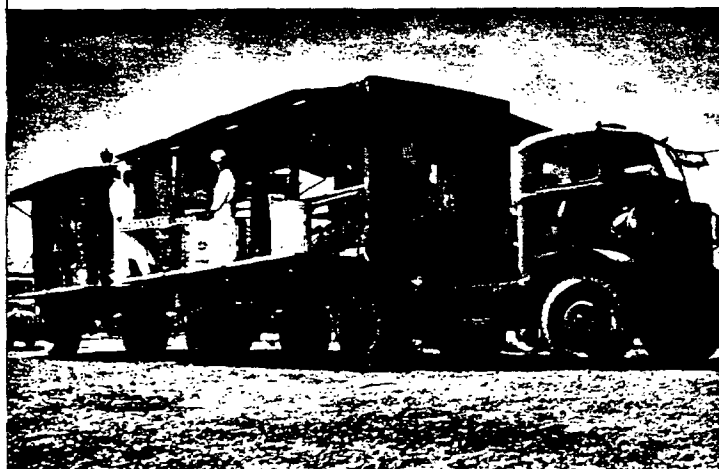
In the combat zone and behind the lines, myriad other petroleum-powered equipment is at work to help win battles as expediently and with as few casualties as possible.

Motorized road graders quickly fashion highways where none existed before, so the fighting man can move into the most advantageous battle position and so essential supplies will not be delayed. Mammoth

trucks highball cargoes and men to their strategic destinations. Vehicles such as the amphibious cargo carrier and the waterproofed jeep and new underwater truck, surmount virtually every natural obstacle. Overhead, gasoline-driven liaison planes brave the territory behind enemy lines to "zero in" artillery and gain vital information about the foe's movements. Tanks, some of them as easy to maneuver as a passenger car, go forth to seek out and contest the enemy.

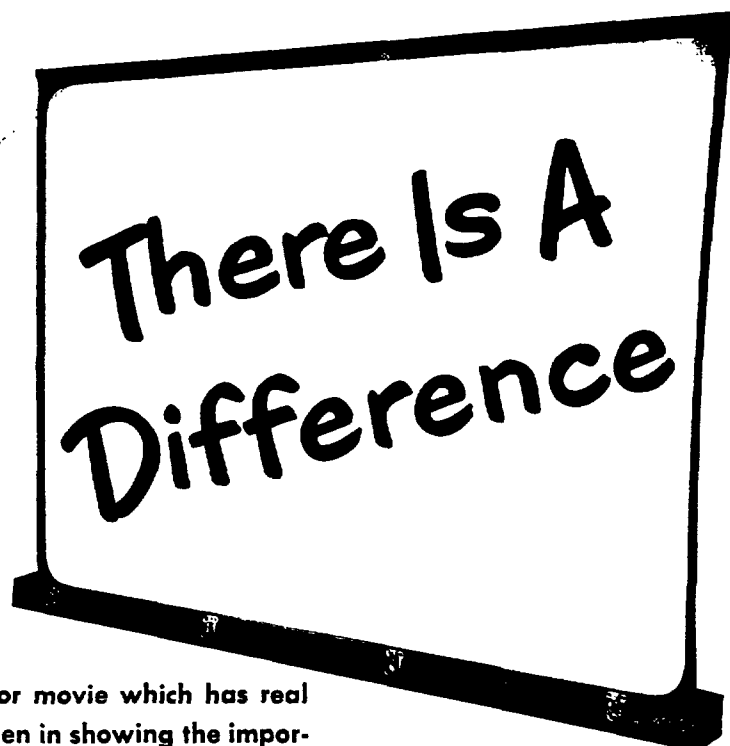
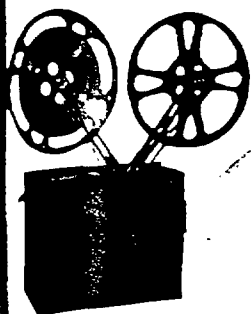
So long as America engages in war, there will be newspaper headlines proclaiming new actions for our Army divisions. Behind those headlines will lie one of the biggest stories of all time — the story of mobility, as provided by American engineering ingenuity and petroleum refining technology.

Among the many varied pieces of automotive equipment required to keep today's soldier in the fight are a mobile eyeglass replacement unit, right; a truck-mounted bakery, below left; and a complete field laundry, below right



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That's the title of a new Ethyl color movie which has real selling interest for service station men in showing the importance of rendering personalized service to each customer

SINGLE OUT any crowded highway and no two cars traveling it will be exactly alike. It will be easy to spot many of similar make and model, and, by chance, a couple of the automobiles may even have come off the assembly line in succession. But in octane requirement and in any of countless other ways, no two vehicles are the same.

What holds true about the automobiles themselves also applies to the drivers of those cars. No two persons are the same. People differ from one another in many ways — personality, likes and dislikes, and almost every other characteristic.

The importance of recognizing this distinction between people, and so establishing an appropriate personal relationship with each and every customer, is the message which a new Ethyl Corporation motion picture, designed to interest service station operators, vividly drives home.

The film — in full color — is en-

titled "There Is a Difference." It is the latest addition to an active library of 19 slide and motion pictures which Ethyl Corporation has produced and distributed through the petroleum, automotive and allied industries.

Used in Training Programs

"There Is a Difference" went before the cameras only after Ethyl had consulted at length with key representatives of many oil companies to work out the final story idea. Assured that the picture could perform a genuine service to the nation's service station operators, Ethyl, after more than a year of planning, began production of the film. Oil company sales executives who have had an opportunity to review "There Is a Difference" report that it accomplishes its purpose.

Intended for use in oil company dealer training programs, the movie takes its audience through 22 minutes of the philosophy of creative

salesmanship, all told in a down-to-earth manner and carefully woven into an interesting plot enacted by Donald Novis and other professional actors.

"There Is a Difference" does not attempt to show service station personnel how to render proper "circle service," nor does it offer any specific new techniques in selling TBA items or the usual gasoline retail outlet services. Rather, it deals with the entire philosophy of selling, so that service station attendants may reexamine their practices in the field of customer relations, and, by so doing improve their present business position.

Chief characters of the movie are Bill Parman, a long-time employee of the Golden Rule Service Station, and Jim Campbell, owner of the dealership. The setting is authentic, most of the outdoor scenes having been filmed at a typical station on Long Island.

As the movie opens, Bill is day-

dreaming about a service station of his own that he is soon going to operate in another part of town. So far as the physical factors are concerned, it doesn't appear that Bill will have much trouble making a go of his new business. He plans a six-pump outlet, and the location is ideal. Nearby are two garden apartments, a big shopping center, and a new development of 500 houses, plus a county highway running right past the place. Not only that, but the oil company he will represent is a big advertiser, so Bill knows his products will be well known to most motorists.

You can almost see Bill riding a silver-lined cloud as he visualizes cars — hundreds of them — driving up to his pumps.

"And there I am, with my best personality," Bill tells himself. "I hurry up to the pump and give the customer my favorite opener, 'Good morning, Mr. Jones, and how are you this morning . . . fill 'er up with 'Ethyl'? . . . Good morning, Mrs. Smith, and how are you this morning . . . fill 'er up with 'Ethyl'? . . . Good morning, Mr. —'."

Then, literally from out of nowhere, comes the jolt. How Bill is made to realize that "you can't treat customers all the same — like they are sardines in a can" — is one of the surprises of the picture. But made to realize it, he is, and quite forcefully.

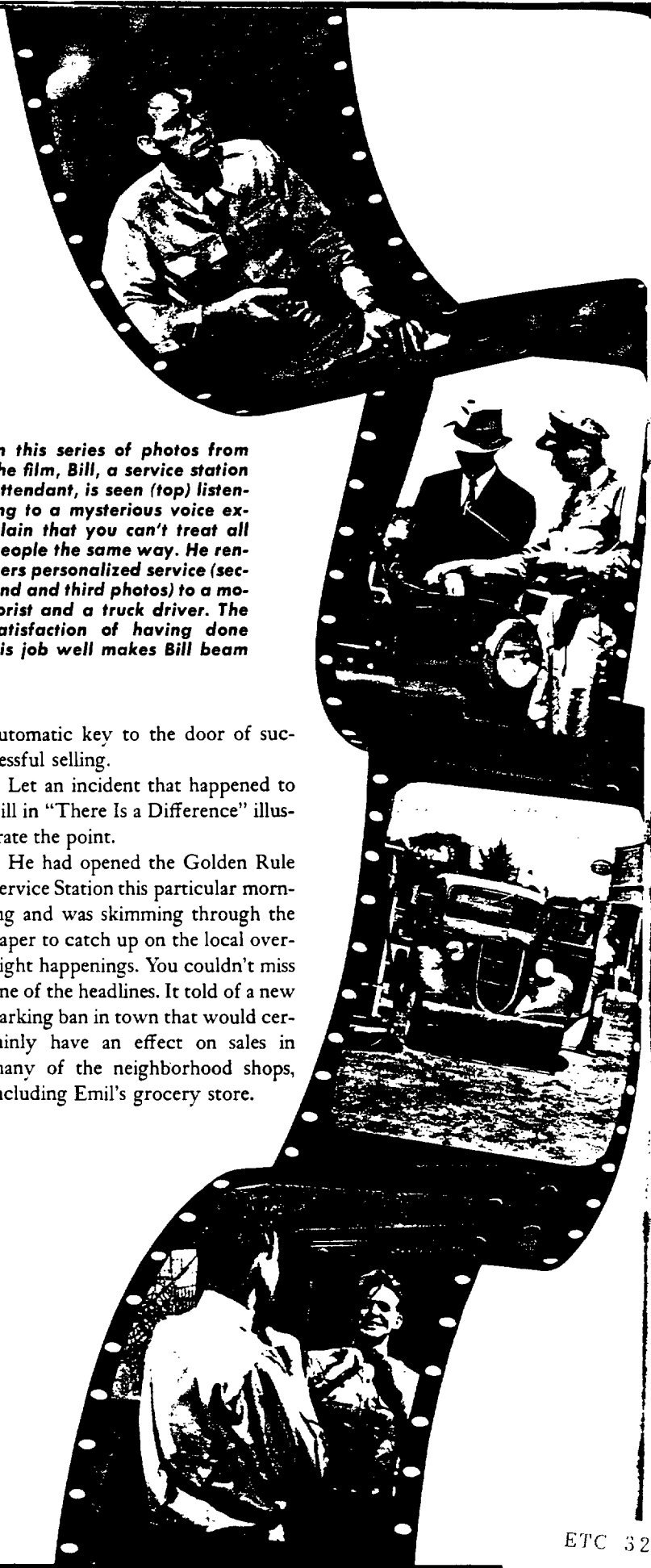
In a series of incidents undoubtedly experienced in real life by many dealers, the film's prospective service station dealer is suddenly jarred into the realization that you *handle* tools and equipment, but you don't handle people. Each one must be *treated* like the individual that he or she is. It's certainly acceptable to bid your customers a friendly time of the day, but a stereotyped "good morning" or "good afternoon" is no

In this series of photos from the film, Bill, a service station attendant, is seen (top) listening to a mysterious voice explain that you can't treat all people the same way. He renders personalized service (second and third photos) to a motorist and a truck driver. The satisfaction of having done his job well makes Bill beam

automatic key to the door of successful selling.

Let an incident that happened to Bill in "There Is a Difference" illustrate the point.

He had opened the Golden Rule Service Station this particular morning and was skimming through the paper to catch up on the local overnight happenings. You couldn't miss one of the headlines. It told of a new parking ban in town that would certainly have an effect on sales in many of the neighborhood shops, including Emil's grocery store.



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Just at that moment, Emil drove up to a pump in his delivery truck, naturally feeling dejected about what the parking regulation would do to his business. Bill knew what was wrong, and figured he would give Emil his best "good morning" routine to take his mind off his troubles.

"Good morning, Emil, and how are you this fine day?" Bill beamed, just as if he was talking to a man who didn't have a worry in the world. "Fill 'er up with 'Ethyl'? Have you seen our special of —?"

That's as far as Bill got. Emil cut him off short with a "never mind the sales talk — just put in the gas," and wouldn't let Bill check the oil.

Bill couldn't understand why Emil was so sharp and touchy, but

his inner self told him why. "Emil was hurt because he had a problem that you, Bill, knew about. And yet all he got from you was a mechanical glad-hand and a fast pitch."

What happens when the service station dealer recognizes the fact that no two of his customers are alike, that each must be approached in a different way? Well, here was Bill's experience in the film.

One day the wife of his next-door neighbor drove into the station with her two children in the car. It had been raining and the streets were still wet. Bill fueled the car, and then began looking it over as carefully as he would his own. In checking the air in the tires he noticed that the tread on one of them was almost completely worn away. As

any service station man knows, a bald tire and a wet pavement form the perfect combination for producing a first-class skid.

Bill cautioned his neighbor, but she suggested he talk to her husband about the bad tire when he brought the car in over the weekend. Bill knew the weekend might be too late. So, with her permission, he telephoned the husband and got his approval to install a new tire.

The Difference Shows

That, the Ethyl movie explains, was good customer relations at its best. And good business, too. Bill sold a new tire, which is one reason for operating a modern service station. But more than that, he put himself in the customer's place and thus rendered a highly personalized service. Who can tell, maybe he even prevented a serious accident by stressing the need for his neighbor to replace the worn tire. Quite a difference between that kind of customer treatment and the "good morning, Mrs. Smith, how are you today?" routine.

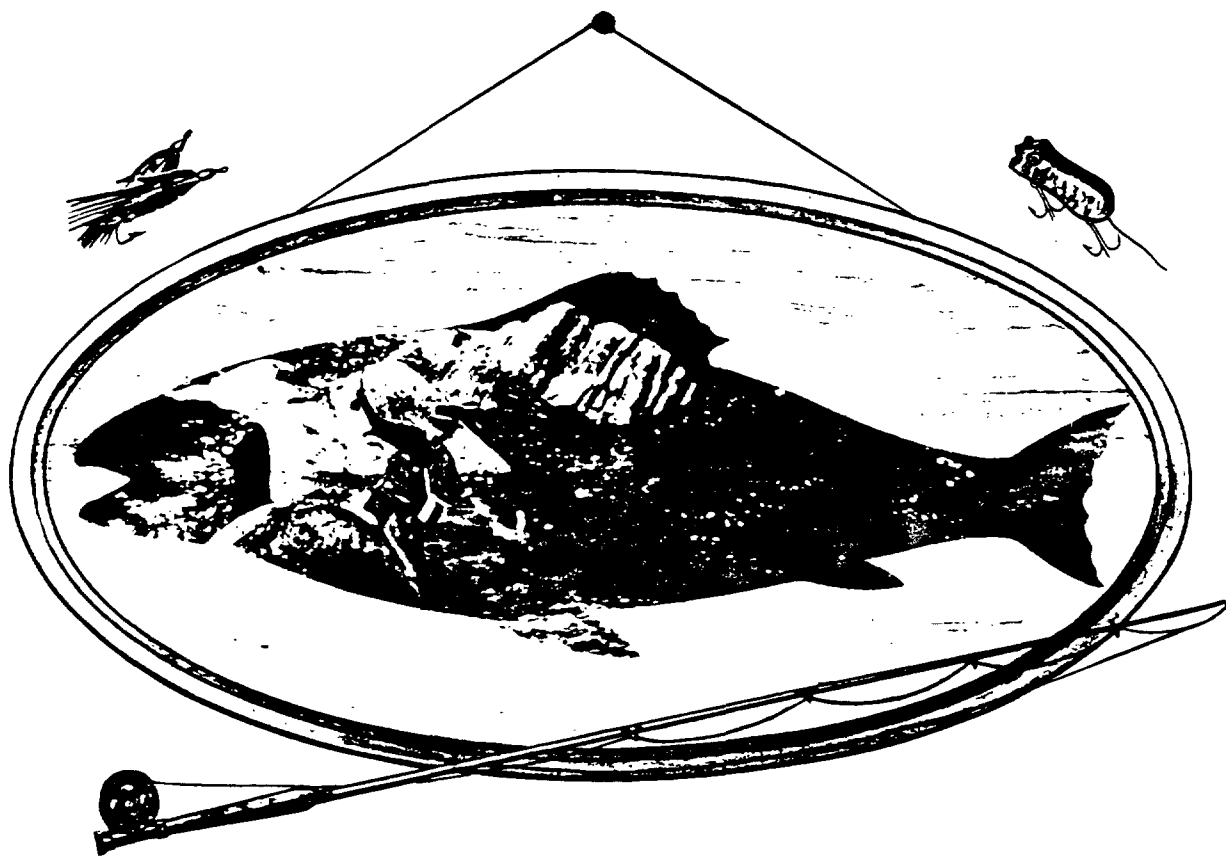
A suitable location, top quality products, and supporting advertising — all are essential if any service station is to be successful. But there's more to it than that. This extra something, as the title of the motion picture suggests, is appreciating that there *is* a difference among customers, and that, therefore, the approach to each of them should be based on a genuine interest in helping them solve their particular motoring problems.

Ethyl Corporation has produced "There Is a Difference" in the hope that, by bringing home this philosophy of salesmanship, the film will provide both the inspiration and the information to enable service station personnel to render even greater, more profitable service.



"There Is a Difference" was filmed at an actual service station by Pathe-scope. Left, Donald Novis, the station owner in the movie, receives acting direction . . . Below, a general view during the shooting of one of the outdoor scenes





THE FISH AND I

To this veteran fisherman, the countless superstitions which so many anglers nurse are but mere alibis for an empty creel

By Harry Botstford

I OFTEN WONDER how many of the familiar and ageless superstitions common to generations of fishermen stem from an ardent search for an alibi to explain an empty creel.

If pride doesn't father some of these fallacies, one can be reasonably confident they all were not born of actual experience.

In nearly four decades of active fishing in many waters in many sectors, I've seen virtually every tenet so dear to the heart of the average angler exploded. Done a little exploding myself, in fact, and that practically makes me an heretic.

The first year I ever did any casting for bass, the elder statesmen filled me with what they believed to be honest fishing lore. One thing they studiously drilled into my then-youthful head was that when it thundered, the fish went to the bottom and were wholly uninterested in any lure that could be offered. I believed them, and later realized that I had lost a lot of prime fishing as a result. Like all anglers, I was gullible.

Once, a sudden July thunder-shower caught me in a boat at the end of a lake, far from shelter. It was a cold rain and the thunder boomed constantly. I had not been provident enough to carry a rain-coat. To help keep myself warm, I started to cast. I was certain I wouldn't catch any fish, but it was something that might start the

blood circulating. I hadn't been casting five minutes when I tied into a bass. No longer did I seem to mind the rain or the thunder. My blood was circulating nicely again. Before the storm was over, I had netted four very nice bass, the smallest of which weighed three pounds.

When I told this to the old-timers, the very ones who had tutored me so thoroughly, they turned bleak and unforgiving eyes on me. From then on, they were convinced the truth was not in me. Since then, I've repeated that storm experience several times. Thunder may disturb overly-timid bass. But if the fish are hungry enough or mad enough, they'll grab a lure. Believe me!

The yarn that fish won't bite during a thunderstorm doesn't hold water with the author. He tried it, with the results shown in this sketch

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Then there was a time, several years ago, when I returned to our cabin on the shore of a small Pennsylvania lake to find my companion, a young and ardent angler, reading in front of the fireplace. I asked him why he wasn't out fishing. He seemed shocked to think that I didn't know fish never bite while there is an east wind.

"How do you know?" I asked. He said he didn't, personally, but more experienced fishermen had assured him it was true. I suggested we find out for ourselves.

A Convert Made

It was mid-October and the wind was penetrating. My friend and I had the lake to ourselves. The tradition-bound anglers were inside, close to a fire. Within the first hour I made contact with a wolfish muskellunge. After a long struggle, my companion gaffed him on the third attempt and we proudly hauled in a beautiful 26-pound specimen. It was the biggest fish caught in that lake in seven years. (And the biggest fish I have ever caught, I might add.) Before the afternoon was over, friend Jimmy had snagged three nice big-mouths plus a 10-pound

musky. All of which made a convert out of Jimmy. No more fallacies for him. He now makes his own rules — and catches more fish than he did when he listened to the elders and their piscatorial theology.

Every angler has heard about the timidity of trout. I believed it, too. Fishing in the Ole Bull country, my guide proved this to be just another fallacy. Indian Charley, who isn't Indian at all, was my mentor.

It was early in the season and Charley was fishing with tiny river minnows as bait, using his fly rod in making casts that were smooth and accurate. The casts, however, were seldom more than 20 feet. He was wading, and Charley wasn't exactly what you would call a quiet wader. He would splash through the water until he found a partially submerged log or rock, or where the water swirled under the bank. He would cast into these waters repeatedly — and he usually got results. Charley's trout that morning were big chaps and by noon he had his limit. There wasn't a one under two pounds. It was an amazing and upsetting experience to me, for it neatly collapsed the old theory about the timidity of trout. That afternoon,

adopting Charley's methods, I caught five very nice brownies in Kettle Creek.

Another tenet of the hardened angler is that the bigger the fly or bug, the bigger the bass it will lure. It seemed like such a perfectly reasonable adage that I never questioned the validity of it. Accident caused me to change my mind. Once I started for a bass stream in a hurry, grabbing a fly box and other tackle on the run. Starting to rig up, I discovered that instead of the box which contained my prize bass bugs and flies, I had brought along a box of trout flies. This, to put it mildly, was a most disturbing discovery to make 20 miles from home.

There was no alternative but to tie on a tiny Royal Coachman. Maybe I would at least have the consolation of catching a few rock bass. These little husky chaps often are partial to a fly.

Scratch Another Tale

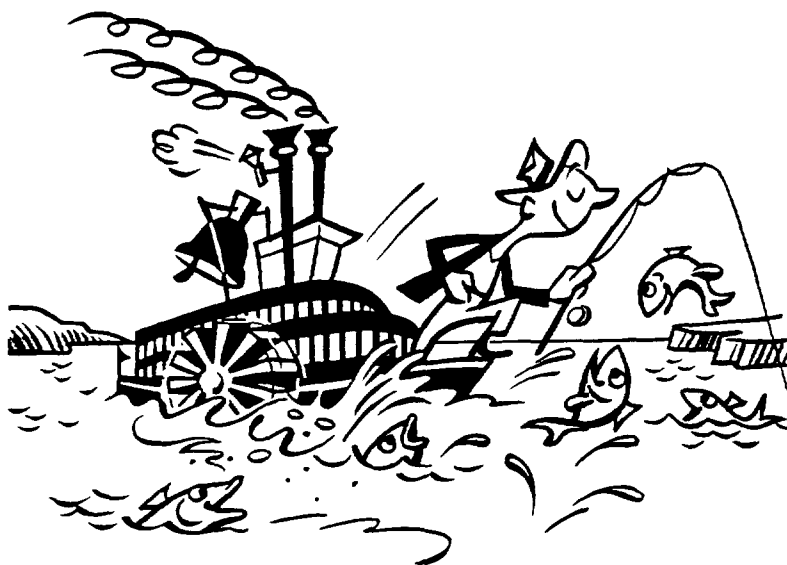
I found some likely rock bass water and half-heartedly made a few casts. The little fly, riding the water cockily, was suddenly sucked under. Automatically, I struck and the slender rod arched. This obviously was no puny rock bass. It was a fighting bronze-back of good size. He broke water three times before he came to net. I took a round dozen bass of comparable size that afternoon and evening, although I released all but three of them. It was about the best day I had experienced all season. I had discovered that big fish relish little flies when they are properly presented — and so another bewhiskered tradition went into the discard.

There was a certain lake in Ohio from which anglers brought home some memorable strings of fat perch, some of which would measure 18 inches. These were handsomely



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Perhaps this is exaggerating things a bit, but the point is that trout, if they are hungry enough, will not pass up any enticing lure, no matter how much the angler may disturb the waters

marked fish, and excellent eating. The anglers used nothing but pollywogs for bait. Nothing else produced good fish, they claimed.

I had been fly-fishing for blue gills and my boat drifted to where the boats of the still fishermen were grouped. "Anyone ever catch a perch on a fly?" I asked. They shuddered at the very idea. "Can't catch these perch on a fly," a seasoned old-timer explained.

"Mind if I try?" I asked. They didn't, so I rigged up a Brown Hackle and a minuscule silver spinner. I cast, let the lure settle to the bottom, brought it around and agitated the delicate rod tip to make the spinner dance. Nothing happened. The other fishermen were amused. Then on the third cast, I tied into a 1½-pound perch that gave me a sweet battle. The old-timers were not impressed.

I was snaring a perch on about every third cast — which is good fishing in my book. The other fishermen definitely were not sorry to see me leave.

You can't always tell. Often the fish will waive the rules. A little touch of unorthodoxy on the part

of an observant and daring angler often pays handsome dividends, upsets cherished tradition.

For instance, a friend of mine was fishing a pool that was usually productive, but not today. He had patiently tried every fly, bug and streamer in his kit. He even had spent a busy half-hour catching three grasshoppers, which usually are sure-fire bait. Sitting on the shore, he brooded and smoked his pipe. Within 20 feet of the shore, a husky bass came out of the water. It smacked at something, missed, tried again. This happened time after time. The bass, my friend discovered, were after moles, trying to swim across the pool. There must have been a mass migration of moles and the bass were having a field day.

My friend is an ingenious fellow. When he is after bass, he will sacrifice anything for the sake of a little sport. Seeing what had happened, he deftly cut an oval from the top of his rubber boot, and shaped it to resemble a mole, complete with legs

One heretic's view is that, like humans, fish enjoy nibbling at different foods from time to time. Says he: "Give 'em a diet change"

and tail. He tied this rubber travesty around a fat bass bug, and optimistically started to cast, keeping the lure moving on the surface of the water. He caught bass. Lots of them, and whoppers, too. As a matter of fact, he continued to use this quaint lure with great success at various pools on this creek for the entire season.

There are many schools of thought about angling — most of them are conflicting. Some fly fishermen labor diligently to duplicate the flies the trout take on a rise. Then along comes some unregenerate parishioner, some cheerful heretic and wholly unorthodox. He uses a fly that is radically different in size and form than those on which the trout are feeding, and which the purists have duplicated in their flies. He takes two fish to every one the tradition-bound fly caster nets.

"Give 'em change of diet!" one lucky man snorted. "When your fly looks precisely like the thousands of others settling on the water, your chances of getting a strike are reduced proportionately. Give 'em a fly that is distinctive and different in size — make it easy for a hungry trout to change his diet. That's my idea — and it works!"

Truth is, the heretic not only catches more fish. He usually has much more fun.



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METERED PROGRESS

ONE OF THE PLEASURES of motor-
ing is the knowledge that when
the gasoline supply indicator on the
dashboard dips toward the empty
mark, there is sure to be a service
station just down the road a bit
where the motorist can quickly and
easily get his car refueled.

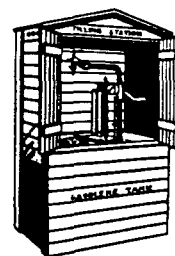
The heart of any service station,
of course, is the gasoline pump is-
land. From the pumps flow the life-
blood that keeps the nation's auto-
mobiles, trucks, buses, and other
power equipment on the roll. To-
day, no matter what the time or
place, purchasing gasoline is just
about the simplest "shopping" duty
there is. You couldn't say the same
thing, however, back at the turn of
the century, before the gasoline
pump appeared on the scene.

One of the rigors of going out for
a spin in the pioneer days of auto-
mobiling was fueling the car. In
those days, there was no such thing
as the service station, with its lineup

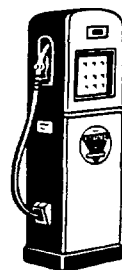
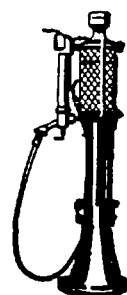
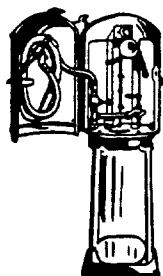
of pumps. The motorist usually had
to drain gasoline from a storage
drum into a measuring can, and then
gingerly pour the fuel into the car's
tank through a chamois-screened
funnel. And woe betide the driver
who ran out of gas. Then, it was
definitely a case of "get a horse."

But in the years after 1900, more
and more "gas buggies" appeared on
the roads, and their drivers objected
to the inconvenience, delays and
messiness involved in hand refueling.
Gasoline pumps and eventually
service stations were the result.

Since that time, pump develop-
ments have been geared directly to
progress in the oil and automotive
industries. As technological ad-
vances produced better cars and
better fuels, pumps kept pace. To-

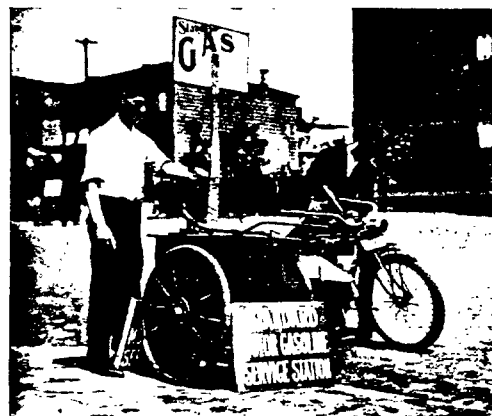


In step with the automotive ve-
hicles they serve and the fuel
they dispense, gasoline pumps
have undergone constant im-
provement through the years

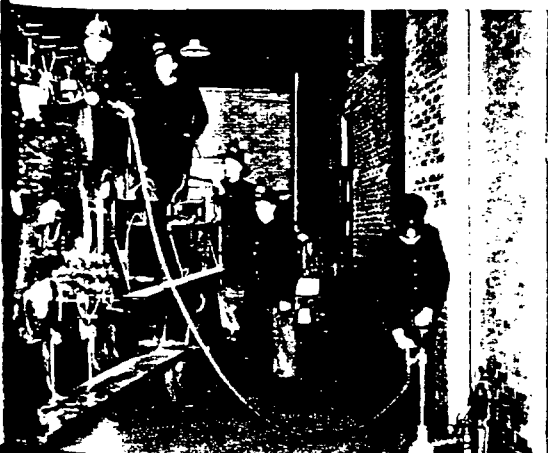


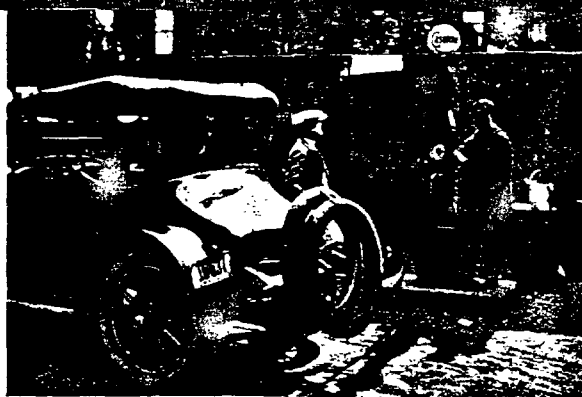
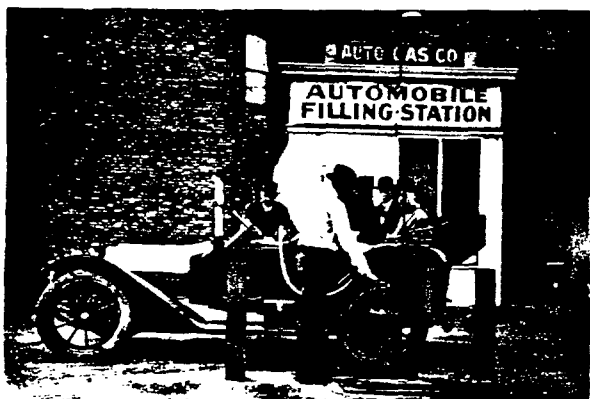
day, when two gallons of gasoline
do the work that three gallons did
25 years ago, pumps are fully as im-
proved over their 1926 counterparts.

Ancestor of today's attractive and
efficient pumps was a crude portable
tank with a one-gallon, hand stroke
pump attachment. This was simply
a converted kerosene pump of the
type used in grocery, general, and



Left, this firehouse
pump was one of the
earliest piston types,
but the tank had al-
ready gone under-
ground . . . Right, be-
fore the days of
drive-in stations some
pumps could be
wheeled to the curb
to serve customers





Left, the operator of this early "service" station pump counted the number of times he turned the handle to measure the gallonage dispensed. In later models, like that shown above, recording dials with hand indicators were added and mechanisms enclosed



Above, the pump was of the early "double-h" type. One of the earliest

hardware stores. At first the "conversion" consisted only of adding a protective covering to the tank and changing the name to "gasoline pump," but it wasn't long before this model swapped its faucet and measuring can for a hose.

Other improvements followed quickly.

The pump, and the tank on which it was mounted, acquired a wooden

housing. It was an installation of this type, some industry historians claim, to which the term "filling station" was first applied. In another change, the pumping pedestal was attached to the floor and the supply tank was put in the basement of the store or garage. Still another forward step was the increase of the piston throw from one to two, and eventually to five gallons.

A bell that rang after the delivery of each gallon was added in the early years. This feature is still retained on many of today's pumps, but it was greatly improved upon with the addition, about 1910, of a recording dial with a hand indicator that clearly showed the number of gallons delivered.

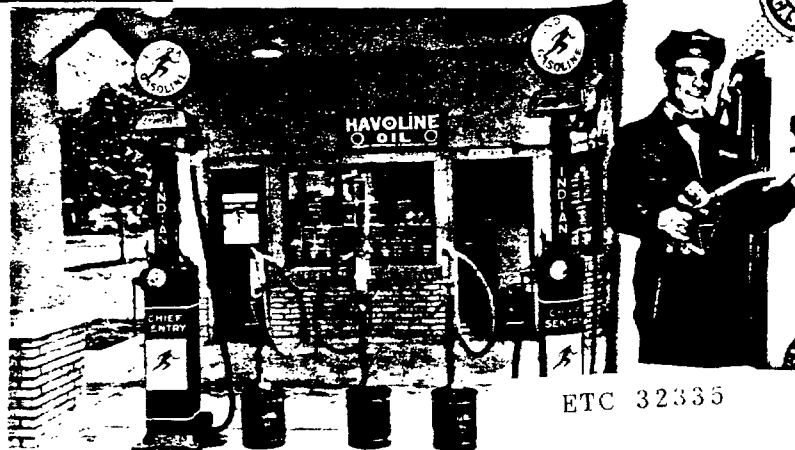
It was about 1910, too, that pumps began to move out-of-doors to the curb and roadside. They acquired more height in order to better display the glass globe with which they were now topped, and before long the multi-pump drive-in service station was a reality.

Just after World War I, the famous glass bowl or "visible" pump was introduced. This pump, consisting of a glass container of two, three, five, and later ten-gallon capacity mounted on a five or six-foot pedestal, literally put gasoline before the public eye. The fuel was pumped by hand up into the bowl in the presence of the customer and then allowed to flow by gravity



Above, since they first came into use, gasoline pumps have had their ups and downs so far as height is concerned. When globe advertising was still relatively new, some manufacturers made them quite tall

Right, a visigauge, or sightglass, a transparent section in the delivery pipe, like those found on these pumps, afforded a view of the gasoline flow. The law now requires that one be installed on each gasoline pump



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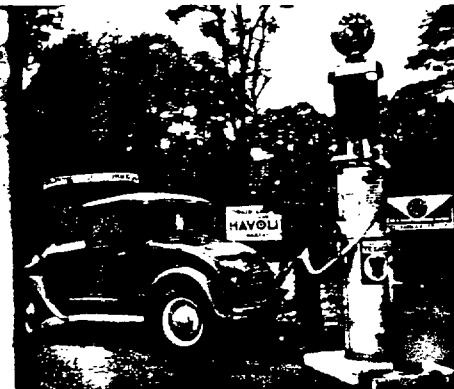


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Above, the visible, or glass bowl,
pump was the most popular model
of the early Twenties . . . Right,
"double-header" pumps like this
one were simply elaborations on
the earlier motor-driven types

down through a hose and into the
car's gasoline tank.

About 1920, nozzle control was
introduced for the 10-gallon bowl
visibles. This permitted, for the first
time, the attendant to shut off the
flow at the nozzle at any time, and
did much to prevent overflow,
waste, and possible fire hazards.

Despite the popularity of the visi-
ble pump and the addition of nozzle
control, the demand was voiced for
new models that could deliver gaso-
line with more speed, accuracy, and
safety. By 1925, manufacturers had
the answer — a motor-driven pump.

But even with electricity now do-
ing the pumping and the hands of
a dial automatically measuring the

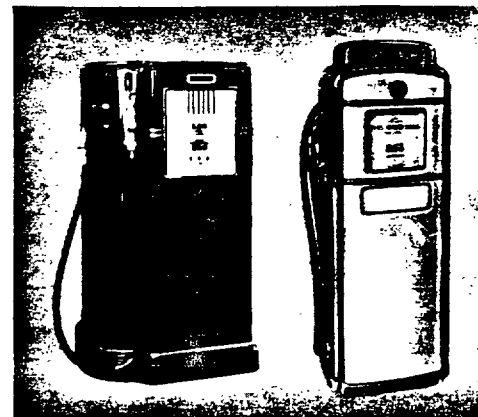


amount of motor fuel being pumped,
other major milestones on the road
of gasoline pump progress were still
to be reached.

In 1933, for instance, less than
ten years after motor-driven pumps
had been introduced, computing
pumps were in use. Now gasoline
was not only pumped faster, but a
quick glance at the pump told both
the motorist and service station at-
tendant the number of gallons and
fractions of gallons delivered, the
price per gallon, and the total
amount of each sale.

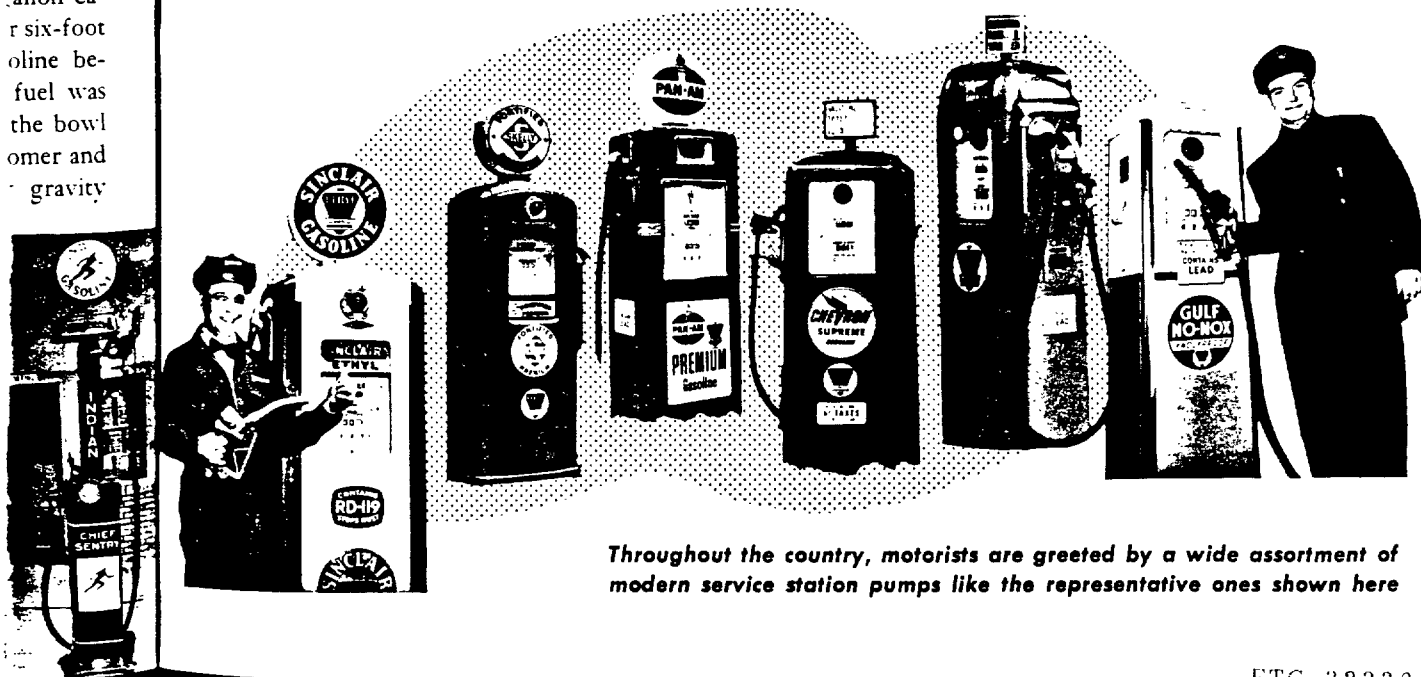
Since its widespread adoption in
the middle 1930's, the computing
pump has undergone several design
changes and has been improved

Below, typical of constant im-
provements by pump manufact-
urers are a new model (left) that
has dual hoses and dials for
fueling two cars at once, and
another (right) that features
moving lighted sales messages



with the addition of a feature that
enables dealers to reset its mechan-
ism when price changes occur. An-
other modification makes it impos-
sible for the pump to be started
unless gallonage and amount-of-sale
figures are set back to zero.

America's automobile owners will
spend something like \$10 billion on
gasoline this year, it has been esti-
mated. Thanks to the modern gaso-
line pump, they will be assured of
getting accurate, fast, and safe de-
livery of every last gallon.



Throughout the country, motorists are greeted by a wide assortment of
modern service station pumps like the representative ones shown here



Bottles cast into the sea contain everything from wills to information about missing ships. But, more important perhaps, they provide valuable data on oceanic tides and currents

By Frank L. Remington

"**S**TILL ON DECK with a few people. One is a child. The last boats have left. We are sinking fast. The orchestra is still playing bravely. Some men near me are praying with a priest. The end is near. Maybe this note will . . ."

Here the message ends abruptly. But the passenger on the ill-fated *Lusitania* who scrawled the note managed to stuff the bit of paper into a watertight bottle and consign it to the waters of the North Atlantic before the great ship plunged beneath the waves. Recovered later, the note related new details of this famous marine disaster.

In the fearful minutes before the rising waters engulf them, seamen and passengers on sinking ships have, for centuries, scribbled farewell memos on scraps of paper and cast

them adrift in sealed bottles. Often these containers toss and turn in the turbulent waters for years, until finally the waves cast them ashore. Others find their way into the traveled sea lanes, where they are recovered by passing vessels. Many, perhaps, are never found:

By the Hundreds

At any given time, if it were possible to make a count of them, there would be hundreds of message-bearing bottles bobbing in the oceans of the world. For many countries carry on an organized "bottle program" as a means of securing additional information about oceanic tides and currents. The U. S. Hydrographic Office, which is part of the Department of the Navy, has conducted such a project for many years now.

Sea captains embarking on a voyage carry special printed forms containing blanks for the date, name of vessel, longitude, and latitude. At sea, the skipper fills in this information, seals the paper in a glass container and sets it adrift. The bottle may be picked up the very next day after a journey of only a few miles. Or it may flounder from wave to wave, even ocean to ocean, and not be discovered until years later.

Upon opening one of these government containers, the finder reads instructions — in eight different languages — asking that the date and location of the discovery be recorded and the paper mailed back to Washington. By this simple process, the Hydrographic Office has amassed and put to practical use a wealth of data on the flow of ocean waters. During wartime, for instance, our experts can thus plot accurate charts on the expected drift of enemy mines.

Aside from their scientific value, messages in floating bottles have

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Since the message bore no signature, investigators doubted its authenticity. But five years later the discovery of a second bottle on the beach of Castlerock, Ireland, left no doubt as to the tragic end of the ill-fated ship. "*Huronian* sinking fast," the message read. "Top-heavy. One side under water. Good-bye, mother and sisters. (signed) Charles McFall, greaser." Investigation showed the steamer did indeed carry a greaser by that name, and the mother and sisters recognized his handwriting.

Rescued from a watery grave at the eleventh hour, a fortunate few live to recognize their notes, when the bottles entrusted with their last thoughts are later recovered. In

The passengers of the *Kent* postponed their entrance into Eternity when another ship rescued them. Eighteen months later, a swimmer in the Bahama Islands found a bottle containing a hopeless death notice. MacGregor recognized it as the one he had written in his darkest hour.

Often, after marine disasters, hoaxers delight in writing spurious notes and setting them adrift. Consequently, a high percentage of bottled messages are frauds. The disappearance of the *Waratah* in 1909 sprouted a crop of these deceptions. The steamer carried 211 persons. Within a year after her mysterious disappearance, five bottle messages, allegedly written by survivors, washed onto Australian beaches. Each proved to be a hoax. The fate of the *Waratah* remains a mystery to this day.

Bottles, so-called silent sailors of

When disaster struck at sea in olden days, often the only word about the vessel's fate was a note stuffed in a bottle



U. S. N. O. M.



BOTTLE PAPER

U. S. HYDROGRAPHIC OFFICE
WASHINGTON 25, D. C.
U. S. A.

PLEASE USE LEAD PENCIL

Thrown overboard by (Give name of master and character):

Master, _____

Officer, _____

Vessel, _____

Date, _____

Latitude, _____

Longitude, _____

INSTRUCTIONS TO FINDER

Throwed over (indicate to him, date et lieu)
Comprenez vous (say, avez vous compris) et si oui.
Prenez par (date et lieu) date et heure.
Boulez par (date et lieu) date et heure.
Indiquez par (date et lieu) date et heure.
Prenez de (indiquez position, date, et lieu).

Finder, _____

Date, _____

Locality, _____

Post-office address of finder, _____

The finder of this will be
Comptroller of Customs

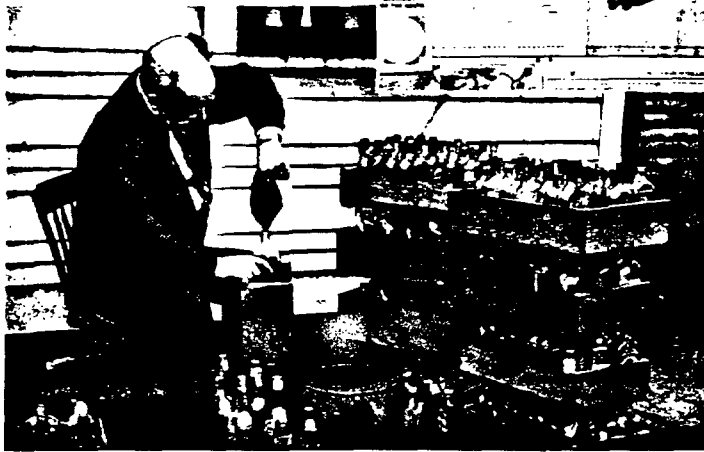
Notations on this official paper as to when and where a bottle was set adrift and the date and place of its recovery help the Hydrographic Office to keep abreast of ocean flows

the seven seas, don't always carry bad news. On at least one occasion a sea-going message served as Cupid's courier. A comely stewardess on an English liner met her future husband by proxy, when her ship picked up a bottle. In addition to a photograph and the address of a man, the container held a message which pleaded: "I am a mate on a freighter bound for the South Seas. I am a lonesome fellow and hope that fate will bring me a wife. Perhaps somewhere in the Commonwealth there is a girl not older than 30 who wants to write to me." The stewardess wrote, and romance soon blossomed.

Several times the floating mail carriers have delivered wills tossed overboard by ship passengers.

Perhaps the oddest case of this sort involved a Boston lawyer who had gone beserk upon the death of a wealthy client in 1911. He sealed his client's 30-million-dollar will in a bottle, surreptitiously boarded an outgoing ship, and hurled the valuable document into the ocean many miles from shore. Subsequently the demented barrister regained his

One floating bottle enthusiast is George Phillips, a Tacoma evangelist. He is shown here by a world map which notes where his bottled messages have been picked up. Below, he pours sand into bottles for ballast prior to casting them adrift



senses and posted a \$25,000 reward for the finder of the bottle. Three years passed before it again came to his hands. In the interim, the bottle had drifted to the far corners of the Atlantic and, among other misadventures, had been swallowed by a shark and was worshipped as a god by a pagan tribe in Brazil.

Soon after Lindbergh flew the Atlantic, a French dressmaker found a bobbing bottle near Saffi, Morocco, and came into a tidy sum of cash because of the peculiar whim of an American traveler. Apparently jubilant over the Lone Eagle's daring deed, the American wrote a sizable draft on his bank and, along with a brief message, enclosed it in a wine bottle and tossed it to the waves from the deck of a liner. The terse note stated simply: "Hurrah for Lindbergh!"

Fate alone determines how long or how far a bottled message will drift or what strange destiny might eventually befall it. Disaster overtook a Japanese sailor in 1784. Before

he died on a lonely reef, the shipwrecked Oriental corked his tragic story in a glass container and committed it to the ocean postoffice. In 1935, after 150 years of drifting, the errant bottle came ashore at Hiratutemura, which by a strange twist happened to be his birthplace.

Special Delivery

Another queer quirk of fortune involved a cocoa tin dispatched from an unlucky ship in 1933. Sailing out of Newfoundland to Port Talbot, the steamer *Saxilby* vanished without a trace. More than two years later the waves deposited a chocolate container on the beach at Aberavon, Wales. Within it a tragic note briefly explained: "S.S. *Saxilby* sinking somewhere off the Irish coast. Love to sisters, brothers and Dinah — (signed) Joe Okane." The ocean currents, in the best Robert Ripley tradition, had delivered the message to the writer's own home town of Aberavon and within a stone's throw of his house.

In addition to the interest displayed by the various world governments in ocean-going bottles, many private organizations and individuals carry on fascinating experiments in floating bottle lore. The International Bottle Club, for one, keeps a constant stream of message-bearing containers journeying over the waves.

George Phillips, an evangelist of Tacoma, Washington, conducts one of the more unusual projects. He collects empty whiskey bottles, fills them with religious tracts and sermons, and tosses them into Puget Sound, from where they are carried to sea.

Something like 15,000 of these pious parcels have been cast adrift by Mr. Phillips and his followers. At least 1,200 have reached a destination, for the "Bottle Parson" has received that many replies from finders as far away as Australia and New Guinea.

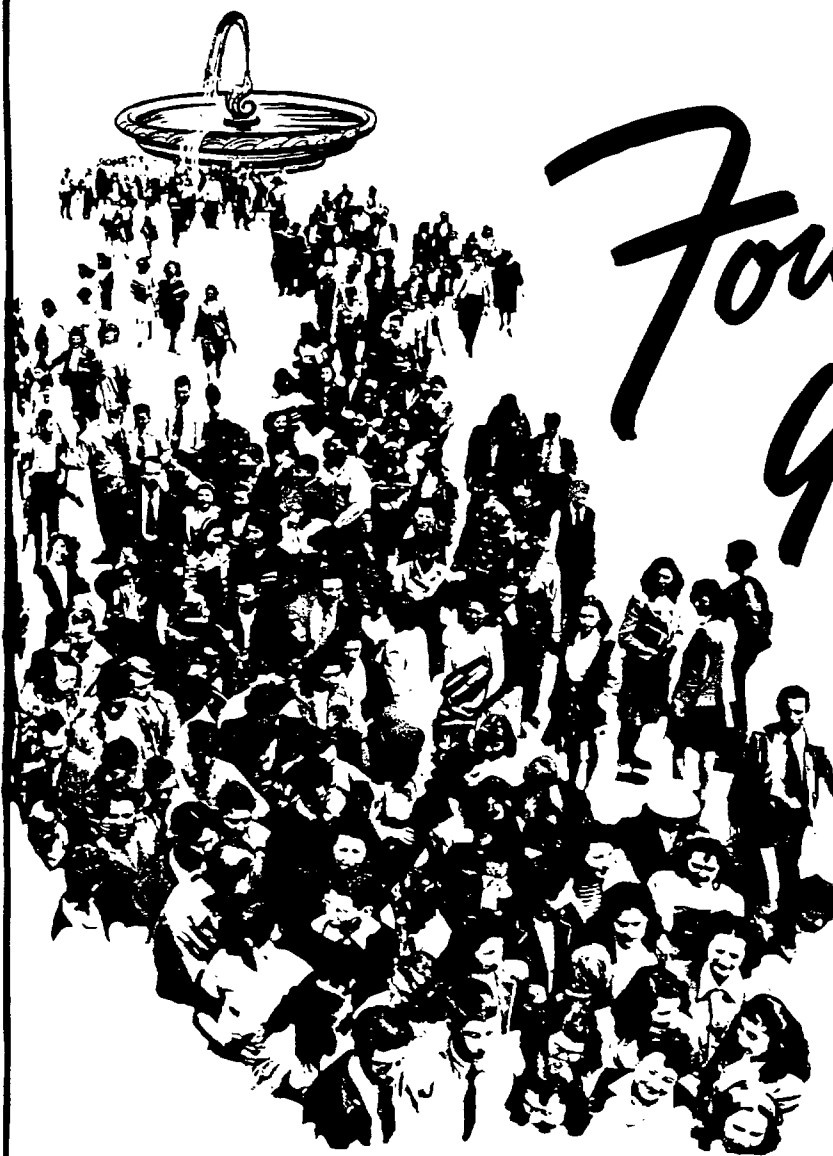
What tidings bottle messages found in the future may carry, no person can foretell. Perhaps some will shed light on the fate of long-lost ships and marine disaster victims. More important, though, the silent sailors of the seven seas will add valuable data to the Hydrographic Office's knowledge of ocean currents and tides.

Directly or indirectly, this information will contribute to the safety and comfort of all mariners.



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Fountain of Youth

Make no mistake about it, our teen-agers will be ready to take their places as leaders of science when the time comes

TWO PAIRS OF youthful eyes gaze intently at a glass screen surrounded by a complex array of wires, gauges, tubes, and sensitive-looking electronic equipment. As minute particles race across the screen's surface, a camera shutter opens, a flash lamp fires, the shutter closes, and, as if for good measure, the camera winds its film ready for another exposure.

The watchful eyes aren't those of a couple of gadget-minded young-

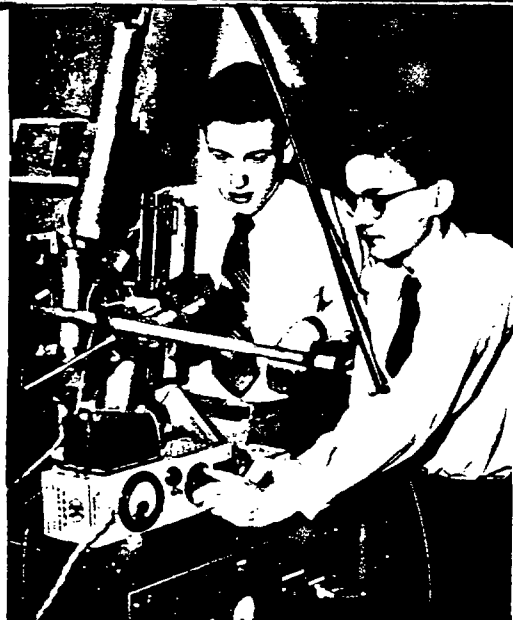
sters viewing a Rube Goldberg creation. Nor are they those of physicists checking complex instruments in a closely-guarded atomic energy laboratory. They belong to two New Rochelle, N. Y., tenth-graders studying the performance of the Geiger counter-controlled Wilson cloud chamber which they themselves designed and built in the basement workshop of one of the boys' homes. The automatic camera takes accurate pictures of the radioactive

particles as they pass through the cloud chamber.

Almost entirely without adult guidance, the youths constructed the apparatus from parts of outdated radios, leftovers from a spare-time electronics hobby, flash tubes discarded as too far gone by Princeton University, and an obsolete miniature cloud chamber from Columbia University.

Little more than 100 miles from the budding physicists' "laboratory," a 14-year-old New Jersey boy startles the scientific world with pioneering of another sort. This youngster, who would rather search for fossils than play baseball, discovered the skeletal remains of a ground sloth, an extinct bear-like mammal that lived 100,000 years ago. Previously, he had found, embedded in some green Jersey clay, a cluster of shells that the Academy of Natural Sciences said dated back perhaps 50 million years.

These aren't isolated cases. Promising youngsters in all parts of the country are constantly confounding both the scientific world and the general public with amazing accomplishments. Such promising leaders are doing much to reverse the opinion held by some adults that all



Typical of the nation's budding scientists are these two suburban New York boys, shown with the Geiger counter-controlled Wilson cloud chamber which they built

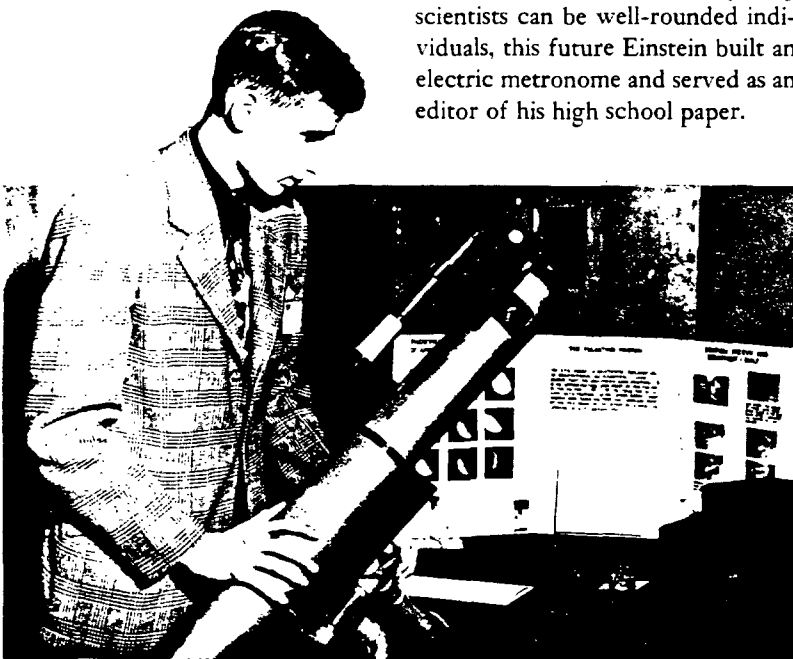
American youths spend their time hanging around soda fountains, racing through the streets in hot rods, and studying nothing more serious than the latest hit tunes.

One of the most encouraging aspects of this spare-time pursuit of things scientific is that little of it

is done in direct connection with school work or under the ægis of parents or teachers. Most of these outstanding young scientists have a real interest in one or more technical subjects and voluntarily spend much of their after-school and weekend time pursuing them.

Take the case of the 16-year-old boy who gained national recognition last year for his extracurricular work in physics. Although he was majoring in music in high school and was an accomplished violinist and pianist, the youth set the scientific world agog with his mathematical and photographic study of the energy of helium atoms through tracks left by the atoms in a photographic emulsion. He computed the amount of energy released when non-fissionable helium is bombarded in an atom smasher. For this part of his research, of course, he was forced to enlist outside help. He borrowed the services of the cyclotron belonging to Washington University in St. Louis.

As if to prove his versatility further and demonstrate that young scientists can be well-rounded individuals, this future Einstein built an electric metronome and served as an editor of his high school paper.



The recently announced winner of the tenth annual Science Talent Search, conducted among high school students throughout the country by Science Service and its Science Clubs of America, was another youngster with a variety of scientific accomplishments to his credit.

Only 17 and hailing from Niagara Falls, N. Y., he already has measured the speed of sound, made rayon, generated chlorine, and built an electric calculator. It was on the basis of such accomplishments that he was awarded the first-place \$2,800 scholarship.

Second place winner in the Search was a teen-ager who, for his project, wrote "a relativistic explanation of gravitational acceleration of falling bodies near the earth," a subject so forbidding that interested readers were referred to a book on



Science Talent Search winners this year included a boy (left) who photographed a lunar eclipse, and one (above) who had an exhibit entitled "The Effect of Reagent Concentration on Speed of a Chemical Reaction"

Top winner this year wrote a paper on "The Effect of Reagent Concentration on Speed of a Chemical Reaction"

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Einstein's theory of relativity for background information.

The annual Science Talent Search, which does much to publicize the fact that there are many youngsters in the country with more than a "rah-rah" outlook on life, attracts about 16,000 scientist-contestants every year. Of this number, 300 are chosen for national honors, and the top 40 are sent to Washington, D. C., for five days at the Science Talent Institute.

Although their scientific interests lie in a variety of fields, the finalists in the 1951 Talent Search were agreed on one point—that it is in the best interest of national defense to cultivate their talents and those of other promising youngsters. All high school seniors, they expect and want to serve their country in some capacity, but feel that they can do a better job for private industry or

for the Department of Defense if they are first given an opportunity to earn their college degrees.

Deferment of key students is admittedly a controversial subject. But Charles Allen Thomas, former president of the American Chemical Society and now chairman of the Scientific Manpower Committee of the National Securities Resources Board, definitely agrees with the youngsters.

To Forestall Shortage

"Perhaps people of high school and college age can't contribute very much at the present time," Mr. Thomas says. "But with proper training they should be able to play a very important part in the defense effort, either directly or indirectly. A gap in our supply of scientific personnel may occur if these youngsters aren't trained. We failed to school a sufficient number of them during the most recent world war and today we are suffering a shortage as a result."

Mr. Thomas and others realize that girls as well as boys are compil-

ing outstanding records in scientific pursuits, and by their work are also building a strong case for modern young Americans. A 16-year-old Phoenix, Ariz., girl, to mention but one, recently developed a technique she believes can reclaim arid lands and increase the fertility of the soil in the Southwest. Her method involves reducing the alkaline content of the soil by treatment with a small amount of ferric sulfate. She hopes to continue her project under field conditions. "If it proves to be effective," she says, "then great areas over the entire Southwest will be opened to the possibility of continued productivity."

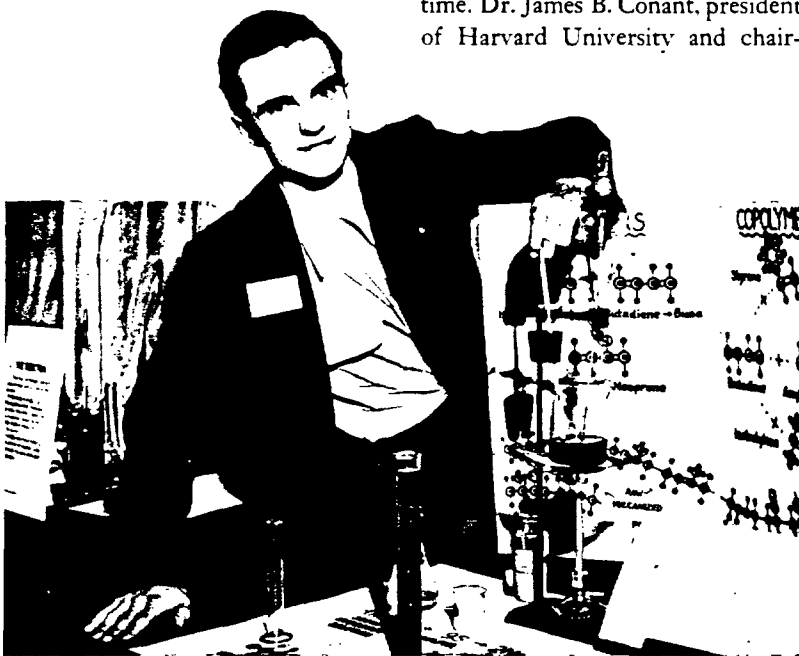
No introvert either, this young lady belongs to any number of high school clubs, enjoys badminton, sewing, and cooking, and can repair sewing machines, typewriters, and washing machines.

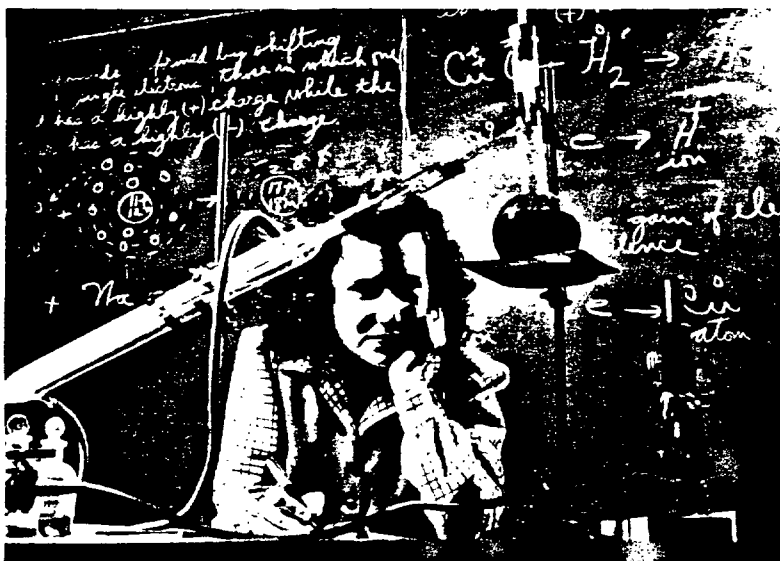
Educators, as well as government manpower officials, are mindful of the great reservoir of talent to be found among the country's not-so-frivolous teen-agers, not only during national emergencies but at any time. Dr. James B. Conant, president of Harvard University and chair-



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Top winner of the Talent Search was the youth above, who developed a device for measuring the speed of sound . . . Right, another prize entry was this boy's study of the laboratory process for producing polysulfide rubber





Symbolic of the creative boys and girls to be found among our present teen-agers is this young lady. A student today, she may well be one of the leaders in chemistry tomorrow

man of the National Education Association's subcommittee on education of the gifted, thinks the country is missing a good bet if it doesn't capitalize on this "much needed brainpower." He feels the opportunity for advanced education should be opened to a greater percentage of these young scientists. Further, he thinks more attention should be devoted to guiding them into the fields of endeavor for which they are best suited and in which they can make the greatest possible contribution.

A 100-page report, "Education for the Gifted," issued by the National Education Association last year, salutes the current crop of outstanding teen-age thinkers. "Gifted youth should be regarded as the potential leaders of American life," it points out. "The United States needs its ablest citizens in positions of large immediate social influence and in work of great potential benefit." High among such positions and in such work, the report lists science and scientific research.

While practically all of our budding scientists are the product of conventional high schools and do most of their work on their own time and initiative, there is at least one public secondary school in the country that specializes in their education. This is the Bronx High School of Science in New York City, sometimes called "an incubator for embryonic scientists." More than 2,000 students are enrolled in this school for the study of particular scientific subjects. Of each year's graduating class, in excess of 90% of the students go on to colleges and universities.

Well-Rounded Course

After a freshman year that includes general orientation courses, pupils are allowed to specialize in natural sciences, physical sciences, chemistry and physics, or mathematics. But with an eye toward a well-rounded graduate, courses in such subjects as social studies, languages, art, music and English are also included.

Private industry, in addition to government and educators, is vitally interested in the work of today's promising young scientists. Business manifests its faith in youth in several ways, particularly by making it financially possible for many boys and girls to further their studies. Oil, automotive, and chemical companies, among others, offer countless valuable scholarships.

Youngsters such as a certain Oak Ridge, Tenn., teen-ager are typical of those who receive such encouragement. This boy has undertaken a study of abnormal growths, or galls, on goldenrod plants—a form of plant cancer—hoping that such a study might lead to the conquest of the disease in man.

Worthwhile work like this not only is contributing to our storehouse of scientific knowledge. It also is doing much to convince many skeptics that perhaps our present crop of young Americans aren't such degenerates after all.

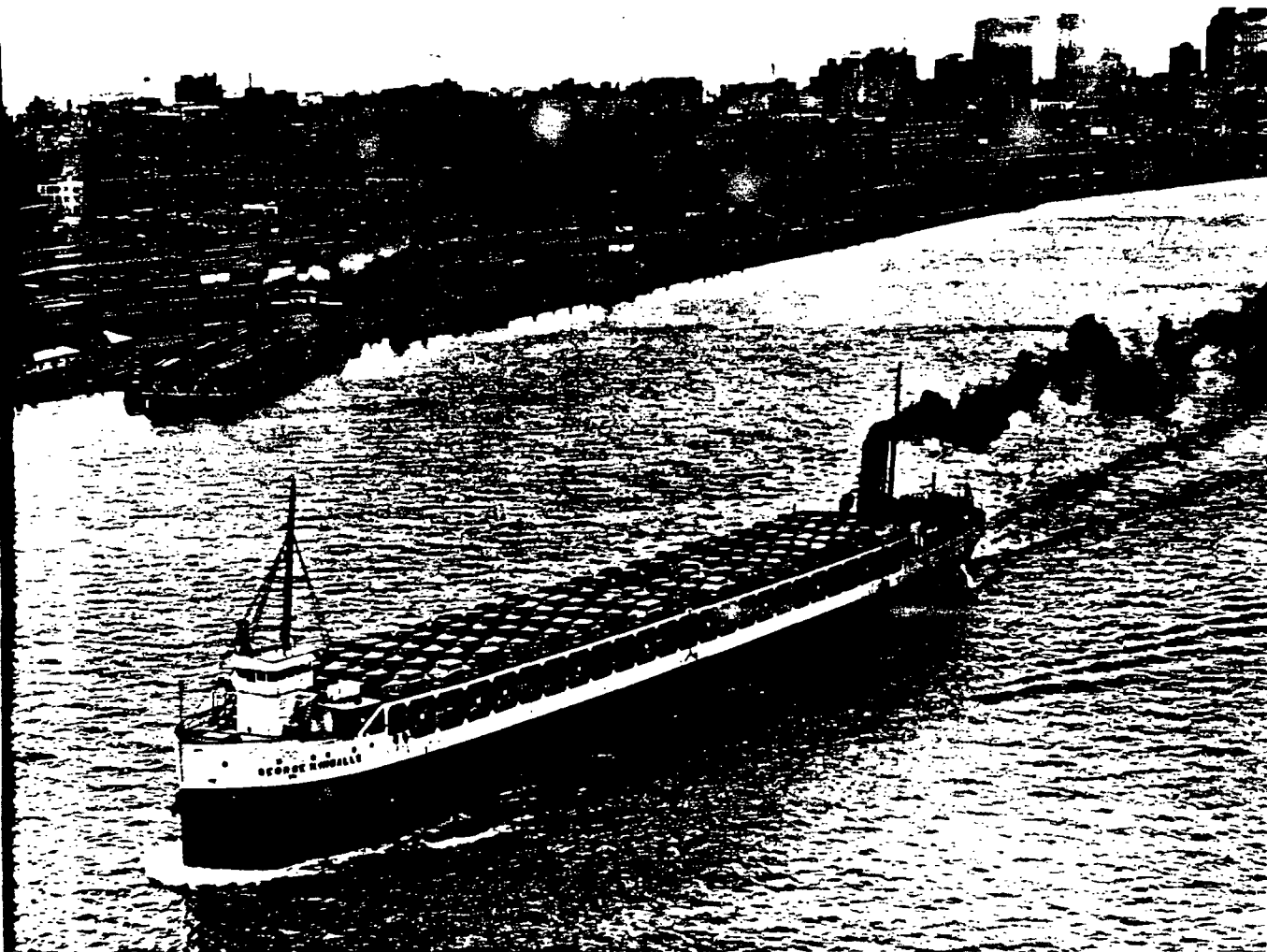
OUR COVER: A view along the Galatin River of Montana, one of the nation's great fishing streams. Kodachrome by Ray Atkeson from A. Devaney, Inc. **OUR PICTURES:** Page 3, courtesy Willys-Overland Motors, Inc.; page 4, montage courtesy Army Ordnance; page 6, courtesy Automobile Manufacturers Assn.; pages 8 and 9, courtesy Pathoscope Productions; pages 11 and 12, illustrations by Kurt Herz; page 13 (bottom left) and page 15 (right in top right photo), courtesy Gilbert and Barker Mfg. Co. through Gasoline Pump Manufacturers Assn.; pages 13 (bottom right), 14 (top right) and 15 (top left), Brown Bros.; page 14 (top left, left center and bottom right) and page 15 (left in top right photo), courtesy Bowser, Inc.; page 15 (top center), courtesy Standard Oil Co. (N. J.); page 17 (top), courtesy U. S. Hydrographic Office; pages 17 (bottom) and 18, Acme; page 19, Frederic Lewis; page 20 (top), courtesy New York World-Telegram; others on pages 20 and 21, courtesy Science Service; page 22, Philip Gendreau; inside back cover, Claude Lockwood.

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DESTINATION: MOTORISTS EVERYWHERE

Naturalists notwithstanding, the true harbinger of spring in the Great Lakes area is neither the groundhog nor the robin. It is the deep-throated whistle of the lake freighter, churning down the St. Clair River to Detroit. The great, black cargo carriers seem happy to shed their winter wraps, to have their engines throb with life again — for it means that another navigation season is underway.

As soon as a channel is broken through the ice at Cleveland, Buffalo, and Duluth, iron ore, coal, grain — and automobiles — move again. The majority of water-shipped automobiles go to these three cities for transshipment by haulaway trucks to dealers. The lake freighters, which average 11 miles an hour, make it from Detroit to Cleveland in 10 hours, to Buffalo in 23 hours and to Duluth in slightly less than three days.

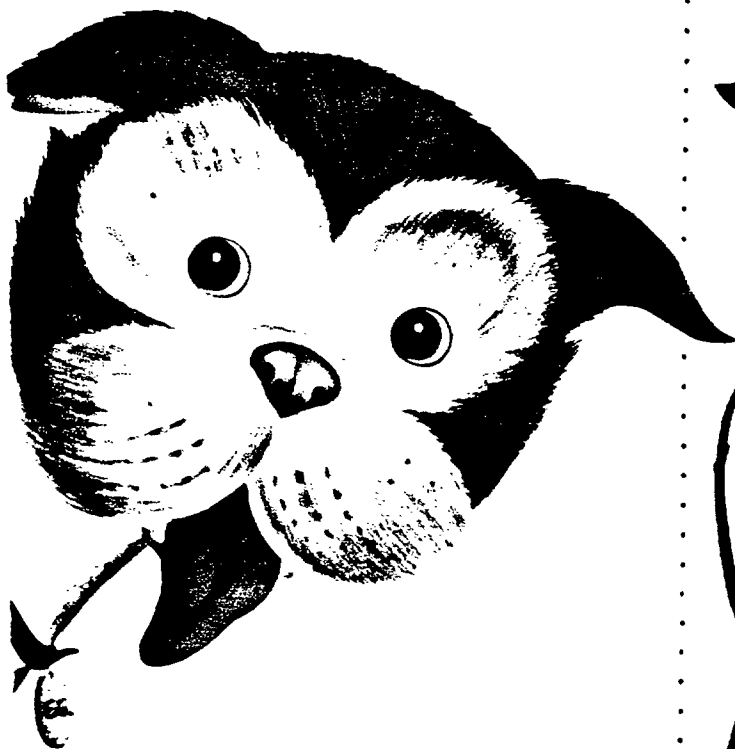
The cars-by-boat business has grown with the automobile industry. During the Twenties, when Detroit auto plants were just getting acquainted with volume production, a number of ore and grain ships were converted to auto carriers. In the years that followed, more bulk cargo carriers were

changed in the same way. Thus, the average Great Lakes car freighter today is of 1910-1915 vintage.

Pre-World War II freighters had space for approximately 300 cars, utilizing the top (spar) deck and three lower levels. The postwar upsurge in automobile production necessitated the addition of "flight deck" superstructures, which increased ship capacities by 100 to 150 cars. Illustrative of how automobile production and shipping figures have almost paralleled each other: in 1939 when 2.8 million cars were turned out, some 208,000 left Detroit by water; of the 6.6 million units produced last year, over 500,000 went to dealers by boat.

The manufacturers deliver new cars and light trucks to dock-side storage lots capable of holding up to 2,000 vehicles at a time. The cars and trucks are driven up inclined ramps to the top and flight decks. Cargo ports in the side of the ship admit them to the three lower decks.

This year's navigation season opening on March 1 was the earliest since the war, and came within one day of equaling the earliest in Great Lakes history — February 28, 1937.



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DOG . . and . . DOGWOOD

- and there is a powerful difference, too,
between gasoline and "Ethyl" gasoline!



"Ethyl" gasoline is *high octane* gasoline. That's why it brings out the top power of your engine — makes a difference that you can feel on hills, on the open road, and when you need quick power for passing or acceleration.

When you see the familiar yellow-and-black "Ethyl" emblem on a pump, you know you are getting this better gasoline. "Ethyl" antiknock fluid is the famous ingredient that steps up power and performance.

ETHYL CORPORATION, 100 Park Avenue, New York 17, N. Y.

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IN THE

ETHYL NEWS

MAY 1951

John D. Bailie, research engineer at Ethyl Corporation's Research Laboratories for the last four years, has been appointed chief automotive engineer of the company's Central Region, with headquarters in Chicago. Mr. Bailie will be responsible for the technical aspects of all Ethyl automotive, fleet, and farm activities carried out in the 15 states of the Central Region.

Mr. Bailie joined Ethyl as an assistant research engineer in 1939. After a brief period of service in the U. S. Army in 1941, he spent three years at the Naval Ordnance Laboratory in Washington, D. C., during which time he aided in the development of projectile fuses and explosives. For this work he was presented with the Navy's Meritorious Civilian Service Award.

Upon his return to Ethyl after the war, Mr. Bailie was engaged in technical report writing at the Research Laboratories in Detroit for two years. Since 1947, he has been a research engineer, first in the Commercial Engine and Fleet section and then in the Agricultural section of the Technical Service division.

A native of Philadelphia, Mr. Bailie was graduated from Pennsylvania State College in 1939 with a bachelor of science degree in mechanical engineering. He is a member of the Society of Automotive Engineers, and Tau Beta Pi, Pi Tau Sigma, and Pi Mu Epsilon fraternities.

THE TOWN THAT LIVES ON OIL

3

Petroleum plays a vital role in the life of virtually every community. But Petersburg, Alaska, relies upon oil perhaps more than the average town. This is a layman's report on just what oil means to Petersburg.

AD-ING NEW CUSTOMERS

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To impress upon additional millions of people the benefits of high quality gasoline, Ethyl Corporation has enlarged its advertising program. The new campaign includes the use of more magazines, television shows, and films at drive-in theaters.

AVIATION LOGBOOK: 1926-1951

10

Three airlines — Northwest, United, and Western — are marking their 25th year of operation. For them, as well as for the entire commercial aviation industry, it has been a quarter-century of genuine progress. This picture story depicts many of the individual phases of that progress.

R_y FOR INDUSTRIAL HEALTH

14

The health of employees, particularly as it is influenced by work environment, is a matter of growing interest to industry. To assist in the problem, several laboratories have dedicated themselves to furthering industrial health. Among the foremost of these is the Kettering Laboratory at the University of Cincinnati.

ROAMIN' HOLIDAY

18

High on the list of favorite tourist spots are our national parks. Here are some of the sights that will thrill this year's national park visitor.

FLOATING SERVICE STATIONS

20

The refueling of fighting ships at sea is one of the notable marine achievements of all time. One result of this comparatively new art is that the striking power of the U. S. fleet and its aircraft has been extended by thousands of miles.

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, 100 Park Avenue, New York 17, N. Y.

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

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Herbert A. Savage, secretary

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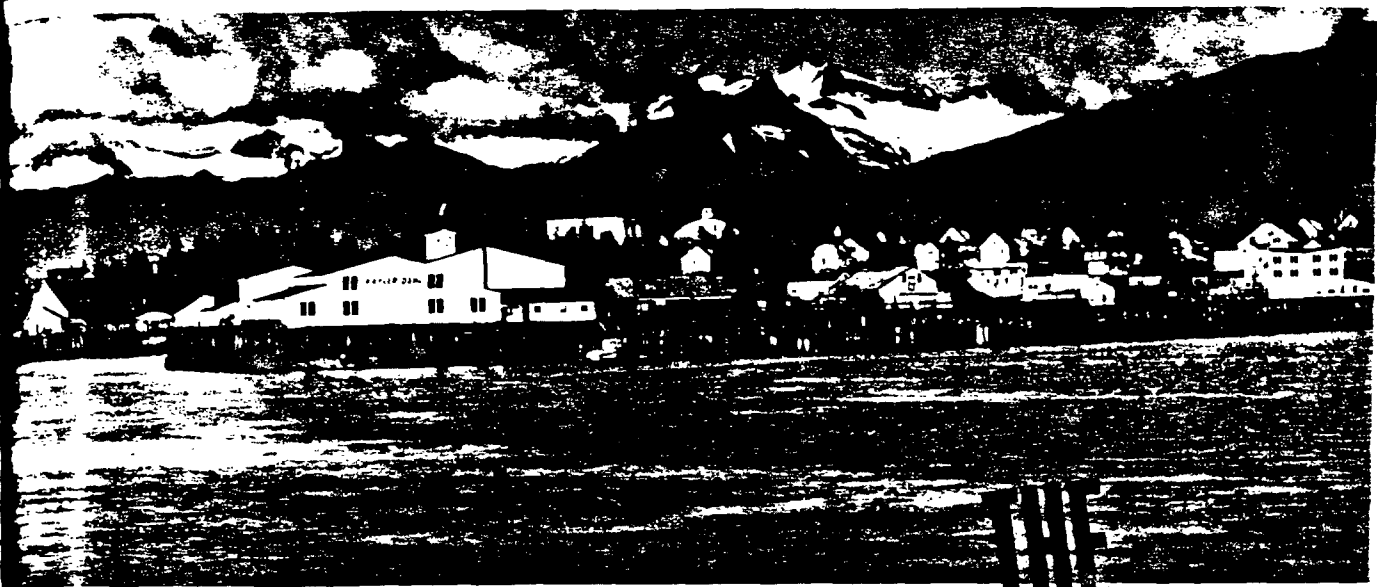
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All civilized communities depend upon petroleum, but few perhaps rely upon it so completely as Petersburg, Alaska

**By Comdr. Noble G. Ricketts
U. S. Coast Guard (Ret.)**

REFERENCE BOOKS will tell you that Petersburg, in southeastern Alaska, is best known for its fishing fleets and canneries. But the picturesque town has another claim to fame that is both unique and significant. It is, without doubt, one of the communities of the world most utterly dependent on petroleum in carrying on its everyday life.

If this fact isn't apparent to the mixed Indian-American population of the town, it is immediately evident to a person like myself upon returning to Petersburg for a lengthy visit after an absence from Alaska of ten years. Oil powers the town's main industries. It fuels the fishing vessels. It heats most homes and

business places. It runs the boats, automobiles and airplanes that are the only means of transportation in the area. Take away petroleum and you virtually wipe modern Petersburg off the map.

Taking a closer look at Petersburg, you find that it is a community of 1,600. By continental U.S. standards, that is a small town. But in Alaska, which has a total population of only 130,000, that many people constitute a metropolis. Petersburg is situated halfway between Ketchikan and Juneau in the Panhandle region, that part of Alaska which borders the Canadian province of British Columbia. Not a boom town, it is nevertheless a typical Alaskan community.

No railroads or through highways run anywhere near it, but this does not lessen Petersburg's dependence on petroleum products. Rather, it heightens it. Water power development has hardly started, for this is a region of wilderness islands and peninsulas. Coal brought in by ship, and local wood can be — and in

THE TOWN THAT LIVES ON OIL

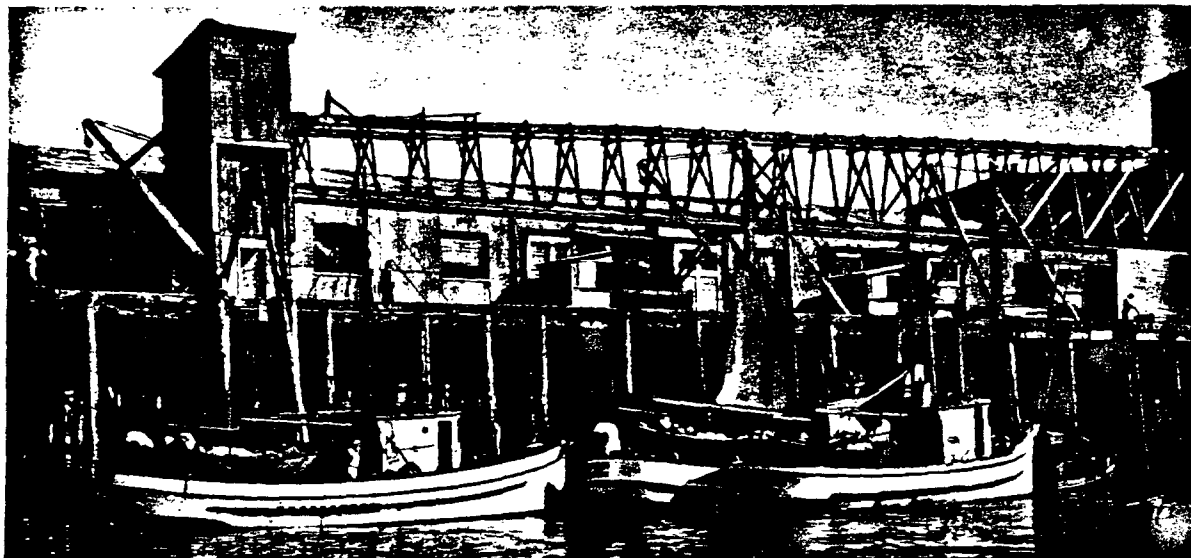
some cases are — used for power, light and heat, but only at high cost.

If one travels, as I have for the past two summers, on an oil-burning steamer out of Seattle, he passes en route to Petersburg many Alaskan coves where canneries are being readied for the salmon season. Petersburg itself is on Mitkof Island, nearly 100 miles inland from the open waters of the Pacific Ocean, on the rocky, river-like Wrangell Narrows. Oil-powered dredges recently straightened and deepened the worst stretches of the Narrows, which is a main channel of what mariners call the Inside Route.

Dozens of great sounds, some almost as large as Chesapeake Bay and all many times deeper, cut into this rugged country from the outer



Situated on Mitkof Island, far down the Panhandle of Alaska, Petersburg is nearly 100 miles from the Pacific's open waters



One of the town's oil-powered cold storage plants. Here, fish are kept frozen while awaiting shipment to the U. S.

coast. Frederick Sound, just north of Petersburg, is one of these big bodies of salt water. They surround the steep, wooded islands and wind about the mountainous peninsulas of the mainland. Evergreen-studded islets, like those off Petersburg harbor, dot their cold waters.

Big bluish objects usually can be seen drifting past some of these islets. These are icebergs from Le-Conte glacier, which runs down to sea level only 20 miles from town, the southernmost glacier of our hemisphere to reach tidewater. During my last stay, the strong tidal currents brought one of these icebergs right into the harbor, where it grounded and melted on the flats.

Louis Miller, the only person around who helped establish the town in 1901, told me icebergs were one reason why Peter Buschmann selected the site for the community named after him.

"For years after Petersburg was started," Miller recalled, "sailing crews kept busy breaking chunks

off the Frederick Sound icebergs. They pounded the chunks up in order to get ice for refrigerating the fish to be shipped south."

The story is different now. Oil has made possible the big cold storage plants at Petersburg and other southeastern Alaska ports. Millions of pounds of halibut, salmon, black cod, and other fishery products, such as processed shrimp, now are kept deep-frozen until southbound vessels with refrigerated space call. It works the other way around, too. Before they leave on fishing trips, vessels load cracked ice into their

holds. Thus, ice made by man with power from petroleum keeps catches of fish fresh until they can be brought into port.

Gasoline or diesel oil drives every one of the hundreds of fishing boats one sees tied up at the Petersburg floats. Internal combustion engines also furnish power to operate their radios, echo-sounding machines and heavy, fast-running fishing gear.

Oil cooks all the fish, shrimp, crabs and clams that are processed in local canneries. And that's a big order. During its banner year, 1949, Petersburg canned almost a quarter-

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Lifeblood reservoirs — these tanks store some of the oil that keeps Petersburg going



The Petersburg way point for the Juneau-Ke

million cases of salmon alone. Oil-driven machines also reduce that part of the herring catch not used for food or bait into fish oil and meal.

Besides powering cannery and cold storage machinery, oil frequently is used to generate the electricity used in many homes and stores. The hydro-electric plant on tiny Mitkof Island's largest stream can't carry peak loads any more. A diesel-powered generator stands by to operate whenever additional electricity is needed.

Heavy Traffic

Down on the floats, men preparing the local fleet for the salmon season told me that many more boats would unload catches at the cold storage plants and canneries. Some from as far south as Seattle and Tacoma were arriving daily. Others would come in later from small Alaskan settlements, like Kake, a nearby Indian village.

The fish buyers of Petersburg make arrangements to have the lifeblood of the town—a heavy and sustained flow of fish—come in from all points of the compass. For some years a considerable tonnage of salmon has been flown in each season from Yakutat, over 300 miles to the northwest. Salmon fishing

opens earlier there, so the most enterprising cannery lengthens its operations with airborne fish.

In spring and early summer some of the larger local boats cruise 1,000 miles west to fish on productive halibut banks off Kodiak Island. These heavy, wooden 50-footers with 15-foot beams run straight across the open Gulf of Alaska, and often take terrific beatings from storms.

In winter, between the fishing seasons, owners of the stoutest boats frequently sail their families down to Seattle. It's a 900-mile run to the south along the Inside Route, where a number of ports and coves are available for shelter. While in Seattle, thrifty owners purchase to bring back home such items as building materials, foodstuffs, and furniture.

Despite their great reliance on water travel, southeastern Alaskans get more air-minded all the time. The more prosperous Petersburg residents think nothing of chartering one of the tiny local planes, kept in a floating hangar next to the public float, for their own private use. They fly out to see how salmon runs are coming along at the start of the season, to visit a seldom-fished mountain lake for some real trout fishing, or to get somewhere on or

off the main line in a hurry. Flying to Seattle on the big planes that stop at Ketchikan and Juneau is but little more expensive than going south by steamer.

Planes are used as a matter of course in this region whenever speed is required, particularly to move the sick or injured to hospitals from fishing boats or from isolated shore locations. That's just one more boon for which petroleum products are responsible.

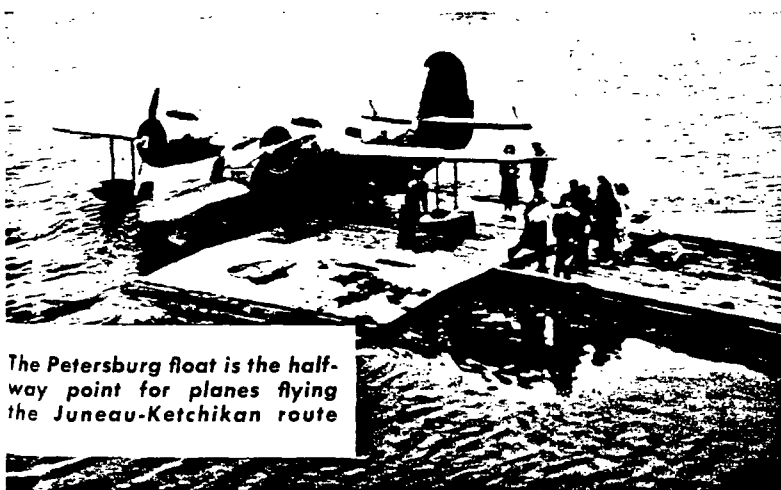
Every flying day, around noon, two six-place planes based at Ketchikan and Juneau land off the wharves with passengers, mail, newspapers and air express. The float at Petersburg marks the halfway point where, northbound and southbound, they pick up much business.

It costs \$20 and takes an hour to fly the 125 miles to Juneau or Ketchikan on the daily planes. A direct steamer takes about 10 hours, but it often makes long stops en route. At that, steamers and modern fishing boats are far faster than the sailing craft and rowboats of the early days.

Wood Not Used

Johnny Sales, an 83-year-old former contractor who renewed the piling of Petersburg wharves time after time before creosoted material came into use, told me about two round trips he made to Juneau nearly 50 years ago. "I went by rowboat and it took me two weeks each way," Sales said. "I camped with my dog near the ends of points to wait for favorable weather and tides. One calm day I got towed by a little wood-burning stern-wheeler working for a cannery."

No boats and few homes in southeastern Alaska burn wood now, although vast forests of spruce and hemlock surround most communities. Many of the better homes in



The Petersburg float is the halfway point for planes flying the Juneau-Ketchikan route

Petersburg have fireplaces, it is true, but mostly these are for cheer and Santa Claus. A few elderly pensioners get exercise and save a little money by cutting wood to burn in their shacks.

Look closely, however, and you'll find that practically every home, even the tiniest ones, have one or more oil drums, supported on a wooden framework, alongside or behind them. The drums are refilled from little tank wagons that rumble over the wooden streets of the town. The wagons are operated by express companies that buy diesel and fuel oil from the two companies — Standard of California and Union Oil Company of California — that have local distributing plants.

Except in the slack winter season, good men are in demand for the fisheries and also for construction and other skilled work. Last summer even inexperienced boys were getting \$2.25 an hour to dig ditches and work on local roads. So it's easy to see that the two Alaskan bugbears, high labor and high transportation costs, coupled with rugged terrain, make wood more expensive than oil for heating in Petersburg.

Midsummer temperatures normally stay in the 50's, day and night, during rainy weather, which prevails fully half the time. Noon temperatures may reach 70 on bright days, but on clear nights, even in July, the mercury usually drops down to 50. Fall chill starts in August, so summer oil fires are kept burning, intermittently at least, in homes, stores and offices.

Even with less than 20 miles of road outside town on which to use automobiles, a surprisingly large number of Petersburg families now own cars. Outboard motorboats also are extremely popular, especially with the boys and with those men who enjoy a busmen's holiday out



Oil-heated homes and gasoline-powered automobiles are two reasons why the town depends so completely on petroleum

fishing just for the sport of it.

Fred Nelson, manager of Standard Oil's plant, lives in a cozy house by the road, not far below a group of storage tanks on the hillside at the south end of town. His office adjoins the house. Union Oil's nearby wharf is about the same size as Standard's. Both extend across the harbor flats so that tankers can tie up at any stage of tide.

Efficient transportation by tankers, as well as competition, keeps oil products at bargain prices compared with other things sold along Inside Route channels. Excellent management plays its part. I saw much of the Nelson family during my stay in town and I know of Fred's fine character and sound business sense. He is a director in the prosperous local bank. Men like Nelson do not just grow with Alaska. Rather, they make Alaska grow.

Fishing boats take on fuel at several berths and floats along the Standard Oil wharf. The four pipes running along it, under the road and up to the tanks, carry the four pe-

troleum products on which Petersburg and all southeastern Alaska is continuing to roll ahead: motor gasoline, aviation gasoline, fuel oil, and diesel oil.

Petroleum products, which sell at prices comparable to those in the United States, seem destined to remain one of the real bargains in the Panhandle region of Alaska. Competition within the oil industry will see to that. As for the need for oil, it is a crying one. Coal and wood, as noted, cost a pretty penny. Water power possibilities are there, but would be difficult to develop because most of the streams are small ones and are located on islands separated by deep tidal channels.



Petersburgers enjoy the same life as people in any U. S. small town. This is a group at a Fourth of July parade

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Ethyl's biggest advertising program ever is designed to help "Ethyl" gasoline marketers increase their 1951 sales

NO ONE, least of all the petroleum marketer, has to be reminded that the U.S. automobile population has increased tremendously during the past five years.

As it has been called upon to meet the unprecedented demand for gasoline and other petroleum products, the oil industry could not help be mindful of such facts as that during the past 12 months alone almost three million non-automobile families went out and bought themselves a car. Since 1946, the increase in car-owning families has been from 22 to 32 million, or almost 46%. For the sake of easy figuring, it's fair to say then that three families operate an automobile today for every two that owned a car only five years ago.

At first glance, this continuing increase in car ownership and the fact that old age, death, and other circumstances reduce the number of steady premium gasoline buyers by at least a quarter-million annually might appear to be two wholly unrelated facts. Actually, however, they combine to form a real sales

challenge to the petroleum marketer. They mean that almost a million additional purchasers of premium gasoline must be acquired each year if the present ratio of premium to total gasoline sales is merely to be maintained.

Advertising obviously is one of the means that must be employed in any effort to add these new customers. As part of its contribution toward helping the industry attain this goal, Ethyl Corporation has expanded its 1951 advertising program

to impress upon more of the motoring public that "There is a powerful difference between gasoline and 'Ethyl' gasoline."

Through colorful insertions in a greater number of leading magazines, and by sponsorship of television shows and drive-in theater commercials for the first time, Ethyl expects to reach a greater number of automobile owners than ever before in its advertising history.

Admittedly, car owners at whom this expanded advertising program is directed are not the easiest consumers to reach. They are an extremely widespread and highly diversified group. They live in all sections of the country. They drive everything from jalopies to 1951 models. Their annual incomes range



Holiday, American Legion, and Sunset, above, have been added to the list of top national consumer magazines carrying Ethyl advertisements. Some of the latter are shown in the montage at right





Millions of car-owning television fans, like those at the right, are viewing the Ethyl shows. Red Barber, above, and other leading sportscasters give the video commercials

from less than \$2,000 to six-figure salaries. Insofar as car use is concerned, they run the gamut from the man who stores his car for the winter to the hustling traveling salesman who averages 1,000 miles a week the year 'round.

Ethyl's advertisements now appear in magazines that are seen by a total of 56 million people every month. To attain this large and select audience, careful planning of what magazines to use was required. Comprehensive research reports plus years of experience indicated what publications would reach the largest number of gasoline consumers most effectively.

Three new magazines have been added this year to the list of those already carrying Ethyl Corporation ads. Each publication was selected because it reaches a desired specific segment of the potential premium gasoline market.

Sunset, for instance, has been added because of its wide circulation throughout the Pacific Coast states. Statistics show that West



Coast motorists put more mileage on their cars in the course of a year than drivers in other sections of the country. This coupled with the fact that 98% of its readers own automobiles means that almost everyone who sees an Ethyl advertisement in *Sunset* is a potential premium customer for gasoline marketers on the West Coast.

Other Special Groups

Just as *Sunset* covers car owners in a certain geographic section, so does *Holiday*, the second newcomer to the Ethyl Corporation magazine advertising list, appeal to motorists in a certain economic bracket. *Holiday's* three-quarters of a million monthly copies are seen by families

that, for the most part, have high annual incomes. Such families drive their cars twice as far each year as the average U. S. family.

Another major gasoline-consuming group is composed of the people who live in towns of 2,500 population or less. These small town residents own half of all the country's automobiles.

In the past, Ethyl has reached the premium market represented by

these small towns through advertisements in such rurally popular magazines as *Country Gentleman*, *Grit*, *Pathfinder*, *Outdoor Life*, *Sports Afield*, *Field & Stream*, and *The Progressive Farmer*. Now, *American Legion*, a magazine with a circulation of about three million, has been added. This veterans' publication enjoys wide readership in the smaller communities and also gets read by an unusually large number of service station operators.

Ethyl, of course, is continuing to advertise in those many magazines which it has been using right along. Originally chosen because they offered a special advantage, such as reaching the appropriate audience and being of a character that prop-

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erly reflected the quality of pre-
mium gasoline, these several publi-
cations have proved most effective
in Ethyl Corporation's case over a
long period of years.

In many instances, Ethyl's unin-
terrupted advertising has won pre-
ferred pages for the company's in-
sertions. Since the first pages of a
magazine are usually its best-read
advertising pages, it is interesting to
note that Ethyl advertisements ap-
pear on page 1 in *Life*, *Time*, and
Collier's, page 5 in *The Saturday
Evening Post*, and page 7 in *Look*.
Because of their preferred positions,
the Ethyl ads are seen by 30% more
people than the average magazine
advertisement.

Must Impress Reader

But, as any advertising specialist
will tell you, the appearance of ads
in a prominent position in a maga-
zine is only a beginning. Advertise-
ments must attract and hold the at-
tention of the reader, as well as make
a lasting impression on him. Re-
cent readership surveys disclose that
Ethyl Corporation's current "pow-
erful difference" advertisements (see
back cover) are unusually success-
ful. One survey indicates that 52%
of the people who see Ethyl ads re-
member as long as 48 hours later
that the sales message was "There is
a powerful difference between gaso-
line and 'Ethyl' gasoline."

While enlarging the scope of its
magazine advertising, Ethyl also is
adding other media in an effort to
reach and impress still more motor-
ists. This second part of the over-
all program calls for the extensive
use of television programs and drive-

in theater films in a 14-state area
where more than half of all pre-
mium gasoline sold in the entire
country is purchased.

The telecasts, aimed at reaching
the urban automobile owner, are
sports shows of from 10 to 30 min-
utes in length. The programs are
conducted by popular sports com-
mentators, while the commercials
feature such top-flight figures in the
sports telecasting world as Red Bar-
ber and Bill Stern. Televised over a
number of stations throughout the
Midwest and South and in Califor-
nia, the programs are expected to
appeal particularly to men because
of their sports flavor.

In order to carry the "Ethyl"
gasoline message to those sectors of
the 14-state area not in normal TV
range, a relatively new mass adver-
tising medium is being employed.
This calls for the showing of "min-
ute movies" at almost 550 drive-in
theaters. These are the same 100-
second film commercials being used
on the Ethyl television shows.

It is felt that the drive-in theater
campaign will prove effective for
several reasons. In the first place,
the audience that sees these Ethyl
films will be made up of gasoline

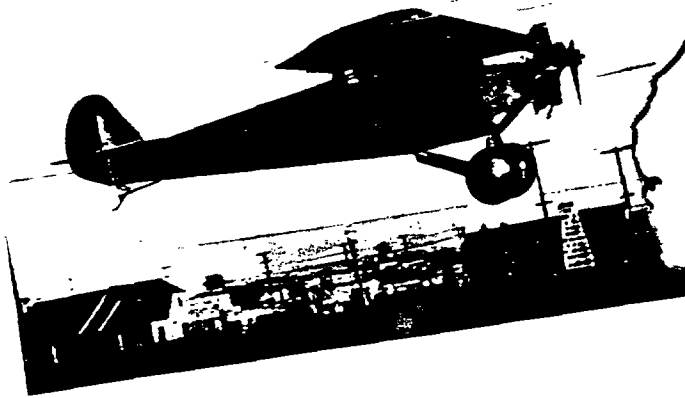
buyers, all of whom should be in
more of a car-minded mood than
usual since they will be seated right
in their vehicles at the time the
advertising message reaches them.
Further, the very nature of the
commercials — vivid visual demon-
strations of the extra benefits of
"Ethyl" gasoline — is such as to in-
fluence immediate future purchases.
For instance, the next time a drive-
in theater patron buys gasoline he
undoubtedly will remember what
he saw — that top quality fuel will
bring out the full power of his car's
engine.

Service to Industry

In a very real sense, Ethyl adver-
tising through the years has been a
service to the petroleum industry in
helping to promote the sale of pre-
mium gasoline. Now, to assist in this
direction even further, the Cor-
poration has launched its biggest
advertising program ever — a pro-
gram that will reach more than two
of every three car-owning families
every month. This expanded effort
will, it is hoped, prove of tangible
value to Ethyl's customer companies
in stimulating the public sale of
their best gasoline.



**On the screens of almost 550 drive-
in theaters in many sections of
the country, audiences are seeing
vivid film demonstrations of the im-
proved car performance that results
from the use of "Ethyl" gasoline**



AVIATION LOOK 1926-1951

In this, its silver anniversary year, commercial aviation can look back on a quarter-century of unlimited progress and ahead to a new era of achievement in serving the flying public

ONLY the twinkling lights of an occasional city below broke the inky blackness as the big plane droned on through the midnight sky. It was a flight the veteran airline captain had made hundreds of times before. But there was something special about tonight's trip. For him, it rounded out 25 years of service in commercial aviation. And what a 25 years! Packed with progress they had been. If ever a man had a right to reminisce, it was he.

Why take, for instance, a simple thing like the two-way radio I had used only a minute ago to report our position and get the latest weather bulletins. Routine stuff today, but a quarter-century ago a guy was on his own once the wheels of the plane left the ground. No radio, no beams to follow, no automatic pilots and all the other navigational aids we have now.

It's enough to make a person shudder to think back how things

were in the pioneer days of 1926. It's sometimes hard to realize it, but commercial aviation is only that old. Northwest, United, and Western were three of the first airlines, and they're celebrating their silver anniversaries this year.

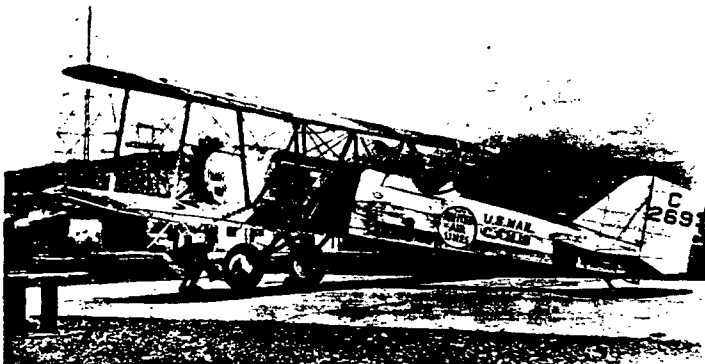
The planes — we'd call them crates today — usually were open cockpit, two-seater creations. They cost about \$111,000 brand new. That was big money in those days. And we thought their top speed of 115 miles an hour and maximum cruising range of more than 600 miles was really something.

We flew on the best gasoline available, of course, but it wouldn't begin to be good enough for today's automobiles, let alone modern aircraft. Same holds true of oils and greases. These big 2,600-horsepower engine jobs need all the perfection

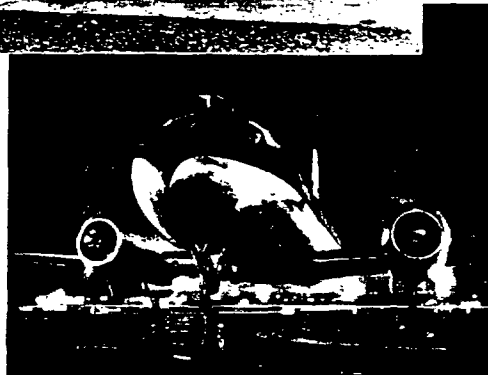
the oil product represents million

Flying West Coast with only there is most people like that Yet here night at a plane and crew

Further days have where payments were above grade are served added), and airplanes are so common modern



Twenty-five years of progress in aircraft design and construction are evident from these two photographs. The early model above carried two passengers and boasted a cruising speed of only 100 mph



Left, a served early Los low, Los

ION LOGBOOK:

1926-1951

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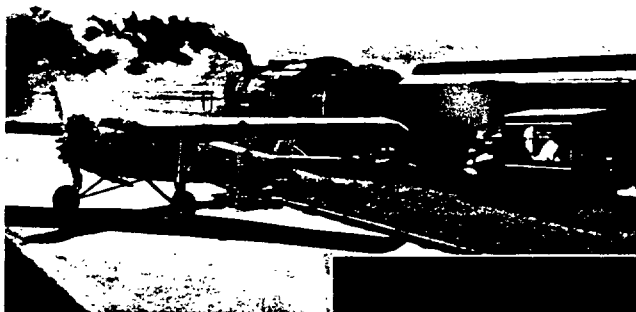
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the oil industry has built into its products. Don't forget, this airplane represents an investment of a cool million dollars or more.

Flying from New York to the West Coast in less than 12 hours with only one stop en route — now, there is really something. In 1926 most people didn't expect progress like that much before the year 2000. Yet here we are, cutting through the night at a 315-mile-an-hour clip on a plane that carries 50 passengers and crew.

Furthermore, some planes nowadays have beds and even lounges where passengers can enjoy refreshments while winging along high above ground. Steaming hot meals are served aloft (free, it might be added), and people board and leave airplanes at sprawling airports that are so complete they're virtually modern cities in themselves.

Left, a converted movie studio served as the hangar at this early Los Angeles airport . . . Below, Los Angeles Airport today

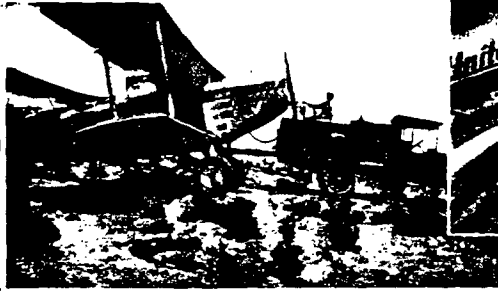


Flight departures and arrivals at night are a common occurrence now. But before after-dark flying became an accepted practice, passengers and mail often were transferred to a train to continue their travels after nightfall



No snappy, tailored uniform adorned the pilot of yore. His usual garb included a jacket, boots, and the traditional helmet and goggles





Above, just as gasoline quality has improved greatly during the past 25 years, so, too, have plane refueling methods



Stewardess service was instituted by the airlines more than 20 years ago. Those in the group above were among the pioneers. Contrast their capes and close-fitting hats with the chic uniforms of the modern air stewardess



Just like it was *not* 25 years ago. In those days, the pilot didn't wear a smartly tailored uniform and sit in a weather-conditioned cabin surrounded by every device known to man to insure a safe, comfortable flight. We wore riding breeches, leather boots, jacket, a snap-under-the-chin helmet, and goggles. The passenger enjoyed no greater comforts. He was right out there in the open, too, at the mercy of the spanking wind, the drenching rain, and the baking sun. More often than

not, he had a sack of mail dumped unceremoniously in his lap just before the take-off.

When the tiny plane started to warm up, the whole earth seemed to tremble. Nobody gave any take-off instructions from a control tower. After eyeing the sock atop the old barn of a hangar to see which way the wind was blowing, we'd take a quick look at the sky. If no other planes were in sight, it was okay to take off. And what runways. Little more than oiled strips running through the middle of what used to be a wheat field.

If the passenger got tired of sitting, it was just too bad. He couldn't get up and stroll — unless he wanted to walk off into thin air. And, unless he had been provident enough to bring along a box lunch, the passenger didn't see food from the time he



In more ways than one, flying was a big step in the life of a passenger back in the Twenties (above). Boarding a plane today is a simple matter



Above and right, compared with the full meals now served aloft, early dinners were little more than box lunches



Above left, the old-time "aerial ticket office" served its purpose, but couldn't compare with modern airline facilities



Passengers once wore high-altitude oxygen masks, and had no lower deck lounge to visit



The pilot snapped out of his reverie. Within seconds, a quarter-century had passed in mental review. He glanced paternally at the new.



young first officer seated next to him in the cockpit.

"What I'm about to say might not make sense to you now, Kid, but I hope the coming 25 years are as good to you as the past 25 have been to me."

grabbed a last-minute sandwich at the landing field lunchroom until he got where he was going. Those who did get hungry could find some consolation in the fact that flying hours definitely were limited. Come nightfall, and mail and passenger were transferred to a train to continue their journey. Night flying wasn't perfected yet, and no one wanted to take any chances.

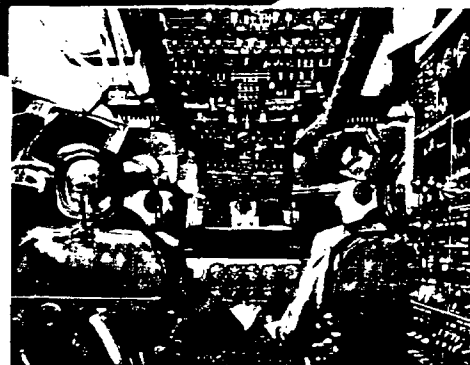
Looking back on it, crossing the country by air really was an experience. Passengers can have dinner in New York and breakfast in California the next morning these days, but they'd have died of starvation if they tried that trick a quarter-century ago. What they had to do then was fly as far west as Chicago in an open cockpit job and then finish the trip in the box-like cabin of a two-passenger ship. The whole journey took over 32 hours, involved 14 refueling stops, and cost well over twice the present fare.

Yes, a guy like me has really seen a lot of progress. Take Ginger and Mary, the stewardesses, for example. They're back there tending to the wants and needs of the cash customers. How we crewmen used to kid the first stewardesses back in the early Thirties. Some of us even resented them a bit. "G'wan home," we'd tell them, "a woman's place is in the kitchen." Now, the stewardess personifies airline service.

A lot of people overlook safety, but that's progress, too. When this business of flying around the country was fairly new, there were something like 18 fatalities for every 100 million miles flown. Last year, even with the tremendous increase in air travel, the fatality rate was only 1.1 per 100 million passenger miles. And another thing —

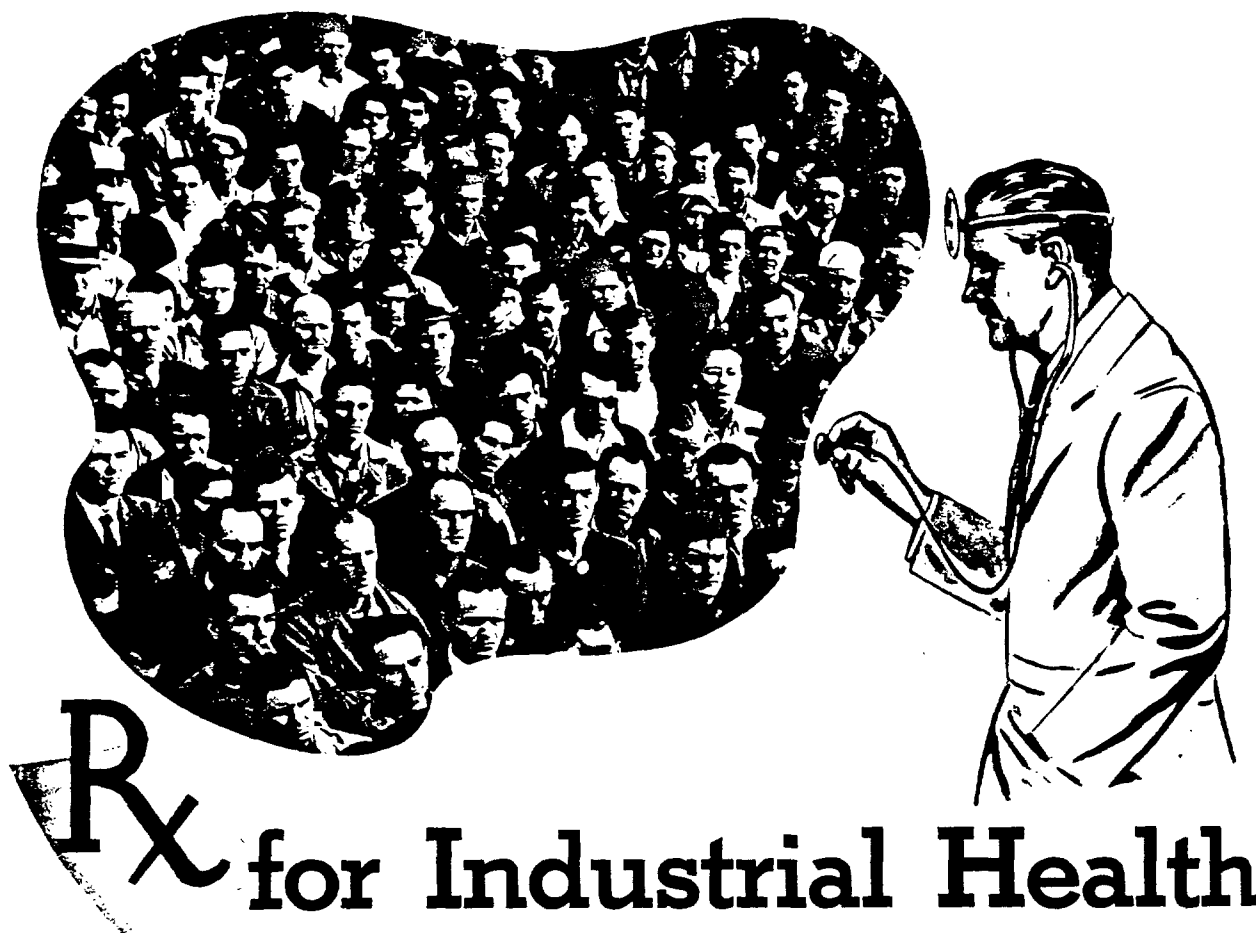


It takes a well-trained team to assure safe, dependable airline service — the mechanic to keep engines in good repair, the stewardess to look after the passengers, and the crew to man our sky giants



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Rx for Industrial Health

The Kettering Laboratory is one of the foremost centers devoted exclusively to helping industry safeguard employees against occupational ills

PHRASES LIKE industrial health, industrial hygiene, and industrial medicine have long been part of our vocabulary. Until 50, or even 25 years ago, however, they were almost empty terms. Illness was illness and an injury was an injury. Few among employees, employers and physicians were especially concerned how or under what circumstances the illness or injury was acquired, or how its future occurrence could be prevented.

Today, the situation has changed, or is changing. Industry, with the

larger business firms in the forefront, is vitally interested in obtaining the answers to questions that arise about employee health. The concept that a company's strength lies in improving its manpower is gaining favor. Just as industry has learned that employee morale is a business asset, so, too, is it recognizing that the continued good health of workers plays an important role in each company's production and future progress.

Physicians who specialize in industrial medicine consider this recognition of the problem a formidable beginning, but only a beginning. They are mindful of such "adverse factors" as (1) a critical shortage of trained industrial doctors; (2) a slowness, although not necessarily a hesitancy, on the part of colleges

and universities to offer specialized industrial medicine teaching; and (3) the fact that 65 to 70% of all U.S. industrial workers, mostly in small firms, are without any direct hygienic supervision. In many instances, not even pre-employment or periodic physical check-ups are given.

There are in this country only about 2,000 doctors who devote either their full energies or a major portion of their time to industrial medicine. Virtually none of these was specifically trained for this work; they merely "picked up" the necessary know-how as they went along. Colleges, some feel, could be doing more to augment the ranks of the nation's corps of industrial physicians. Four schools provide special training for graduate medical stu-

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The Kettering Laboratory staff numbers more than 100 persons, like the man at right. Even with its large staff and modern facilities, the Laboratory cannot handle all the projects offered it

dents, but only one, the University of Cincinnati, now offers a degree of Doctor of Industrial Medicine. In all of the U. S. at present, only five men hold this new degree.

There is a bright side to the picture, however. To help bridge the gap, some 10 or 20 laboratories throughout the country are actively and relentlessly engaged in investigating the specific and over-all problems of industrial health. Most of these research centers, if not established directly by various industries, rely upon strong industrial support to keep them functioning. Other laboratories of this type have been created by institutions of learning with or without financial aid from industry, as the need may be, and still others are private or governmental undertakings.

Recognized as one of the largest, best known, and best equipped of our industrial health laboratories is the Kettering Laboratory. Both administratively and physically, it is

part of the Department of Preventive Medicine and Industrial Health, College of Medicine, University of Cincinnati. Dr. Robert A. Kehoe, one of the outstanding authorities on toxicology, is director of the Laboratory. In addition to, but apart from, this connection, Dr. Kehoe fills many other positions, such as that of medical consultant to the U. S. Air Force and Atomic Energy Commission and medical director of Ethyl Corporation.

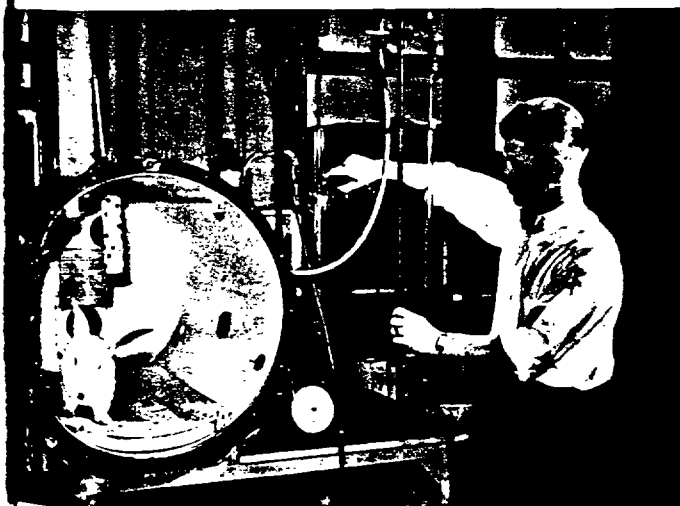
Dedicated in late 1930 and named in honor of Charles F. Kettering, the creative genius, the Laboratory was made possible by outright contributions from a few industrial firms, including Ethyl Corporation. Its yearly budget, which now exceeds

half a million dollars, is met by funds provided by those industries, companies, and other groups which call upon it for investigative research, and direct services and advice. In its two-decade lifetime, more than 35 individual firms and government agencies have sponsored projects for investigation.

These range, in importance and scope, from the diagnosis of a specific health condition of a lone individual in a single plant to a medical and scientific assault on ailments that have come to light only in this atomic age. Such a disease is berylliosis, which apparently is induced by exposure to beryllium, a rare and little-known metal. Beryllium is used in a number of modern products,



Valuable data are gained through the use of animals in experiments. Left, a rabbit in a respiratory chamber is exposed to a chemical vapor . . . Below, the backs of mice are painted in a skin disease study



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including certain highly useful alloys. Its further potential usefulness, however, is handicapped by its toxic properties. A cubic meter of air containing more than one-tenth of a microgram of the metal is considered beyond the limits of safe breathing. Persons who breathe in too much beryllium can suffer either an acute inflammation of the lungs or they can fall victim to a chronic lung condition.

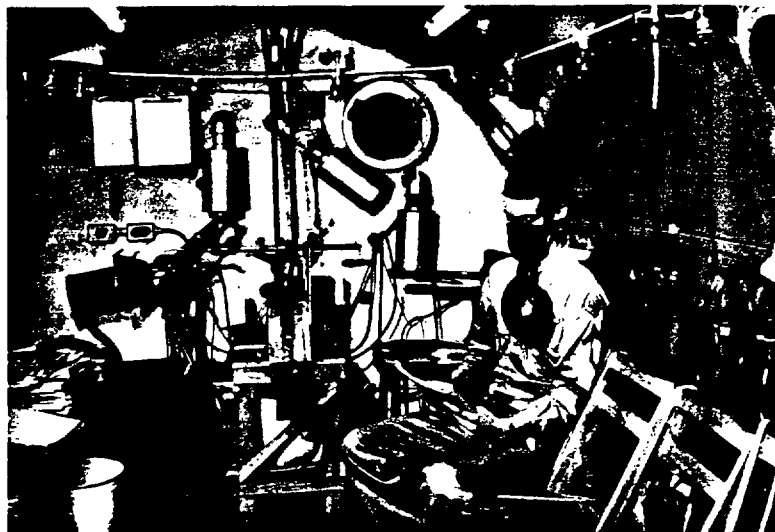
The Kettering Laboratory feels that if it can reproduce the chronic form of the disease in an animal, it can then undertake studies that will determine the many whys and wherefores of berylliosis in humans. Thus far, however, experiments in this direction have failed, although much useful information concerning the disease has been obtained. Conquering berylliosis obviously looms high on the agenda of the Kettering and other industrial health laboratories investigating the disease.

Fluoride Study

A somewhat similar, although perhaps less dramatic, study is under way in connection with inorganic compounds of fluorine employed in various industries. Most fluoride taken into a human body is stored in the bones, and the chemical is capable of changing the structure of the bones and of affecting various bone joints.

The poser that has been put before the Kettering Laboratory staff by the several companies sponsoring this project is how much fluoride can a person absorb into his system without suffering any ill effects. When this pertinent question has been answered, industry will then know what steps, if any, it must take to reduce an employee's intake of this material.

Like so many others, this health



As well as for industry, the Laboratory conducts investigations for the armed forces. Here, a World War II soldier is shown undergoing a test in a "high altitude" chamber

problem goes beyond the business plant and factory. Fluoride, in too great a concentration in the air, often may settle on, or be taken up by, plants on which animals forage. This fact thus makes the problem one of agriculture as well as industry. But it is a dual problem which those of industrial medicine feel they can conquer, given the time and support.

The field of industrial medicine is all-encompassing and far-reaching. The term "industrial health" itself is a broad one in its implications. It is usually accepted to mean the general well-being of every last employee as influenced by any work condition whatsoever. Any and all segments of job environment fall within the domain of the industrial physician. In many cases, such as health conditions arising from contamination of the air with toxic dusts or vapors, the doctor will tackle the problem in association with an industrial hygiene engineer. Further, industrial medicine is as much, if not more, preventive as it is corrective.

For all these reasons, Dr. Kehoe and most other leading experts in the field agree that the industrial

physician must hold a point of view entirely different from that of the general medical practitioner.

The latter readily treats all who come to him for care, but he does not go out among families or other groups seeking ill people whom he might attend. Conversely, the industrial doctor must not only attend those employees who are ill or injured, but he must be on the alert for job conditions that might lead to industrial ailments. He must be prepared to suggest alterations in any part of the work environment in which he finds a health hazard. None of these things can he do if he does not fully understand the work and the workers of the company which retains him.

By Kettering Laboratory standards, an industrial physician needs seven years of college and medical study, two years of hospital training, and three years of specialized training in a professional school or in industry, or both.

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As in the case of public health practitioners, the big opportunity for the industrial physician is prevention rather than cure. Modern medical science enables the doctor to relieve much human suffering after a malady strikes. But only after it learns how to prevent disease from occurring in the first place will the medical profession consider the battle finally won.

Accordingly, many projects at the Kettering Laboratory deal with preventive medicine. Among the most significant of these have been a series of investigations of "economic poisons." These are products of modern chemistry which are used as insecticides, fungicides, and other agents for the purpose of promoting agricultural production and protecting crops from insects.

The use of such chemicals, in an effort of modern technology to provide new and better food, creates risk in their manufacture and use, and involves some hazard to the consumer of food materials which may

To assist in air pollution studies, the Kettering Laboratory maintains a traveling unit in which collected samples of air can be analyzed on the spot



be contaminated. Since the use of these materials is regarded as an economic advantage, the knowledge of how to protect both industrial employees and the consuming public from any ill effects is a necessity.

The Kettering Laboratory has long been involved in work relating to the petroleum industry, through its investigations in the field of gasoline antiknock compounds.

A related project currently in progress in connection with petroleum products concerns amyl nitrate, a potential additive for diesel fuel. Amyl nitrate is considered thoroughly safe for the use for which it is now intended. But since it may be widely used some day in the future, the Kettering research staff, through an exhaustive test program, is investigating the limits within which it can be employed.

The list of industries which are sponsoring preventive medicine projects, to safeguard the future health of those persons who both make and use a specific product, grows constantly. In fact, even with its staff of over 100 men and women and its modern facilities, the Kettering Laboratory finds itself unable to handle all the projects presented.

To cite other examples of preventive medicine, a firm which manufactures metallic equipment asks the Laboratory to establish whether its plant ventilation system is adequate to avoid the possibility of employees breathing in too much of a metallic dust. Another group wants to find out whether solvents used in factory processes or in finished products might prove detrimental to the physical well-being of employees or consumers. In each case, laboratory investigation showed the respective companies how far to go in taking precautions to safeguard health.

Major Problems Ahead

Ahead lie formidable problems that industrial health specialists will be called upon more and more to solve. Air and water pollution rank high among these. In addition, new problems are bound to arise.

Dr. Kehoe sums up the future role of industrial medicine in these words: "American technological production is destined to be intensified, with the result that ever more people will be engaged in industrial work. The speed of production can be expected to place new stresses and strains upon all industrial workers, including management. This, and the general increase in the tempo of living, will bring about new health problems and recurrences of the old in new guise.

"More and better medical care will be required to maintain present standards of industrial health; still more to achieve the improvement desired. The greatest resource of any nation is its people, the health of those people its greatest source of strength. This is the challenge before public health workers in America today, and control of the environment of people who work in industry is a prime part of our public health program."

ROAMIN' HOLIDAY

This summer, as always, national parks will be a mecca for millions of tourists



Above, after driving through mile-long Pine Creek tunnel, motorists in Utah's Zion National Park are greeted by the view of lofty, craggy mountains. . . . Left, the plunging falls in Yosemite, one of two California national parks



Above, Cliff Palace at Mesa Verde National Park in Colorado has more than 200 rooms. . . . Left, one of the boiling mud pots in Bumpus Hill, a section of Lassen Volcanic National Park in northern California



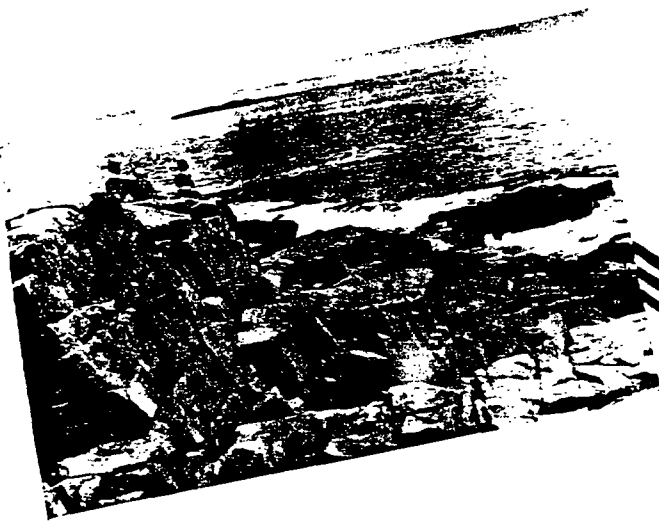
Right, the Shenandoah National Park stretches for 80 miles along the scenic crests of Virginia's famed Blue Ridge range



IN KEEPING with a good old American custom, millions of vacationers during the coming months will pile into the family automobile and tour off to one or more of the 28 national parks that dot the country from coast to coast.

Perhaps more than any other factor, the automobile has been responsible for the tremendous growth in the popularity of our national parks. In the days when the motor vehicle was just coming into its own, visitors were counted only in the hundreds of thousands. Last year, the parks attracted more than 13.5 million people, and more than 96% of them arrived in private cars or buses.

The prediction is that 1951 attendance at the national parks will break all records.



Above, from Ocean Drive, tourists get this picturesque view of a typical section of New England's rock-bound coast which is included in Maine's Acadia National Park



Above right, two young visitors to Everglades, the newest of our national parks, listen to a naturalist describe some of Florida's tropical wildlife and vegetation



Best known for its therapeutic baths, Hot Springs National Park, in Arkansas, also claims Oaklawn Park, a jockey club where horse races are held every spring



Above, a few of the towering, brightly colored rock pinnacles that gave the name Fairyland to this section of Bryce Canyon National Park in southwest Utah

Below, vacationers in Kentucky's Mammoth Cave National Park gaze in awe at the natural beauty of the rock formations that enclose the clear waters of Crystal Lake



The fishing bridge, above, and Old Faithful Chalet, right, are but two of the many gathering places for tourists in Yellowstone, the oldest and largest of the national parks





SERVICE STATIONS

That, truly, is what the Navy fleet oilers are. Nothing, even stormy waters and darkness, stays them from their job of refueling fighting ships at sea

EVEN IN THIS DAY, it is a little difficult to imagine an oceanic service station where Naval ships can veer in, get 'er filled up, and go on about their business again.

Still, American ingenuity being what it is, it shouldn't surprise too many people that the petroleum industry and the Navy have put their collective heads together and created what, for all practical purposes, amounts to a chain of just such refueling points. These may not be service stations as the landlocked motorist knows them, but they accomplish the same end.

What has been worked out is a system whereby specially fitted Navy tankers can refuel fleet ships at sea, come hell bomb or high water. "Islands of oil" and "floating

In addition to their bulk cargo of oil, the Navy refueling ships often carry loaded drums for transfer to other vessels

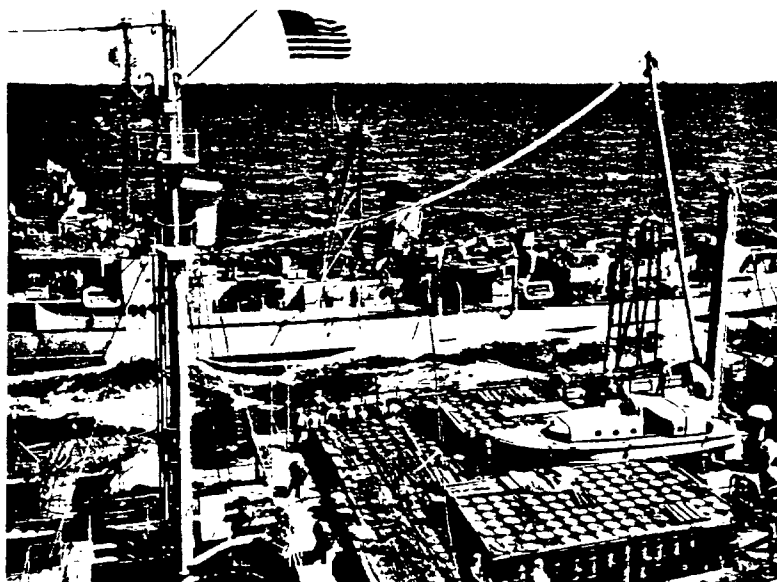
service stations" are but a couple of the properly descriptive names that have been applied to this type of tanker. Formally, it is an AO, fleet auxiliary oiler. In addition to an AO number, each of these ships proudly bears a U. S. river name of Indian origin, just as cruisers honor cities and battleships are named after the states of the Union.

Refueling at sea, a technique first widely used during the last great war, represents one of the great advances in fleet operations. It ranks with such other historic achievements as the introduction of the

armored fighting vessel and the Navy's conversion from coal to oil.

More than just a convenience to ships whose petroleum supply is running low, the ability to refuel ships at sea has extended the striking power of the U. S. fleet and its aircraft by thousands of miles. This is a vital factor in these days when the grey-painted fighting units of the Navy must patrol millions upon millions of square miles of ocean on both sides of the world.

Sea refueling explains why, as the Japanese learned during the second World War, our ships could remain



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in action for weeks and months on end. Fleet task forces had a habit of showing up, their guns blazing, when the Japs logically might suppose these ships were at a base taking on fresh supplies of petroleum and other battle necessities. With refueling at sea now a routine occurrence, any vessel, even including battleships and aircraft carriers, can remain in action indefinitely so far as oil supply is concerned.

How does refueling at sea work? Climb aboard AO-98, the *USS Caloosahatchee*, for a verbal trip on a typical Navy fleet oiler. Capt. E. P. Finney, Jr., Annapolis '32, is the skipper.

Any oilman who has ever had anything to do with the transportation end of the business should feel right at home on the "Caloosa." She, like the other Navy fleet oilers, is similar in design to commercial tankers. AO-98, in fact, is one of those standard Maritime Commission hulls which were laid down for either Navy or commercial use. The most glaring difference between the military and civilian types is the midship arrangement, where the Navy vessel has swinging booms and towering rigs for guiding and steadying the hose lines during refueling.

Her capacity is 150,000 barrels of petroleum. That means the *Caloosahatchee* can't carry as big a load as some of the newer commercial tankers, but it definitely takes her out of the small tanker class. Navy specification fuel oil, to power the ships she refuels, is by far the biggest item in the Navy fleet oiler's liquid cargo. But she also bears diesel oil, and several tanks are laden with aviation gasoline. The latter, of course, will be taken on by aircraft carriers as draft for their thirsty planes.

The auxiliary oilers do not normally roam the seas with the fleet or

as an active unit of a task force, but rather rendezvous by prearrangement with those ships that need fuel replenishment. On the trip today, the *Caloosahatchee* is scheduled to refuel an aircraft carrier and a destroyer during maneuvers "somewhere in the Atlantic" off Block Island. The rendezvous spot has been predetermined. On the oiler's port side, the carrier is easing into refueling position, after which the destroyer will come up on the oiler's starboard side.

Now, one of the unsung dramas of the sea is about to unfold. Even

judgment on the part of the bridge could result in a serious collision. A careless boatswain's mate, manning one of the rigs supporting the hose lines between the ships, could let one of the lines fall in the water and thus perhaps leave a telltale slick.

Refueling at sea is a daring, delicate maneuver, but the Navy has had no serious mishaps during such an operation. This is a silent tribute to those who man ships like the *Caloosahatchee*. Their accomplishments are perhaps all the more heroic when you realize that the oiler's crewmen are not hand-picked for



Even in high seas and in enemy waters, the refueling operation goes on. Here, as seen from another ship, a camouflaged oiler "nurses" a battleship and a destroyer simultaneously

in calm waters, in daylight, and without the threat of enemy attack, the utmost in seamanship is called for, to prevent the ships from banging each other and to avoid yanking the hose line connections apart prematurely. High seas, darkness, and enemy-prowled waters — any one or any combination of these three circumstances demands the absolute acme of control.

Every man, from skipper to seaman, must be on the alert. A mis-spoken command or an error in

their petroleum background. A few may have worked in a garage or service station in civilian life, but most of the crew never were associated with the oil business even to that extent.

With each ship heading into the sea, to get the swells on the bow and thus prevent side-to-side rolling, the vessels to be refueled draw abeam of the oiler. Rail markers, usually red flags, are displayed to indicate the pumping station positions of the respective ships and the vessels line

themselves up accordingly. Hose line messenger guides and other necessary contact lines are shot over to the other ships from the oiler by means of a special gun. Distance marking and telephone lines are strung between the bridges of the craft, and the various pumping and fueling stations aboard the ships are also connected by telephone.

Often, still another line of contact is maintained between the vessels. This extends from mast to mast, and is for the expedient transfer of lubricating oil in small containers, or for removing an ill or injured person from one ship to another.

All the while, the refueling operation is going on. The skippers are barking commands that will hold their ships on the proper course and maintain the minimum safe distance between ships. This means that the vessels are riding only about 50 or 60 yards apart — truly a feat to be performed only by experienced seamen! Control of the entire refueling procedure rests with the AO. She sets the course originally, determines when the oil shall begin flowing from her hold to the storage tanks of the ships being nursed, and operates the mechanisms that are needed to break off the refueling in the event of an enemy attack or other emergency condition.

OUR COVER: Sequoia trees in Mariposa Grove, Yosemite National Park, California. Kodachrome by David W. Corson from A. Devaney, Inc. **OUR PICTURES:** Pages 3, 4, 5 and 6, Noble G. Ricketts; page 7, Camera Associates; page 8 (top), courtesy Columbia Broadcasting System and (lower), Frederic Lewis and Ewing Galloway; page 9, courtesy Automobile Mfrs. Assn.; pages 10, 11, 12 and 13, courtesy Northwest Airlines, United Air Lines, and Western Air Lines; page 14, Ewing Galloway; pages 15, 16 and 17, courtesy Kettering Laboratory, University of Cincinnati; pages 18 and 19, Frederic Lewis, Three Lions, and courtesy National Park Service; page 20 (top), official Department of Defense photo courtesy of the OIIC; pages 20 (bottom) and 21, official Department of Defense photos; page 22, courtesy of the OIIC; inside back cover, courtesy The Netherlands Information Bureau.

Having given of her vital liquid cargo, the fleet oiler watches the destroyer and the aircraft carrier steam on their way again. It is not the oiler's job to seek out and destroy enemy craft, but men of the AO fleet enjoy a certain share of every Naval victory. It was their ship, and her precious petroleum supply, that enabled the fighting units to stay at sea and thus extend their striking power over a far wider area than otherwise possible.

For decades, the possibilities of

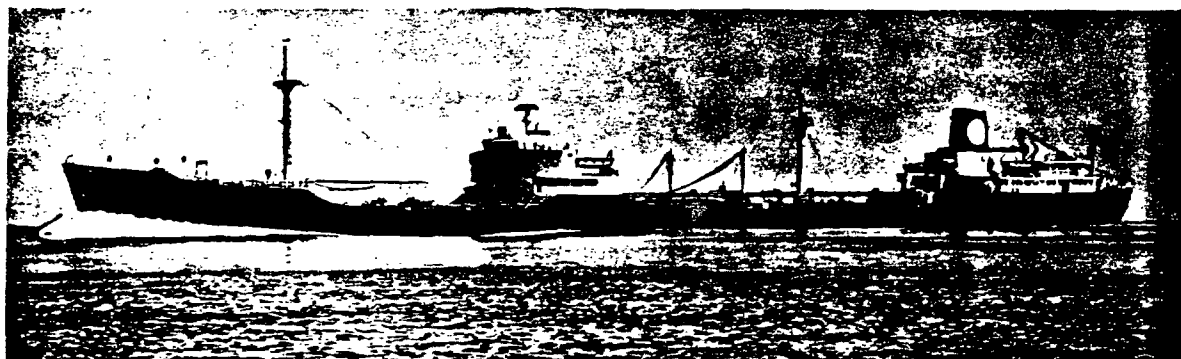
refueling at sea have been discussed and tested. It was not until World War II, however, that the actual need for such a technique presented itself. Now, as has been demonstrated in Korean waters, fleet oilers can refuel not only one or two ships at the same time, but three and even more. Further, although the AOs are the only specially fitted refueling ships, actually many Navy ships can re-supply other vessels with fuel oil, diesel oil, and gasoline.

Fleet oilers are part of a vast armada of tanker-type vessels now in defense service. The other part of the armada is made up of hundreds of commercial tankers from the petroleum industry which are helping to speed the flow of gasoline and oil to the military.

As units of the recently-established Volunteer Tanker Allocation Pool, the tankers are moving petroleum to the far-flung corners of the world in accordance with military demands. They do not engage in direct refueling operations, but often are the source from which the Navy's fleet oilers draw their cargo, which, in turn, is transferred directly to the fighting ships on the high seas.

Together, the Navy fleet oilers and the commercial tankers are making sure that the military, in the present conflict as in previous wars, has all the petroleum it requires — when and where it needs it.

Modern commercial tankers, like the 200,000-barrel capacity one shown below, help supply the Navy refueling ships



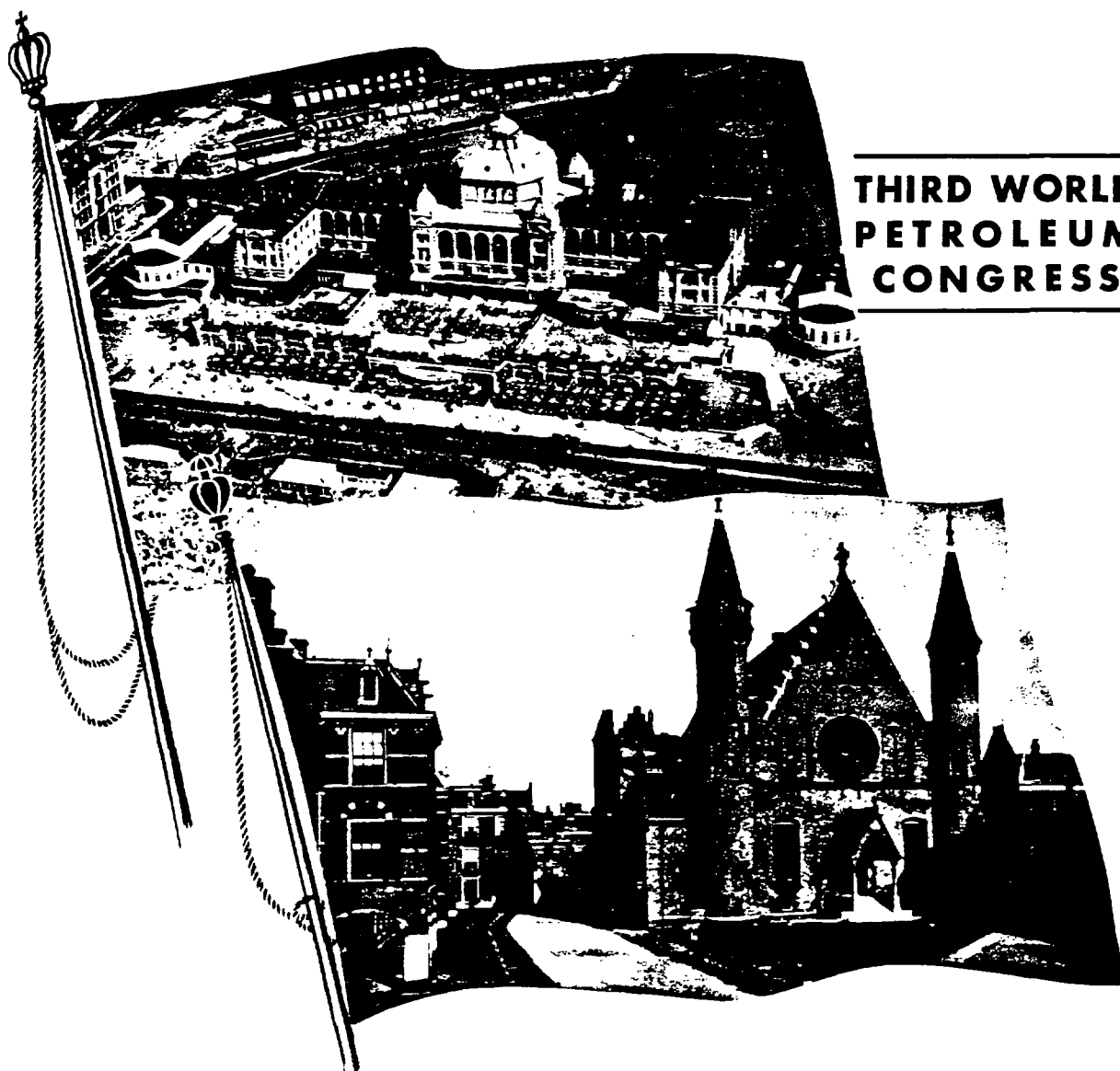
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THIRD WORLD PETROLEUM CONGRESS



For ten days late this month and early next, the eyes of the petroleum world will be focused upon the venerable European cultural center of The Hague. In that Netherlands metropolis, long famous as a convening place for international groups, the Third World Petroleum Congress will be held from May 28 through June 6.

Purpose of this first world-wide meeting of oil technologists in more than a decade is to direct attention to the place that science and technique occupy in the petroleum industry. Representatives from at least 25 nations, including all the world's major petroleum producing and refining countries except those behind the Iron Curtain, will be in attendance.

More than 300 technical papers are to be delivered at the Congress. Among the authors whose papers will be discussed is J. B. Macauley, director of research at the Ethyl Corporation Research Laboratories. His presentation is entitled "Advances in the Utilization of Tetraethyl Lead." Also playing an active role in connection with The Hague meeting is Earl Bartholomew, general manager of the Ethyl Labora-

tories. He is the Society of Automotive Engineers representative on the six-man Executive Committee of the National Committee for the United States for the Third World Petroleum Congress.

On this page are pictured the historic buildings in which the Congress will meet. The top photo is an aerial view of Scheveningen, the seaside resort of The Hague, where all but the opening session will be held. The large, majestic building in the center of this photograph is the Kurhaus hotel. Plenary sessions and some sectional meetings are scheduled for this building. The Palace hotel nearby will be the scene of the remaining sectional meetings.

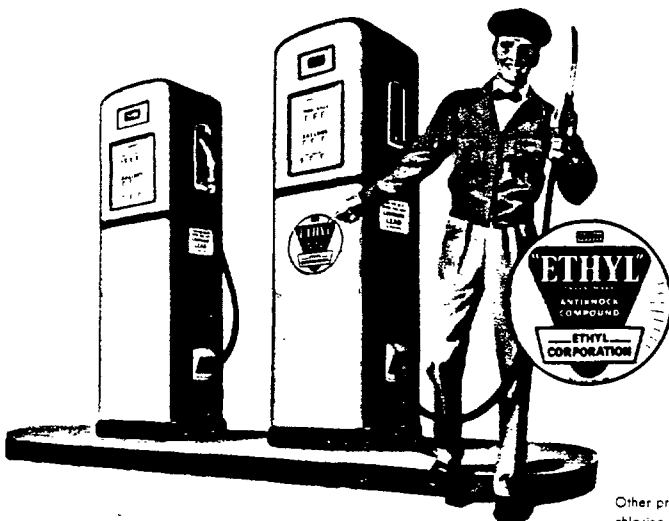
Pictured in the lower photo is the Ridderzaal, or Hall of Knights. Built in 1280 by William II of Holland as part of a fortress around which the city of The Hague has grown, the Ridderzaal is the building in which Her Majesty, the Queen, each year opens the new session of Parliament. The Netherlands Government has granted the Third World Petroleum Congress special permission to stage its inaugural session in this historic 671-year-old Dutch shrine.



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ETHYL NEWS

JUNE - JULY ★ 1951

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IN THE

ETHYL NEWS

JUNE-JULY 1951

B. Bynum Turner has been elected a vice president of Ethyl Corporation and placed in charge of all research, engineering and development activities of the company, which will now be consolidated in one department. Mr. Turner will continue his headquarters at Baton Rouge, where he has been general manager of manufacturing. His successor in that position is Clinton W. Bond.

Dr. Graham Edgar, for many years vice president and coordinator of Ethyl's various research activities, will assist the President on technical matters and continue as chairman of the Research Committee.

As head of the new Research and Engineering Department, Mr. Turner will bring together in one unit all Ethyl research, engineering, product development, and new construction contract activities.

Mr. Turner has held several key manufacturing department positions with Ethyl Corporation, including an assignment as coordinator of Ethyl's \$100 million expansion program at Baton Rouge and Houston. He will continue to supervise that program until its completion next year.

At the age of 40, Mr. Turner has 18 years' experience in the petroleum industry, having been first employed by the Humble Oil & Refining Company in 1933. During World War II, he was with the Rubber Reserve Co. in Washington, as head of its butadiene-from-petroleum section.

THE QUEEN OF CLUBS

3

Back in 1949, a handful of young women employed by oil companies in New Orleans decided they should know each other — and the petroleum industry — better. That was the beginning of the Association of Desk and Derrick Clubs of North America, a group that promises to make its existence felt more and more as time goes on.

SOIL FOR OUR SONS

8

Much still remains to be done, but America has been working wonders in saving its soil from erosive forces. This is a progress report on the soil conservation program to date, and a preview of our land's future.

DETROIT'S 250TH BIRTHDAY

12

On this anniversary of the city's founding, it is interesting to look back 50 years and recall how the automotive industry happened to spring up in Detroit.

THEY'RE LITTLE DEMONS

15

"Midget" midget racing cars are the newest thing under the Southern California sun. Built of spare parts from other vehicles, they compete on tracks not much bigger than a baseball diamond infield.

ONCE UPON A HOLIDAY

18

Many readers will be able to put themselves in the author's place as he relives the grand and glorious Fourth of July celebrations of a generation ago.

ENGINES LIVE LONGER, TOO!

20

Just as human life expectancy has increased notably in the past 25 years, so has the average mileage life of trucks and buses. Joint improvements by the automotive and petroleum industries, of course, are responsible for this gain.

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.

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Manufacturer of "Ethyl" antiknock compounds, 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;
Herbert A. Savage, secretary

ETC 32371

JULY 1951

THE QUEEN OF CLUBS



But a mere idea only two years ago, Desk and Derrick now is a nation-wide organization of oil industry women

A HANDFUL of attractive young women who work for oil companies in New Orleans are a little breathless these days.

Two years ago they had an idea. They started a little club to help each other understand the petroleum industry more thoroughly, so that members could be more useful and responsible employees.

Now the club idea has grown by such leaps and bounds that a national organization, with nearly 1,500 women members who work for some 350 oil companies throughout the country, has just been formed. This healthy distaff newcomer to the ranks of otherwise masculine organizations to which oil people usually belong is the Association of Desk and Derrick Clubs of North America. As local groups, the activities of Desk and Derrick Clubs are already familiar to many oilmen in several cities. Now, with the coast-to-coast organization a reality after months of study and planning, Desk and Derrick looks ahead to a still brighter future.

The idea behind Desk and Derrick is this: girls who work for oil

companies and for other firms associated with the petroleum industry believe they can do a much better job if they know more about the industry to which they belong. And a girl who does a better job not only helps her boss and her company, but makes herself more valuable.

What the individual Desk and Derrick Clubs have done proves that they are a good deal more concerned with realities than with wishful thinking.

They hear company executives speak on the oil industry — and as

any oilman knows, a good many aspects of the business are anything but simple. On educational field trips, the girls go through refineries, visit research laboratories, inspect pipelines, tour tank farms, and visit steel mills and other plants where the industry's various equipment is made. They climb derricks with particular interest and glee. Visits to offshore drilling rigs and "swamp buggy" excursions to watch wildcatters at work help to round out their down-to-earth experiences.

Learning more about their indus-





Desk and Derrick officers, Mrs. Lee Wilson Hoover, Sec., Mrs. Alvin H. Howard, Pres., and Mrs. Bonnie Robertson, Treas.



Frances Lord Awtrey, founder of Desk and Derrick, was an honored guest at a Houston club Open House. That's her shaking hands with W.B. Steward of Schlumberger Well Surveying Corp.

Calgary club officers. Seated are Eleanor Crockett, Pres., and Aurora Tewksbury, Rec. Sec. Standing: Mary Goulding, V.P., Bonnie Robertson, Treas., and Ethel Cairns, Com. Sec.



try, however, is only part of Desk and Derrick's self-imposed responsibilities. The other part is service to the industry — an activity that is becoming increasingly important.

Two Desk and Derrick floats in the Oil Progress Week parade in New Orleans last year, and the help given by 80 club members in explaining oil industry exhibits to the public, are typical of the clubs' major contributions to oil industry public relations. A current project of particular interest in New Orleans is the compiling of an oil directory which will list information about all companies which have to do with refining, marketing, and supply or service activities in the oil industry. To be published at the club's expense, complimentary copies will be distributed to oil companies for their use.

Aided API Meeting

Other clubs throughout the country are playing a corresponding part in local oil industry activities. The Los Angeles club, as an outstanding example, contributed countless hours to the American Petroleum Institute convention last fall, handling reservations and registrations, serving as receptionists, entertaining wives, and performing many other useful chores.

The energetic young oil lady who heads the new national Desk and Derrick organization is Mrs. Lee Wilson Hoover of New Orleans, secretary to Alvin H. Howard, an independent oilman. Any group interested in finding out more about Desk and Derrick and how to start a club should write her at 1427 Hibernia Bldg., New Orleans.

Serving as national first vice president is Miss Blanche Kelley of Los Angeles, secretary to Samuel Grinsfelder, field operations vice president of Union Oil of California.

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The second vice president is Lucy Dee Owen, of Houston, an *Oil and Gas Journal* editorial assistant. Miss Enid Bahle, secretary to W. M. Johnson, Shell land manager in New Orleans, is secretary of the Association, and Miss Virginia Murray, dip-meter department supervisor with the Schlumberger Well Surveying Corporation, New Orleans, is treasurer. The Association of Desk and Derrick Clubs has five regions, and all are represented on the Association's board of directors.

If you look behind the business-like and up-and-coming Desk and Derrick organization, you will find that somewhat simpler and more wistful feelings had an important part in getting things started. It all goes back to a girl who wanted to meet other young women with similar business interests in other oil companies.

The girl is dark-eyed Inez Lord Awty, secretary to John F. Bricker, division land manager of Humble Oil & Refining in New Orleans. She had been with Humble for nine years by the spring of 1949, but still didn't know another girl in the oil industry outside her own firm.

One day, in an expansive mood, Miss Awty asked her boss why it wouldn't be possible to have an informal get-together of girls who were working for oil companies in New Orleans so they could meet each other. Mr. Bricker quickly agreed, told her to go ahead with the plans, and said he'd see that the girls didn't have to worry about the check.

Miss Awty first contacted Mrs. Amelia Crandell at The Texas Company, secretary to R. L. Keyes, division production manager. Mrs. Crandell was equally enthusiastic about a gathering for oil industry girls, and with the help of a few others, all the arrangements were



Left to right: Inez Lord Awty, secretary to John F. Bricker, Humble Oil & Refining Co., New Orleans; Lucy Dee Owen, Houston, *Oil and Gas Journal* editorial assistant; Enid Bahle, Shell land manager in New Orleans; Virginia Murray, dip-meter department supervisor with the Schlumberger Well Surveying Corporation, New Orleans; and the President of the club.



A group photo of the New Orleans Club of Shell Oil Refinery at New Orleans.



Betty Quick, Pres.



Dorothy Shatto, 1st V.P.



Ellen Peluff, 2nd V.P.



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soon completed. The Petroleum Club of New Orleans made its quarters available for the meeting.

The party was such a success that everyone felt they shouldn't stop there. Over strong Louisiana coffee in Vieux Carré patios during the next three weeks, ideas flew thick and fast. Miss Awty and Mrs. Crandell, together with Mrs. Camella Bustetter, secretary to H. C. Teasdel, president of The California Company, and Mrs. Bettie Conley, secretary to William G. Helis, Jr., of the William Helis interests, were especially convinced a permanent club for oil women was overdue.

They finally met at the Petroleum Club to bring their plans to a head on April 19, 1949. Twelve directors were chosen. It was almost a lark to elect Miss Awty the first president, Mrs. Conley vice president, Miss Amelia Abide, of Gulf Oil, secretary, and Mrs. Crandell treasurer. Dues were set at \$3 a year.

Considering such an informal beginning, it is easy to understand why the founders of Desk and Derrick are a bit startled to realize that their club has reached its present size. Actually, however, they don't have to look very far to discover the reasons for its success. The girls had a sound idea to begin with —

better, apparently, than they realized at the time. Besides, they knew how to make it succeed.

The selection of "Desk and Derrick" as a name for the neophyte club was a happy choice, for instance. It immediately stuck in people's minds, and helped put across the idea that girls at desks are very much a part of the oil industry. The name developed one day when Miss Awty and Gordon Atwater, a consulting geologist, were trying to pick a descriptive title. A committee is now working on a Desk and Derrick pin or emblem for members of the national organization to wear.

Fueling the Fire

The club did not let its initial fire die down for lack of fuel. Prompt and systematic plans were made to set up a program and follow through with it. At the same time, taking their cue from the success of the initial spring party, the girls wisely leavened their agenda with lighter social events.

Oil company leaders addressed the club on a variety of subjects during its initial series of monthly meetings. They covered such topics as the administrative problems of an oil company, a geologist's part in the search for oil and gas, what an

oil scout does, how oil wells are drilled, and the importance of oil and gas conservation. At another meeting, the girls witnessed a demonstration of Ethyl Corporation's "Fire Power" Show.

Weekend field trips added reality to what the Desk and Derrick girls learned from their lecture and discussion meetings. Beginning with an exciting excursion to The California Company's offshore Bay Marchand field, members bobbed across choppy waters one bright morning to climb aboard one of the elaborate rigs perched on steel piles. There they saw how a typical crew lives and works while drilling for oil beneath the Gulf of Mexico.

This trip was followed by others to The Texas Company's fields at Lafitte and Lake Salvador, and to the William Helis interests' operations at Pointe-a-la-Hache field. Shell Oil was host to the club at its Norco refinery. The Bateman Drilling Company arranged a visit to Avondale wells. A demonstration seismographic trip sponsored by Gulf Oil included a splashy forage in a "swamp buggy" through Mississippi delta country at Lookout Pass. These are typical of the many educational trips the club members have taken.

A good many members of Desk and Derrick feel they have learned more about the oil industry through



The outgoing officers of the New Orleans club. In the usual order (seated) are (l. to r.) Bettie Conley, Pres.; Amelia Crandell, V.P. and Camella Bustetter, Cor. Sec. Standing are Thelma Htenhoffer, Rec. Sec., Amelia Abide, Treas.

Look at that crowd! The inaugural dinner of the Calgony club on Jan. 29, 1951. More than 425 oil gals attended. Bunt em!



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*Brand new is the Denver club. Organized on May 16, 1951. Here's
most of the charter members of the Mile High City group*



their field trips than through their office experiences. One girl said, "I never knew what a 'Christmas tree' was until I went on a field trip and saw one. I hadn't wanted to show my dumbness by asking about it." Another girl admitted she had been listing "fishing tools" on invoices with no idea what they were until she saw some on an offshore rig.

With local variations, the experiences of the other Desk and Derrick clubs in other parts of the country have been patterned after the programs and activities of the 200 girls who belong to the "mother club" in New Orleans.

Jackson No. 2 Club

Jackson, Mississippi, was the second club to be established. Girls in the oil industry there had read newspaper accounts of the New Orleans club's activities, and inquired about forming a similar organization. Los Angeles was the third club and is now the largest, with nearly 400 members representing almost 100 oil companies. Houston was established next, and now has more than 325 members. Los Angeles and Houston, oddly enough, were founded largely through the efforts of two unrelated Dorothy Johnsons, one with Standard of California and the other with Standard of Texas.

Breathing hard down the neck of Los Angeles for the distinction of being the Desk and Derrick Association's largest club is the newly-formed one in Calgary, Alberta. The inaugural dinner was held in January. Now the Calgary club has some 330 members, representing 87 companies. Another healthy young Canadian newcomer is at Edmonton, where more than 200 girls got a local Desk and Derrick club going in April. As in the United States, oil company officials have given the Canadian clubs their full support.

Other newer clubs include Shreveport, Denver, and Ventura, Calif. A new one is now being organized in Dallas, and some girls in the Philadelphia-Marcus Hook area have indicated they want to start a club. On the international front, Mrs. Lucille Taylor, of the York Supply Company in Houston, was official delegate for the Association of Desk and Derrick Clubs of North America to the Third World Petroleum Congress at The Hague.

Girls who belong to Desk and Derrick are not only secretaries of executives and key officials, but hold a variety of other jobs as well. They include switchboard operators, clerks, typists, accountants, operators of business machines, receptionists, laboratory technicians,



department supervisors, and various specialists.

One of the more recent services instituted by the Desk and Derrick Association is an informal job-placement bureau for oil companies that need a girl with particular qualifications. The bureau helps girls to find living quarters and to get acquainted and settled when they start new jobs. As part of the service, too, New Orleans club members have given talks to high school students on career guidance programs.

Public Recognition

The petroleum industry has not only recognized the accomplishments of Desk and Derrick so far, but has publicly expressed confidence in the organization's future usefulness. This it did by honoring Miss Awty, Desk and Derrick's founder, at the Spindletop anniversary celebration at Beaumont in January. Miss Awty was presented with an armful of roses and a week's vacation in Houston for having been selected "the outstanding woman of the year in the oil industry."

Oilmen who already are familiar with Desk and Derrick will be quick to give an armful of roses to the entire organization as well. And there is every reason to believe that there will be many other occasions to give the petroleum industry's women the recognition that they are surely bound to deserve.



SOIL FOR OUR SONS

Though much still remains to be done in the field of soil conservation, America is winning the battle against wind, rain and the other forces that rob us of our valuable land

THE EVENT probably will go unnoticed except by a relatively few people. In fact, no one can now pinpoint exactly when it will happen. But some year this century, America is going to have licked — once and for all, it is hoped — the urgent problem of soil erosion.

At the present rate of progress in this field, the happy year will be approximately 1985. But under ideal conditions — with more specialists and more money available — the job could be accelerated to completion in only 20 years, or by about 1971, according to estimates of the U. S. Soil Conservation Service.

The difference between those two target dates is only 14 years, a mere tick on Eternity's clock. Still, in

that time, wind and water erosion will ruin as much as eight or ten million acres of America's land for further practical cultivation. That's the same as saying that we will lose an area about equal to New Jersey and Connecticut combined. And the bald, cold fact is: in this day and age of teeming populations, with only increasing populations in sight, no nation can continue to waste productive land and still provide its people with unlimited food.

To those who understand what a devouring, devastating menace soil erosion really is, the year-after-year progress in combatting this malady of the good earth is heartening. Yet, when, later in this century, basic conservation measures have been

applied to all the land, that will be only part of the job.

For, in the words of Dr. Hugh H. Bennett, world-famed conservationist and head of the U. S. Soil Conservation Service:

"As to finishing the job, actually there is no end to it, because when the basic conservation measures have been applied there still remains the continuing task of maintenance. This is true of all the works of man. If not maintained, they eventually disappear through neglect." With maintenance, of course, will go soil improvements to be derived from research, so that we not only preserve our land but enrich it as well.

Although there are records that soil conservation was practiced years and years B.C., the need to apply such techniques in the United States has become a pressing one only in this century.

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This once-productive Oklahoma farm is an example of how wind and water can ruin the land when proper soil conservation measures are not employed

Always there was land beyond where man, abandoning fields that had turned unproductive, could make a fresh start on unplowed soil. Beyond the Atlantic seaboard lay the fertile valleys of the Midwest. Beyond that were the Great Plains and the open reaches of the Southwest. Beyond those parts were California and the Northwest. But beyond that, there was only water.

Rude Awakening

It was then, after agriculture had marched across the continent from one ocean to the other, that men first realized the urgent necessity for making the most of what land we had. With no new lands to turn to, there was — and is — no alternative. But the men who first understood the problem were only a handful. Even today, there are landowners of the "what was good enough for my forebears is good enough for me" school who heed not the dire warnings that this nation could starve itself out of existence without erosion control.

Whatever evidence Americans

needed of the deadly havoc that wind can wreak on unprotected soil they got in the series of dust storms that literally and figuratively swept the country in the mid-Thirties. One great duster — that of May 11, 1934 — will be remembered in particular. Soil, long dried out by the lack of rain, was eddied off the Plains states to shroud cities as far away as Washington and New York. Some of the precious soil even was deposited on the decks of ships 200 miles out in the Atlantic.

Soil conservation involves more than scientific plowing and planting. It includes, among other things, the construction of ponds to catch rainwater that could wash away topsoil if allowed to run uncontrolled



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Dr. Bennett is of the firm conviction that soil conservation progress has been such during the past 17 years that, if farmers and ranchers keep up their present rate of conservation work, we never again will experience another disaster of this costly magnitude.

But what has been accomplished since the Dust Bowl days represents only about 20% of the total soil conservation job to be achieved in the United States. Admittedly, we've come a long way in a short time, with the result that farmers today are in a better position than ever before to supply the astronomical amounts of food and fibers that are needed.

Yet, there is no escaping such facts as that some three billion tons of soil are washed or blown out of fields and pastures each year — enough to fill a freight train that would encircle the earth 18 times at the equator; or that all but 80-90 million of the 460-500 million acres of good cropland left in the United States are subject to erosion if not protected; or that we've already seen approximately 200 million acres of good land — mostly in the South and Midwest — either ruined completely for any further immediate cultivation or else severely damaged.

"Good soil," Dr. Bennett points out, "cannot be stockpiled. It can't be mined from the depths of the earth or dredged from the floor of the ocean. It can't be grown. And we still haven't learned how to build new topsoil, or even a reasonable substitute for it, on any substantial scale, within any brief time. You can, of course, improve erosion-exposed subsoil, but that is very different from building topsoil."

The most potent force against continued erosion in the world today is represented by the more than 2,300 soil conservation districts that have been created throughout the length and breadth of the United States and in our territorial possessions as well. These districts are created by vote of all landowners within the boundaries of each district, and are governed by local citizens.

Help from Industry

Banded together in this manner, farmers can plan programs of joint action for the community good. In many cases, these programs are carried out not only with the help of U. S. Soil Conservation Service specialists but with assistance from interested industries as well.



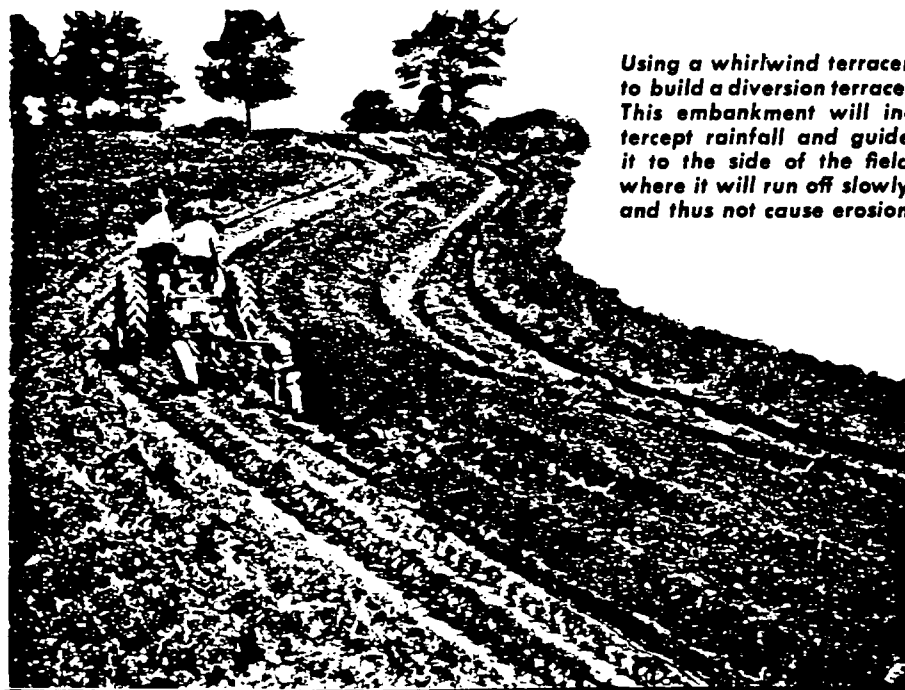
The intelligent use of power-driven farm machinery by America's farmers has enabled them to protect millions of acres of productive land that might otherwise have been rendered useless by the forces of nature

The farm equipment manufacturing and retailing industries, for instance, are actively engaged in a program of direct cooperation with soil conservation districts, looking to mutual benefits from improved farm equipment usage. Ethyl Corporation, to cite another example, has contributed to the over-all effort by producing "This Is Our Land," a motion picture that vividly stresses the importance of soil conservation. Although released six years ago, this film is still shown frequently to conservation-minded groups throughout the country.

A program like that being conducted in the Broad River Soil Conservation District is typical. This district, covering eight counties in the Piedmont hill section of Georgia, found that, according to modern conservation practices, it was farming thousands of acres of land that were not suitable for cropping. It also located 150,000 acres of idle land in the district. Some of this was suitable for crops, and most of the rest was good for pasture, meadow, or woodland.

The farmers of the district then mapped a comprehensive program to make the best use of their land. When all the changes have been made, there will be 75,000 acres less cultivated land, but the Broad River District will have an additional 217,000 acres of pasture, meadow, and woodland. Because it is the best soil, and because it will be used properly, the land left in crops will produce far more per acre than it ordinarily would have. In addition, 150,000 acres of land that formerly lay idle throughout the district will be made productive.

Near Temple, Texas, some 175 neighboring farmers joined together to combat erosion in a different way. Their chief enemy was water.



Using a whirlwind terracer to build a diversion terrace. This embankment will intercept rainfall and guide it to the side of the field where it will run off slowly and thus not cause erosion

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the greatest land spoiler of all. Be-
 deviled for years by water runoff
 during storms along the North Elm
 Creek, these farmers constructed
 terrace outlet channels that carried
 the water harmlessly from one farm
 to another and on to natural drain-
 age channels. The terrace channels
 ignored property and county lines,
 just as runoff water pays no heed to
 such boundaries.

The above are but two examples
 of good conservation. There are
 countless other ways in which land-
 owners, individually and collective-
 ly, are saving the soil.

Common Practices

Among the more widely practiced
 measures are *contouring*, which is
 farming around hillsides with curv-
 ing furrows to fit the lay of the
 land, instead of straight furrows up
 and down hill; *crop rotation*, the
 alternating of various crops on a
 piece of land, to keep the soil pro-
 ductive and improve it; *contour
 strip cropping*, the planting on the
 contour of strips of grass and other
 close-growing plants between alter-
 nate strips of clean-tilled row crops;
 and *gully control*, the use of plants
 and mechanical measures to reduce
 the rate of water flow within gullies
 by diverting water away from the
 heads and sides of the gullies.

A so-called National Land Capa-
 bility Inventory is proving a major
 weapon to farmers and ranchers in
 the constant battle against erosion.
 This inventory, which is now about
 one-fourth complete and will take
 another 30 years to finish at the
 present rate, is for the purpose of
 determining the physical condition
 of land.

Detailed information about soil,
 slope, erosion, and other land and
 water features is being plotted on
 maps for every field and farm in
 the country, and this information is

then interpreted in terms of eight
 different land classifications. The
 value of these eight classes of land
 ranges from the best, that which is
 "very good and can be cultivated
 safely with ordinary good farming
 methods," to the worst, which is
 suitable only for wildlife or recre-
 ation because it is steep, rough,
 stony, sandy, or too severely eroded.

Obviously, modern farm machin-
 ery also is a prerequisite to scientific
 farming. "Good land and good ma-
 chinery go together," says Dr. Ben-
 nett. "Eroded, gullied land can't
 produce the income to pay for effi-
 cient, up-to-date implements; and
 worn-out machinery, held together
 with baling wire, does not permit
 efficient and profitable farming."

Starting with the petroleum-pow-
 ered tractor and going on through
 a variety of special equipment for
 earth-moving jobs like building
 farm ponds and district group-
 drainage projects, the landowner of
 today relies heavily upon modern
 machines to help him do his work.
 So great is this reliance, in fact, that
 American farmers this year will use
 in their tractors, trucks and other
 engines twice as much oil-driven
 horsepower as the total power con-
 sumed in the nation's factories. It is
 also interesting to note that in the
 past three decades some 64 million
 acres, on which formerly grew food
 for the animals now supplanted by
 tractors, has become available for
 the production of food and fibers
 for human use.

No one who fully appreciates the
 erosion problem considers it a mat-
 ter of concern to the farmer and
 soil conservationist alone. "As the
 farmer goes, so goes the nation" is a
 maxim that applies. A prosperous
 farmer stimulates trade in both rural
 and urban communities, and thus
 increases employment for profes-
 sional and industrial workers. His



**Exhibits that show actual farms
 in miniature before and after con-
 servation planning demonstrate to
 farmers how to care for their
 land and get the most out of it**

conservation methods help to pre-
 vent floods that destroy or damage
 farm and city property, highways,
 railroads, and manufacturing plants.
 They also encourage a more flexible
 and diversified type of agriculture.

Gone: Another Farm

On and on the list of benefits
 of modern soil conservation goes.
 These benefits explain the present
 enthusiasm of the farmer and soil
 conservationist as they see looming
 in sight the day when America will
 have conquered the terrible blight
 that is erosion.

But, lest anyone grow complacent
 about the constant need for soil con-
 servation, Dr. Bennett cites a fact
 that should bring the matter home
 to everyone. In the time it has taken
 to read this article, the equivalent of
 a 10-acre farm, to a topsoil depth
 of six inches, has been blown or
 washed away — its valuable topsoil
 lost forever.

As the Motor City reaches a milestone, it is interesting to recall how the automotive industry happened to locate there

WHEN THE FRENCHMAN, Antoine de la Mothe Cadillac, and a band of 100 fellow-countrymen founded Detroit back in 1701, they could not have dreamed that they were creating a community which was to become a universal symbol of industrial might.

This same lack of awareness was evident among those people who populated Detroit even a scant 50 years ago. As we swung into the Twentieth Century, theirs was a city of only 286,000 population. Detroit had already donned an industrial toga, to be sure, but the city was not yet outstandingly dynamic, symbolic, and alive.

Now — this year, and particularly during the month of July — Detroit is marking its 250th birthday. It does so as the fifth largest metropolis in a nation of many big cities,

and as a key manufacturing hub in the world's proclaimed arsenal of democracy.

What, then, happened in the past half-century to transform Detroit into the throbbing, vibrant center it now is? The answer must be clear to everyone — the automobile. Probably neither before nor since has a single product of manufacture had such a profound influence upon a community as the automobile has had upon Detroit.

On such an occasion as a birthday, it is interesting and customary to flip back the pages of history and recall the days gone by. One of the most memorable chapters in Detroit's book of life is that which aptly could be titled "The City That Almost Wasn't." For, Detroit has had to struggle to win and hold its distinction as the world's center

of automobile manufacture. There was, in fact, a time when other cities could more properly claim this honor.

Not by any preordination, nor by the simple expedient of a blind-folded person sticking a pin in a map of America and having the point land at Detroit, did the city

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These photos show three stages of Detroit's growth — the waterfront as it appeared in 1794, Cadillac Square in 1912, and the modern metropolis



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become the core of the automotive industry. There was no prior selection. Detroit got that way through a series of events that seemed most ordinary and natural at the time.

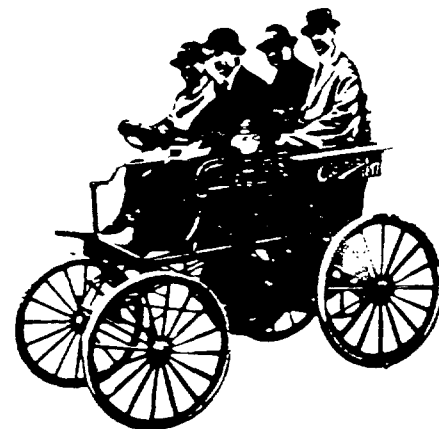
Looking back to 50 years ago, one can wonder at why and how Detroit ever managed to become a name synonymous with the automobile and truck. The first successful gasoline-driven motor vehicle made in the United States was built by the Duryea brothers, not in Detroit, but in Springfield, Mass. It was Cleveland, and not Detroit, that manufactured more than 80 different makes of cars in the early days of the industry. It was in Chicago, not Detroit, that the first automobile race was contested. It was in New York, not Detroit, that the first organized auto show was staged.

It was in this shop, which has been restored at Edison Institute near Detroit, that Henry Ford worked on his first auto

Still, Detroit emerged, and to such an extent that many people today forget that cars are manufactured in other cities, some of them 85 miles and more distant from the Michigan metropolis.

As one automotive parts company's advertisement put it: "If the automobile industry were as concentrated in Detroit as many people think it is, the city would cover most of Michigan. The truth of the matter is that almost every city of any industrial consequence contains factories contributing directly to the building of automobiles."

True, Detroit had much to recommend it when the American automobile came upon the scene. It was ideally located on navigable waters. It was studded with small shops and foundries that made internal combustion engines for marine use and as stationary power plants for Michigan's mines, lumber mills, and salt wells. Still another important factor was that Detroit and three neighboring communities in Michigan were the late 19th Century centers of carriage making, and so had not only the raw materials available, but workmen skilled in upholstery and in the manufacture of springs, wheels, and bodies.



First and only model of its kind, the 1897 Oldsmobile is now in the Smithsonian Institution. It had a 5 hp. engine

But all this was not enough. Other cities were strategically located, and other cities had skilled craftsmen and raw materials to offer. What Detroit had that they did not possess was a concentration of young, inventive "tinkerers" — men like Ransom E. Olds, Henry Ford, David Buick and a host of others.

On any list of individuals who helped to establish the automotive industry in Detroit, the name of Mr. Olds stands high.

Olds, like so many other automotive pioneers, was obsessed with the burning idea of hitching the gaso-



line engine to the carriage to form a self-propelled vehicle. In the 1890s, Olds acquired his father's machine shop in Lansing, Mich., and organized what was known as the Olds Gasoline Engine Works. In that plant was built the famous Oldsmobile of 1897, a vehicle now in the Smithsonian Institution. The success of this first and only model of its kind led to formation of the Olds Motor Vehicle Company, which soon was merged with the gasoline engine company to form the Olds Motor Works.

The latter firm, it has been recorded, might well have floundered had it not been for the financial support of S. L. Smith, a wealthy copper magnate of the time.

Of him, a somewhat forgotten man, one historian has recorded that he "deserves to be remembered as the first man of large means to peer into the future of Michigan automobile production, catch a glimpse of its possibilities, and finance a new venture in a large, vital way."

Aflame inside to get his motor vehicle into volume production, Ransom Olds reached the conclusion that Lansing then was not an ideal location in which to continue his operations. It lacked skilled machinists, for one thing. Its ability to house any influx of workers was also questioned.

East Ruled Out

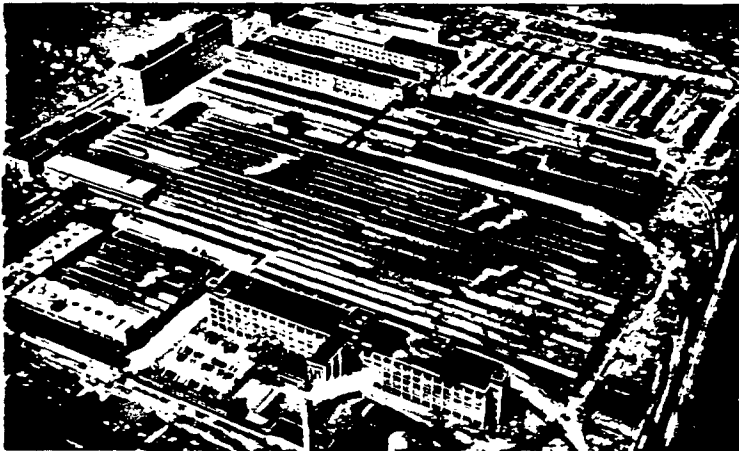
Many sites, including some as far removed as Newark, N. J., were considered. But Eastern capital in that day could not be interested in the automobile—at least, not the gasoline-powered buggy. New York financiers felt certain that electric cars would win out, while Boston interests were backing steam as the method of propulsion. Only men of vision like the Detroit "tinkers" saw gasoline as the best and cheapest means of power.

Returning from his discouraging trip to the East to interest capital there in his new venture, Olds stopped off in Detroit to discuss the

matter with Mr. Smith. The latter, it has been written, advised locating in Detroit and then and there "backed his advice with enough cash to settle the issue."

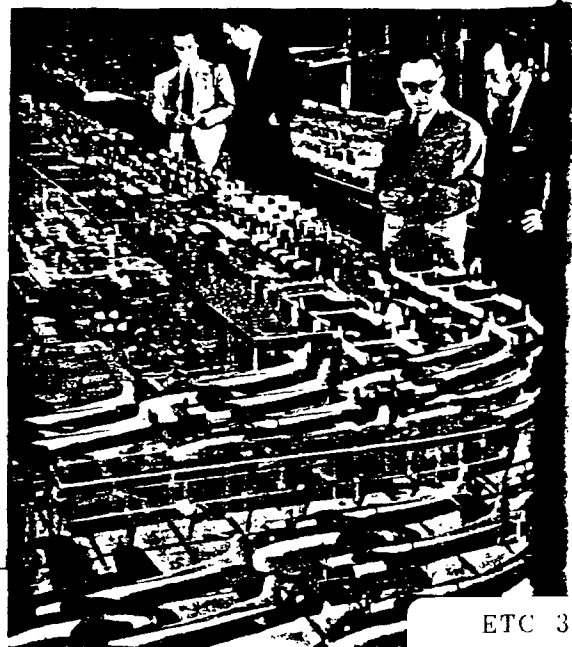
Here, the rest of the story becomes more familiar. The story of how, despite a devastating fire in its Detroit plant, the Oldsmobile in 1901 became the first mass-produced and most popular gasoline automobile in the world at the time; of how, having marveled at the success of the Oldsmobile, Detroit capital backed to the hilt the other automotive pioneers in their ventures; of how the industry grew by leaps and bounds; and of how gasoline-powered vehicles proved themselves far superior to those driven by electricity or steam.

Also, it is the story of a city. A city that has ridden to glory and prestige on the wheels of automotive transportation. A city whose 250th birthday might not be quite so meaningful had it not been for its sons of vision who foresaw the magic of the automobile. A city that once again is tooling up to deliver the destructive weapons of war just as it delivers the enjoyable goods of peace. A city that could be only dynamic Detroit.



One of the many busy automotive factories to be found in Detroit is this Chrysler plant

Right, symbolic of Detroit's response to the call for war goods, this scale model of the Willow Run plant shows how Kaiser-Frazer is converting to the job of producing giant military cargo planes while continuing to turn out automobiles



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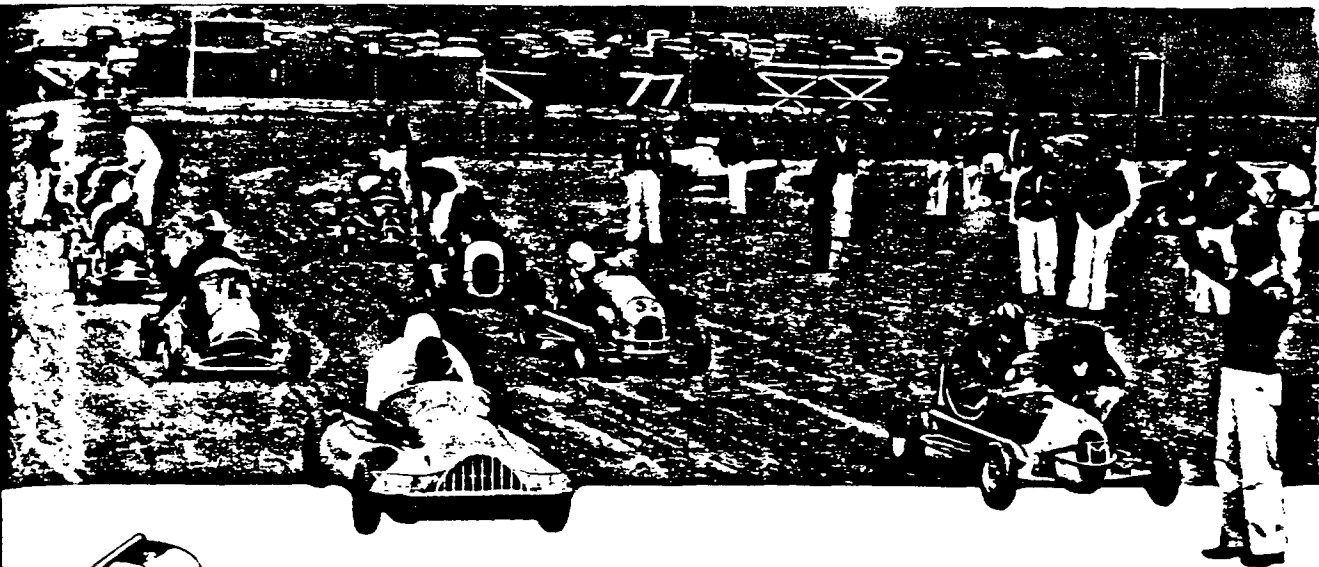
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THEY'RE LITTLE DEMONS

That's one description of the new three-quarter midget racing cars that are gaining popularity on Western speedways

By Frank L. Remington

WESTERN SPEEDWAY enthusiasts have a new baby — the three-quarter midget racing car.

Still in their infancy, the pocket-size speedsters are powered by motorcycle engines, run on motor-scooter wheels and tires, and compete on tracks about the size of a baseball diamond infield. At speeds up to 100 miles an hour, they provide thrills galore with wheel-to-wheel dueling, spine-tingling skids, and frequent pileups on the slightly banked turns. Enthusiasm for these tiniest of all racing cars is catching on with epidemic rapidity, chiefly at Southern California tracks.

Little brother to the standard midget racer, the T.Q. midget has a wheelbase three-fourths as long, weighs about half as much, and can be built for a comparative song from small automobile and motor-scooter parts.

There are two big reasons for the growing popularity of the "midget"

midgets, as the three-quarter cars are called. First, they are less expensive to build and maintain than the full-size midget racers. And second, the "midget" midgets have, so to speak, given racing back to the crowd. Because the tracks are ovals only one-fifth to one-eighth of a mile long, fans get a close-up of all the action without the need for binoculars.

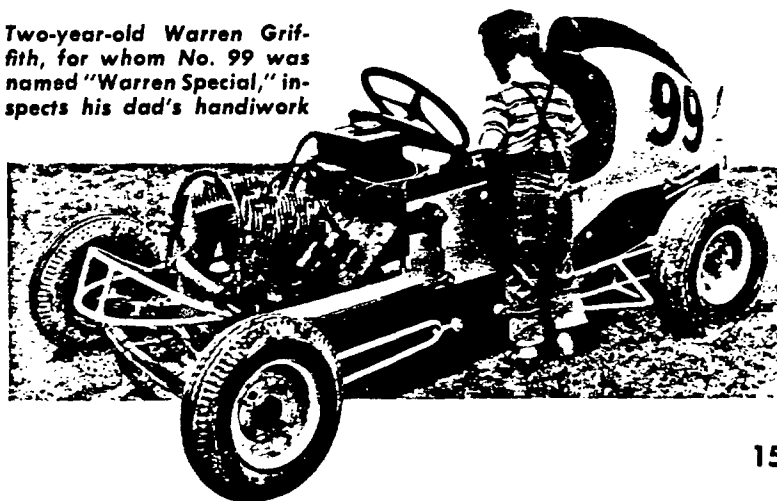
"It's a poor man's racer," says Paul Griffith of Downey, Calif., owner of three-quarter midget No. 99. Always interested in racing, but financially unable to construct a \$3,000 to \$6,000 standard midget, Griffith found the T.Q. a ready outlet for his racing ambitions.

A typical owner, Griffith works

weekdays as a foreman at the Douglas Aircraft plant in Long Beach. Evenings, however, find him puttering about his garage workshop, adjusting the carburetor, mixing special fuel blends, or making plans with his driver, Jerry Caywood, a furniture store upholsterer. Comes Saturday, the two push their racing creation onto a home-made, two-wheel trailer and head for Indio, desert site of a three-quarter midget track, or one of the other speedways. The Indio track conducts night racing under floodlights.

An evening at the track consists of four or five events. Winners of the trial heats qualify for the trophy dash, in which the drivers attempt to set new track records. The semi-

Two-year-old Warren Griffith, for whom No. 99 was named "Warren Special," inspects his dad's handiwork



final event runs 20 to 30 laps, and the main event is a 30-to-50-lapper. In addition, there often are special races of various lengths.

A typical race has from 15 to 20 entrants. Prizes are figured percentage-wise on the paid attendance. Admission generally is one dollar, and the crowds range from a few hundred to several thousand. After track rental and other expenses are deducted, the contestants split the melon, with the winning drivers, of course, taking the largest slices.

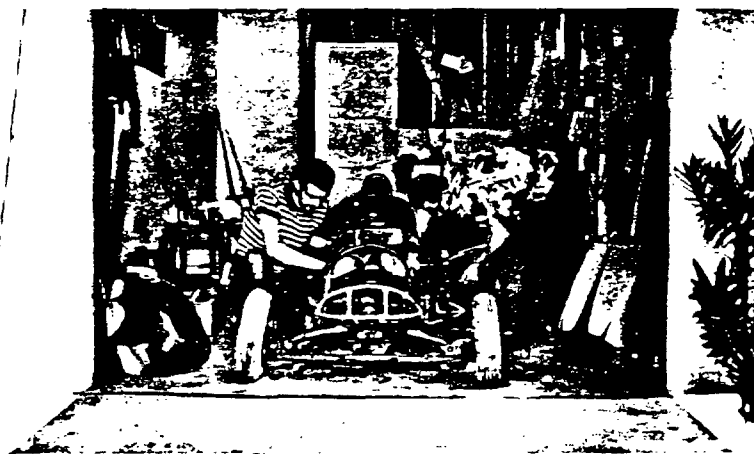
In his T.Q. track competition, Jerry Caywood, a veteran driver in this young sport, has figured in his share of freak accidents and tough breaks. Of average build, he appears almost too bulky to squeeze into the confines of No. 99's cockpit. But he manages to slip in without greasing himself. After hooking a safety belt across his middle and adjusting goggles and helmet, he's off to the races.

Upside Down Club

Once his steering apparatus gave way during a warm-up run and the car piled into the wooden crash wall. Jerry not only suffered a fractured nose, but the car couldn't be repaired in time to enter the race.

However, his chief claim to fame is his membership in the exclusive Upside Down Club. He earned this dubious honor by being involved in one of those once-in-a-million accidents. Roaring around the track at breakneck speed, the racer in front of him went into a spin and headed back towards Jerry. No. 99 rammed it head-on, climbed over, turned turtle, and ended up against the crash wall. Jerry's car left its tire marks on the other driver's jacket. "I found myself flying through the air upside down," he recalls. "Thought it was my last race for sure." Fortunately, both drivers escaped without serious injury.

The design and construction of the cars are left to the ingenuity of the individual owners, so long as they meet the specifications of the Three-Quarter Midget Racing Association. The rules specify a weight range of 350 to 650 pounds, a wheelbase of 54 to 60 inches, a tread of 32 to 40 inches, wheels ranging from six to nine inches in diameter, and an engine of 30.50 to 45 cubic inches, depending on type. Numerous safety devices are also mandatory, such as a tail that extends beyond the rear wheels, firewall, and flex-type steering wheel.



Most "midget" midgets, built of spare parts, are assembled in home workshops by hobbyists and amateur mechanics

Paul Griffith got the T.Q. "bug" a year ago, and immediately contacted driver Jerry Caywood. At their leisure, the two drew up a design for a Tom Thumb racer. Evenings and weekends during the next six months, the hobbyists worked in Griffith's garage with his lathe, welding outfit, and mechanic's tools. Sporting a coat of yellow paint, No. 99 finally rolled off the home-workshop assembly line.

Its springs, front axle, and rear end were cut down from an Austin. The eight-inch wheels and tires were taken from a Cushman motor-scooter. Steering was adapted from a

Franklin. In fact, all the parts were cut or adapted from automobiles, motor-scooters, and motorcycles.

The engine is a 45-cubic inch Harley-Davidson twin-cylinder engine that develops 20 horsepower at 6,000 rpm. The compression ratio is $7\frac{1}{2}$ to 1, half of that of some other "midget" midgets. The carburetor came from a stock car, and a $2\frac{1}{2}$ -gallon can serves as a gas tank. No fuel pump is used. Fuel is forced from the tank to the carburetor by gravity alone. No. 99 has a standard Austin gearbox with first and second removed, leaving third and

high. The braking lever outside the body, on the left, works on the rear wheels. With no self-starters, T.Q. cars must be pushed by a truck to get under way.

The side panels and hood were molded from plastic. The racer weighs close to 500 pounds and has a wheelbase of 60 inches and a 40-inch tread. Total cost of construction approximated \$500.

Like Griffith, most of Southern California's 30 registered owners are backyard mechanics, who designed and constructed their three-quarter midgets as a hobby. T.Q. racing is specifically meant for those

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Minus self-starters, the pygmy racers must be pushed by a heavier vehicle in order to get their engines turned over

enthusiasts who can't afford the larger, more costly cars.

No two models are the same. Some cost as little as a few hundred dollars, others as much as \$2,000. One San Diego owner spent only \$350 on his racer, yet he was third in the 1950 championship class.

One hobbyist salvaged the tires from a portable cement mixer and used them on his racer. Others adapt wheels and tires from the tail wheels of airplanes. Some owners find discarded racing car bodies readily adaptable to T. Q. specifications. One racer used a surplus engine that formerly operated the bomb-bay doors of a bomber, while still another ingeniously cut down a four-cylinder Crosley engine to about 34 cubic inches and designed a special cam. Even small outboard motors are pressed into service to power the pint-sized cars.

Bob Feuerhelm, a Pasadena enthusiast, constructed two T. Q. midgets weighing only 350 pounds apiece. He created his own laminated plastic body parts. Unlike most other "midget" midgets, Bob's cars have their engines in the rear. They are 30.50 cubic inch motorcycle engines that develop 42 horsepower. The fuel tanks are in front.

What goes into the two-to-four-gallon tanks is anyone's guess. Each owner compounds his own fuel mixture and jealously guards the se-

cret. One burns alcohol, another methanol. Other owners use mixtures of the two with "Ethyl" gasoline added. The formula may change from race to race as the driver finds a new mixture that brings better results.

Speed Secondary

Speed of the T. Q. cars, of course, varies with the engines and weights of the cars. Some drivers prefer powerful engines that give plenty of speed on the straightaways. The lighter cars, however, have less trouble in taking the curves.

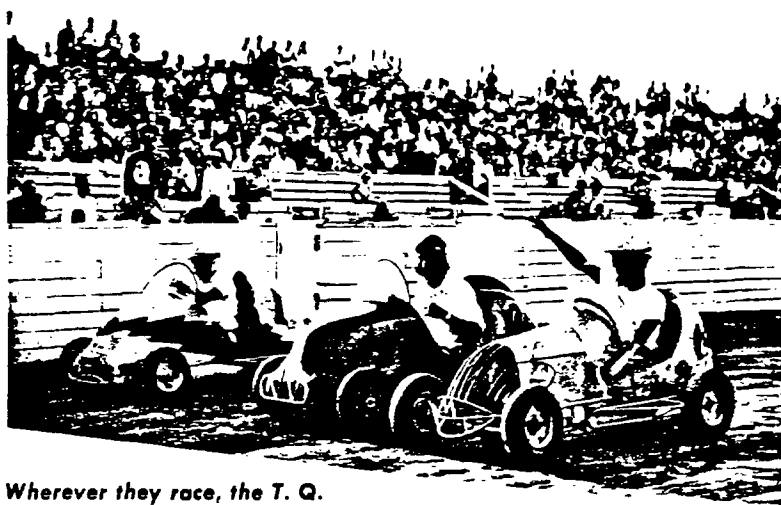
No. 99 can work up to a speed of more than 70 miles per hour. "But speed isn't so important on a small track," says Paul Griffith. "Winning depends to a great extent on the

driver's skill in taking turns and maneuvering into a favorable position."

To keep the T. Q. jobs on a strictly low-cost basis, the Three-Quarter Midget Racing Association has ruled that each competition must be a claiming race and that any offer of \$2,000 for a car must be accepted without question by the owner. This decree automatically outlaws the construction of expensive motors and high-cost parts.

The Association meets four or five times a year to select track locations, draw up regulations and specifications for the racing cars, and discuss ideas to promote public interest in the sport. The Association has plans to set up a circuit with one track in each of seven Southern California towns. Worthwhile purses would be offered and races held two or three nights a week. There's also talk of establishing indoor T. Q. tracks.

In its second season this year, three-quarter midget racing is really only getting started in a big way. There are more racers, more interest, and more fans this year than last. And with enthusiasm spreading daily, the sky's the limit — figuratively, if not literally — for these pygmies of the speedway.



Wherever they race, the T. Q. midgets draw a big crowd

Once Upon a Holiday



What man among us can ever forget those grand and glorious July Fourths of his boyhood?

By Harry Botsford

WHEN I WAS YOUNG, people didn't get many days off, but any man who worked for pay on the Fourth of July was suspect. It was, in every respect, a very special day, just as Thanksgiving was a special day, as Memorial Day was special. All three days have a patriotic significance, but of all of them it always seemed to me that the Fourth was the most American.

Independence Day was a day of unashamed exuberance, a day in which we voiced our personal belief in America and its ideals, our freedom from any entangling alliances, our faith in our government, and our belief in God. In every corner of the land, it was a day calling for picnics, brass bands, ex-soldiers and sailors marching in ill-fitting uniforms, and some poor but inspired oratory. We waved our flags. Our hearts were high with pride in the fact that we were Americans, that we were free to whoop and holler, to shoot off firecrackers and generally comport ourselves in a carefree manner.

On the fifth of July, I'm sure, we

all felt better. Men went back to work firmly convinced that we inhabited a chosen land. Our faith had been revived, and we young whippersnappers could thumb our noses at any other country in the world. A single American could outfight ten members of any other nation. Wasn't that what the speaker had said yesterday? We had more progressive industry, our farmers could raise more wheat and potatoes, our hogs were bigger, our cattle heavier than those produced elsewhere. Our men were taller and more courageous, our women more beautiful. That's what the man said.

'Crackers and Punk

For months, we prepared for the Fourth. Small boys saved their pennies and nickels for firecrackers and a piece of punk. Parents put a little money aside for some rockets, Roman candles and pinwheels to make the night a thing of sparkling beauty. These are items adjudged unsafe today, but, golly, how we loved them back when.

Each small town had its own celebration. There was a brass band. Not always a good band, but one

that could play long and loud. And what they could do with *Stars and Stripes Forever* and *The Girl I Left Behind Me!* The band led the parade, behind the grand marshal, who invariably was a war veteran in a faded uniform. He rode nothing more than a prosaic farm horse, but in our minds we saw him in a spanking new uniform, young and gallant, riding a dashing steed to the wars. What if it was only old Joe Strawbridge, who dug graves at Woodlawn, and who was known to drink a little too much on the day his pension check came through? On this special day, the Fourth of July, he was a symbol and we thought he was a great American. Which he was!

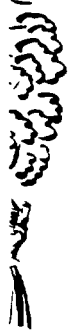
The parade was no great shakes to people accustomed to seeing big turnouts, but we had only one parade a year. The various church organizations marched in a body, carrying a banner to tell of their affiliation. People were unashamed of their religious membership in those days.

There were a few veterans, mostly members of the Grand Army of the Republic. (Why don't we have

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such a grandiose name for our troops today?) Only a few would be in full uniform; most of them wore military caps and civilian clothes. There they were, however. We never forgot our men who had served, even if they were only a few. Democrat and Republican, Catholic, Jew and Protestant — they marched together, proud of the fact that they were Americans and had fought for an ideal.

Then came the decorated carriages, the horses groomed to perfection, and a few wagons loaded with exuberant youngsters who grinned as they tossed firecrackers into the street. Always, too, there was the village wit in a clown suit. The drums thumped, the trumpets blasted, the fifes shrilled — and the crowds lining the sidewalks cheered. There were flags on the lawns and in front of Town Hall. Everyone owned a flag, it seemed.

Stirring Oratory

The speaker was somebody important from another town. We never used local talent. We wanted to hear a new voice, even if we knew the message would be an old one. On that day we wanted a strong injection of Americanism, some flag-waving, the sort of speaker who could make people cheer and wave their hats and hold their chins high when the day was over. When he

talked, we seemed to hear the roar of muskets on Bunker Hill, to feel the chill of Valley Forge; we saw the men in blue and gray struggle gallantly at Gettysburg, and we saw our armies fighting in Mexico.

And who can forget the Fourth of July community picnic, one of the most democratic affairs Americans ever knew? We sat down at long tables and no one came around to collect a dollar. The food was free — and bountiful. On this day, we were a community that forgot its petty differences. Bugbee and Vincent, the town's rival grocers, sat across the table from each other and exchanged friendly banter. Families that had feuded all year declared an armistice, and never was there a time when more goodwill existed.

Picnics were fun, a genuine community effort. Often they were sparked by a ball game. Sometimes the teams were good, other times they were pretty bad, but they were composed of people we knew. Whenever Tom Burdon, the grocery clerk, blasted a home run into the trees, we predicted that some day he would be playing ball in the big leagues.

The band members, wearing gaudy uniforms and carrying their instruments, always came to the picnic. Their only pay was the dinner they ate, and they collected heavily.

Unless too thoroughly stuffed, they obliged with a few selections after they had eaten. Some were gay and rollicking tunes. Often there was a little square dancing, a lot of laughter. Then the band played very soft and a group would sing. Things by Stephen Foster and some of the old hymns — all sung fervently and honestly. What the singers lacked in harmony, they made up in volume.

Stuffed to the Ears

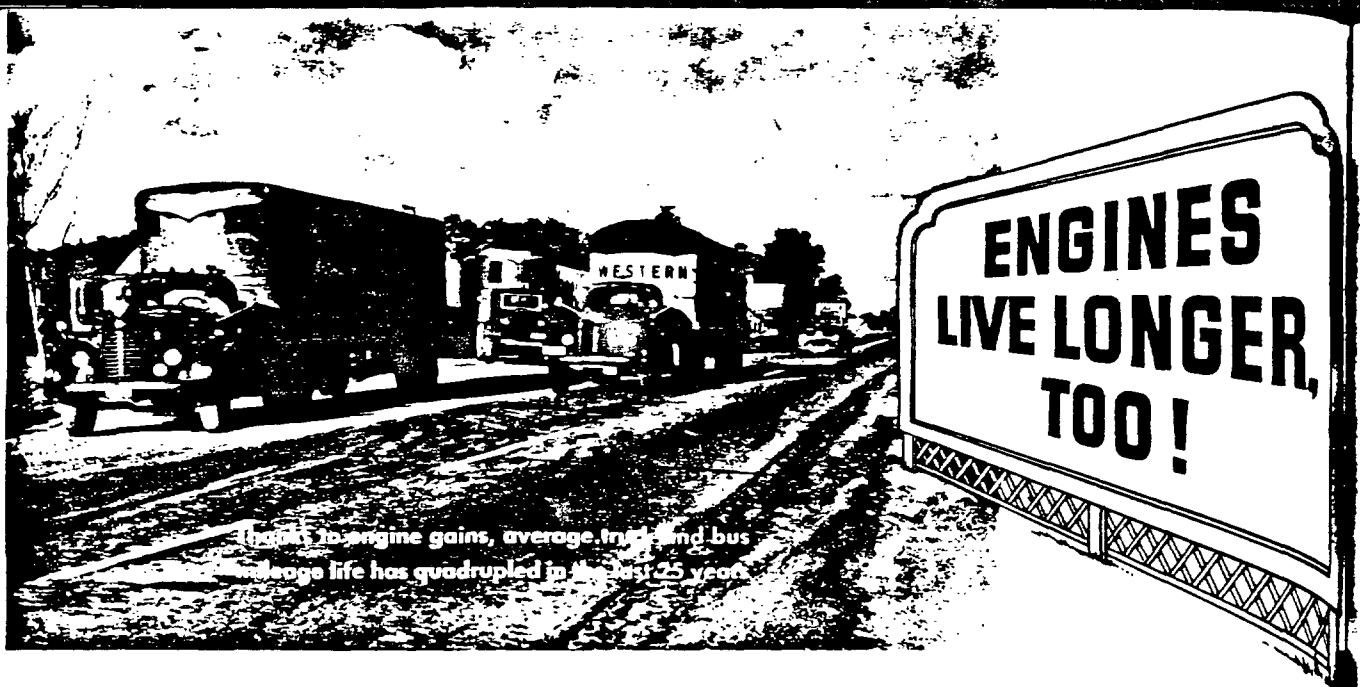
Some of us, especially the younger generation, ate too much ice cream and cake, drank too much lemonade, consumed too much cherry and/or lemon pie. Miraculously, we were never sick, but we were filled up to the ears.

At dark, we all went home. There could be heard the occasional bang of a firecracker some kid had saved for this time. We sat outside the house and sent up our rockets and they split the sky in an arc of gold, terminating in a small shower of lovely stars. Pinwheels spun madly to an early death, leaving the world dark and shadowy and leaving small boys and girls very sleepy and tired.

Somehow, when we crawled into bed, we had nice memories to cherish, a feeling that it was so good to be an American, a rather special privilege that we shared with our friends and neighbors.

It was a great day!





ASK ANY MOTORIST why the automobiles of today run so much better and longer than their predecessors used to, and he'll immediately reel off a dozen or more sound reasons. Even the lady driver, who is not supposed to be too interested in such things, can readily mention some of the answers — improved engines, superior gasoline and lubricating oils, and more dependable tires, to name a few.

Most people, however, can claim no such familiarity with the improved operation of commercial vehicles. This is quite understandable, since the average person seldom, if ever, has the occasion to lift up the hood of a bus or truck and compare what he sees there with what he might have noted in the corresponding engine of 20 or 25 years ago.

Parallel Car Gains

Yet, as those who service and operate the nation's fleet of 8.5 million trucks and buses full well appreciate, the gains that the automotive and petroleum industries have mutually scored in heavy duty engine design and operation closely parallel those of the passenger car.

As a result, not only has the use-

ful life of the commercial engine been lengthened considerably, but the time between overhauls and service check-ups has been greatly extended. One set of statistics tells the commercial engine durability story in a nutshell: the average mileage life of trucks and buses has more than quadrupled in the past 25 years, and these vehicles now travel two, three, and, in some cases, even five times as many miles before they need their first major overhauling.

Except that they are bigger and are designed to serve a different purpose, commercial engines are the same as passenger car engines in their basic structure. Both are skillfully designed assemblages of interdependent parts. The truck engine, of course, must be built to withstand far more rugged usage than the family car.

From the standpoint of design and materials used, any number of engine components offer themselves as illustrations of true progress in this direction. Spark plugs are an example. While their general shape has not changed materially in the past quarter-century, there have been several improvements in their design and structure.

High-alumina ceramic insulating material, introduced in the Thirties and used with outstanding success in World War II automotive and aircraft spark plugs, now is the standard automotive plug insulation.

The superior strength, heat conductivity and dielectric qualities of this new-type insulator have allowed wider latitude in spark plug design. Specifically, the material has made it possible to design the firing end of a plug to include a larger center electrode wire, a longer and slimmer insulator nose, and still provide a greater volume for free circulation of gases.

Tailored Plugs

This, in turn, has permitted better compromises to be made in so-called hot-running and cold-running plugs for particular types of engines and service. Plugs which run "hot," or dissipate their heat slowly, have been found best for light duty service, while "cold-running" plugs are generally best suited for heavy duty operation.

When you consider that the exhaust valve is the engine part that takes the most punishment, it is not surprising that a big share of

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the effort to add to engine life expectancy has been centered around this piece of metal.

Much is demanded of the physical structure of exhaust valves because of the high temperatures to which they are subjected and the heat ranges over which they operate in commercial service.

Valve temperature may approach 1,600 degrees F. as a truck pulls up a long hill at high engine speed and full throttle. Then, when the vehicle is over the crest of the hill, the engine may be used as a brake on a down-grade and the red hot valves are suddenly quenched with liquid fuel. Conditions of this sort put the finest of steels to test, so valve materials can be nothing but the very best.

Through the years, there have been several important stepping stones leading to victory in the battle against overheated poppet valves. Perhaps the five most outstanding of these have been the development of better base valve materials, the use of hard, corrosion-resistant materials on valve faces, the use of seat inserts, internal (sodium) cooling, and valve rotation.

The latter, valve rotation, stands out as one of the most significant single contributions to increased durability of commercial and farm

tractor engines during the post-World War II period. Rotators are self-contained devices which give, or allow, a twisting motion of the valve as it opens and closes. This turning motion prevents localized "hot spots" which lead to warping and burning. It also keeps valve stems clean, thus promoting better lubrication and preventing valve sticking.

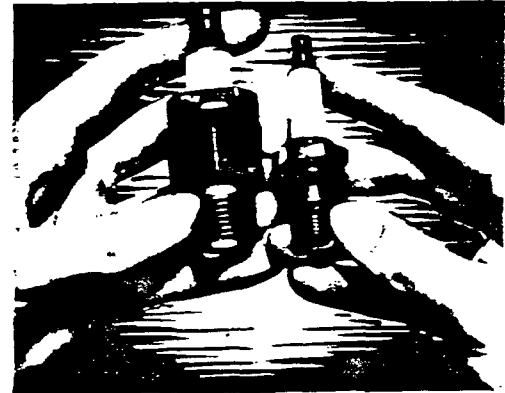
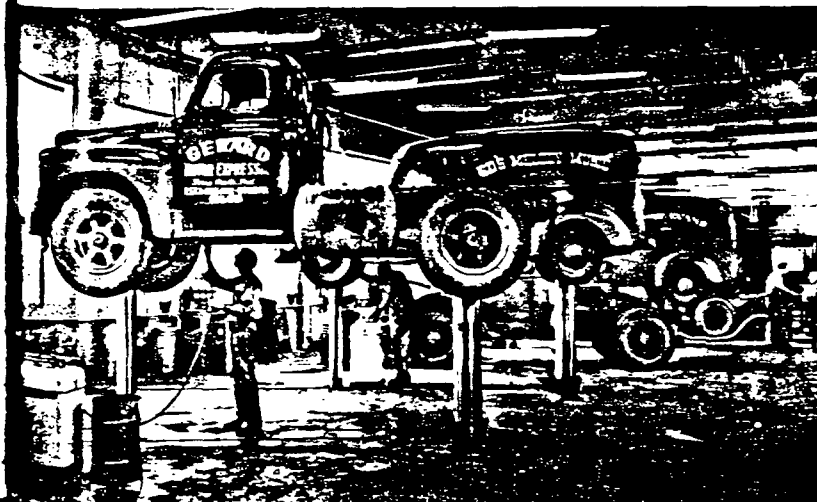
While the widespread use of rotators in tractor, truck and bus engines is a comparatively new development, experimental work to evaluate the possibilities of rotation was started by the Ethyl Corporation Research Laboratories in 1933. Ten years later, joint tests conducted by the Ethyl Laboratories and two leading valve manufacturers definitely established the superiority of valve rotators. Hundreds of individual tests with 34 different truck and bus fleets were conducted, using various experimental valve rotator mechanisms manufactured by the two cooperating valve companies.

No Interim Teardowns

Data obtained in the tests represented approximately 11 million miles of highway operation. In addition, 17,000 hours of stationary engine operation were logged.

These pioneer tests indicated, and

To capitalize on the added mileage that has been built into commercial engines, vehicles must receive the proper preventive maintenance



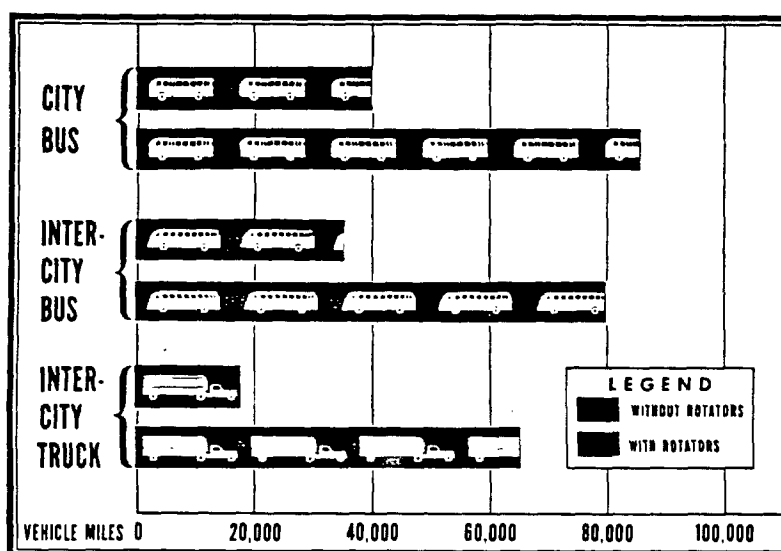
An example of better engine parts, the modern spark plug (right) is much smaller and more durable than its 1920 predecessor (left)

actual fleet usage during recent years has proved, that the use of rotators extends valve life from two to five times over that of conventional valves. Rotation has made the fleet maintenance superintendent's dream of "valve life equal to piston ring life" come true. Valve reconditioning and ring replacement can now be accomplished during the same major overhaul, with no interim teardowns. Less time in the shop means more time on the road — where the revenue is.

Because of the improvements in base metal materials and the development of such aids as hard-facing, sodium cooling, and rotation, valve durability is no longer considered a factor limiting operational mileage between overhauls.

Few, if any, of the thousands of parts that make up today's internal combustion engine have been ignored in the never-ending effort to increase engine durability.

Only recently, for instance, a new process for making bimetallic pistons was announced. These pistons, which have a cast iron insert in the ring groove area, combine the desirable light weight and thermal conductivity characteristics of aluminum with the superior wear resistance of cast iron.



As indicated by this chart, based on extensive Ethyl tests, the life of truck and bus exhaust valves is greatly extended by using rotators

Another notable recent accomplishment is chrome plating the top (compression) piston ring. First used in aircraft and tank engines of the last great war, chrome-plated top rings are now to be found as standard equipment on several makes of heavy duty commercial engines. Such rings, because of their greater resistance to abrasion, double the time an engine can be operated before excessive ring wear occurs.

Considering other parts of the engine, the crankshaft and connecting rods—the backbone and arms of an engine—are now such that they outlast their predecessors by two to four times. So, too, has the air cleaner been improved. Early oil-wetted cleaners were only about 70% efficient. The first oil bath air cleaners, introduced around 1930, were a marked improvement. Now, however, recent modifications have made the oil bath air cleaner almost 100% efficient. Piston ring and cylinder bore wear thus have been reduced to a fraction of that formerly encountered.

To operate most satisfactorily, an

engine should be provided with adequate crankcase ventilation. Here, again, there has been marked progress. Modern crankcase ventilating systems rid the engine of much of the combustion vapors and accumulated moisture which may combine to form acids and attack various engine parts. Proper ventilation also helps to evaporate any raw gasoline that might be introduced into the crankcase through excessive choking or extended idling.

Lubricants Improved

And so it goes. Name any commercial engine part, and you will find that it has been improved.

At the same time, the petroleum industry, keeping pace with automotive engine designers, has made many notable contributions to engine durability. The story of improved motor fuels is well known. Less spectacular, perhaps, but equally important, has been the constant improvement in engine lubricants.

Great strides have been made in this direction in the past decade. For instance, superior heavy duty

lubricating oils have resulted from the development and use of chemical additives. These additives accomplish four important missions: inhibit oil oxidation, neutralize acid-forming compounds produced during combustion, impart detergency, and act as dispersants. Dispersant-type additives keep motor oil contaminants in suspension, thus minimizing the formation of lacquer-like deposits and sludge.

If the average citizen is unaware of what the combined efforts of the automotive and petroleum industries have meant to commercial engines, the farmer and truck and bus fleet operators certainly are not.

Improved durability has not only resulted in savings to them by increasing engine life, but has enabled them to operate their equipment on fuller schedules over longer periods of time. These benefits, in turn, have accrued to the general public in terms of more food from the tractor-using farmer, more dependable service on the part of the bus operator, and the safe, rapid delivery of both necessities and luxuries by the nation's trucking industry.

OUR COVER: An unusual view of the nation's Capitol at Washington, D. C. Kodachrome by Ewing Galloway. **OUR PICTURES:** Pages 8, 9, 10, 11, courtesy U. S. Soil Conservation Service; page 12, courtesy Burton Historical Collection, Detroit Public Library; pages 12 and 13 (top center), courtesy Detroit's 250th Birthday Festival, Inc.; page 13 (top right), courtesy General Motors Corp.; page 13 (bottom), courtesy Ford Motor Co.; page 14 (left), courtesy Chrysler Corp.; page 14 (right), courtesy Kaiser-Frazer Corp.; pages 15 (top) and 17, Bill Boaz; pages 15 (bottom) and 16, Jack B. Kemmerer; pages 18 and 19, illustrations by Irving Hoffman; page 20, Ewing Galloway; page 21 (top), courtesy AC Spark Plug Division of General Motors; page 21 (bottom), courtesy Automobile Manufacturers Assn.; third cover, A. Devaney, Inc.

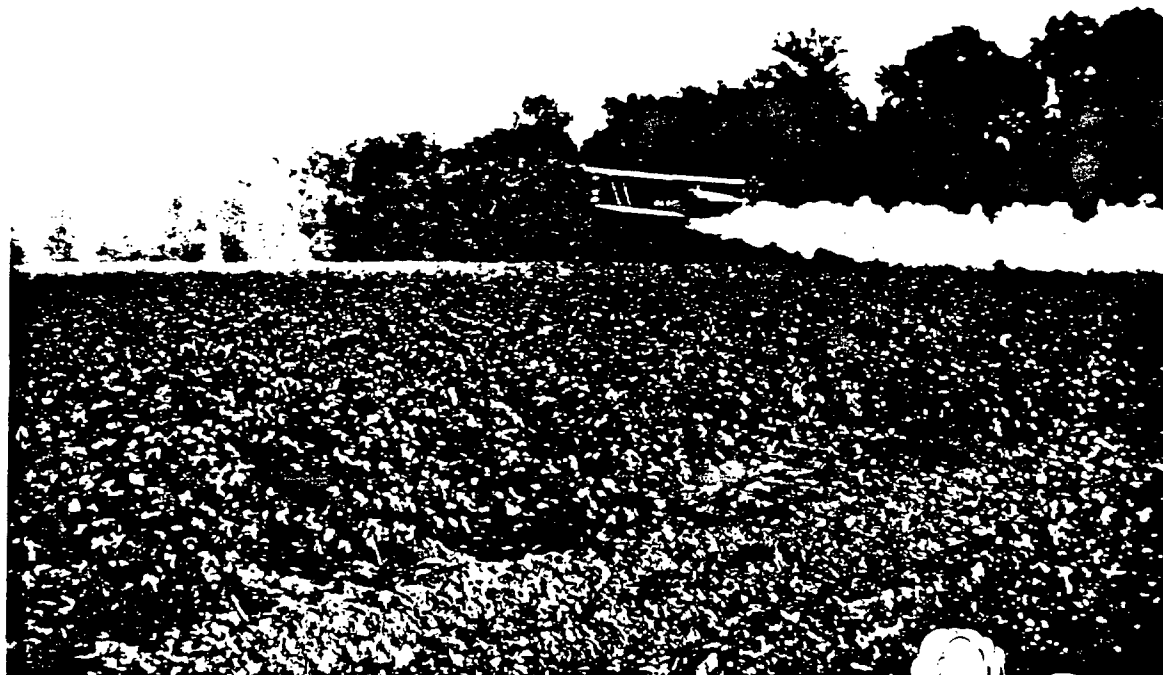
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KILLING COTTON KILLERS

A common sight throughout the Cotton Belt this time of the year is an airplane swooping low over a field, a curtain of light-colored powder trailing in its wake.

To the unknowing, this could be a military craft laying an aerial smoke screen during "war games." The plane is wag- ing war all right — but with destructive insects as the enemy. "Dusting" crops with insecticides is the chief weapon cotton farmers employ against the boll weevil, aphid, thrip, leaf- worm and the hordes of other insects that each year enjoy a 400-million-dollar feast on the nation's cotton crop.

Modern science has placed a vast array of chemical inse- cticides at the farmer's disposal to help him protect his plants against the ravages of these pests. One of the more effective of these is benzene hexachloride — BHC, for short — which Ethyl Corporation manufactures at its plant in Baton Rouge.

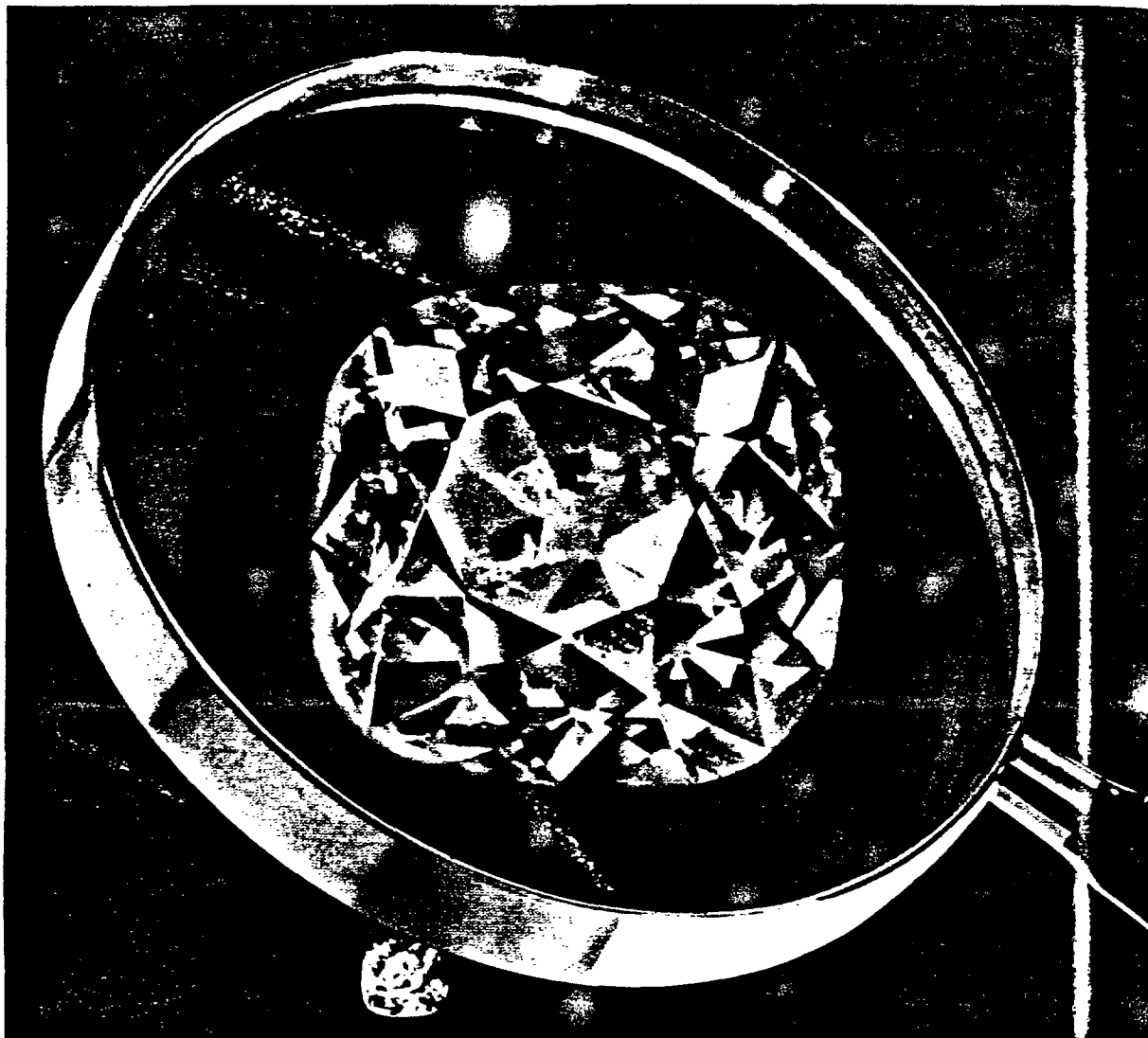
BHC is a fast killer. The insecticide conquers boll weevils and other cotton destroyers within a matter of hours. It reacts on insects as a stomach poison, contact poison, and a fumigant. This spells certain death whether the insect sus- ceptible to BHC eats it, steps on it, or breathes it.

A widely used cotton dust is the so-called 3-5-40 mixture,

which consists of 3% gamma BHC, 5% of DDT, 40% of sulphur, and the remainder inert material. This balanced insecticide is effective in preventing the depredations of all principal cotton insects, when applied as recommended by qualified entomologists.

In areas subject to severe insect attack, the 3-5-40 dust has, in effect, as much as doubled the cotton yield which would otherwise have been attained. Many cotton farmers report that an investment of five to ten dollars per acre in insecticide has returned upward of \$100 in the form of higher crop yields.

The immediate and growing popularity of BHC is evi- denced by cotton growers in Texas and Oklahoma. In 1946, the first year the material was available, farmers in those two states used about 11,000 pounds of the BHC-DDT mix- ture. In 1948, they applied more than eight and one-half million pounds. U. S. consumption of BHC alone last year was 50 million pounds. This year, the Department of Agri- culture has requested a minimum of 65 million pounds to help farmers grow the greatly enlarged cotton crop that is needed in the present emergency.



Courtesy of Baumgard Brothers — world's largest diamond cutters.

Why is complete antiknock service very much like a diamond?

Worthwhile antiknock service, like a valuable diamond, has many facets...each of which must be perfectly formed in itself and properly related to the others.

It is Ethyl's twenty-seven years of experience concentrated in the antiknock field which has made possible the painstaking development of each individual facet.

Ethyl service follows every drop of "Ethyl" antiknock fluid all the way from its manufacture to its ultimate consumption in an engine.

"Ethyl" antiknock compound is mixed with gasoline — so we assist refiners in blending oper-

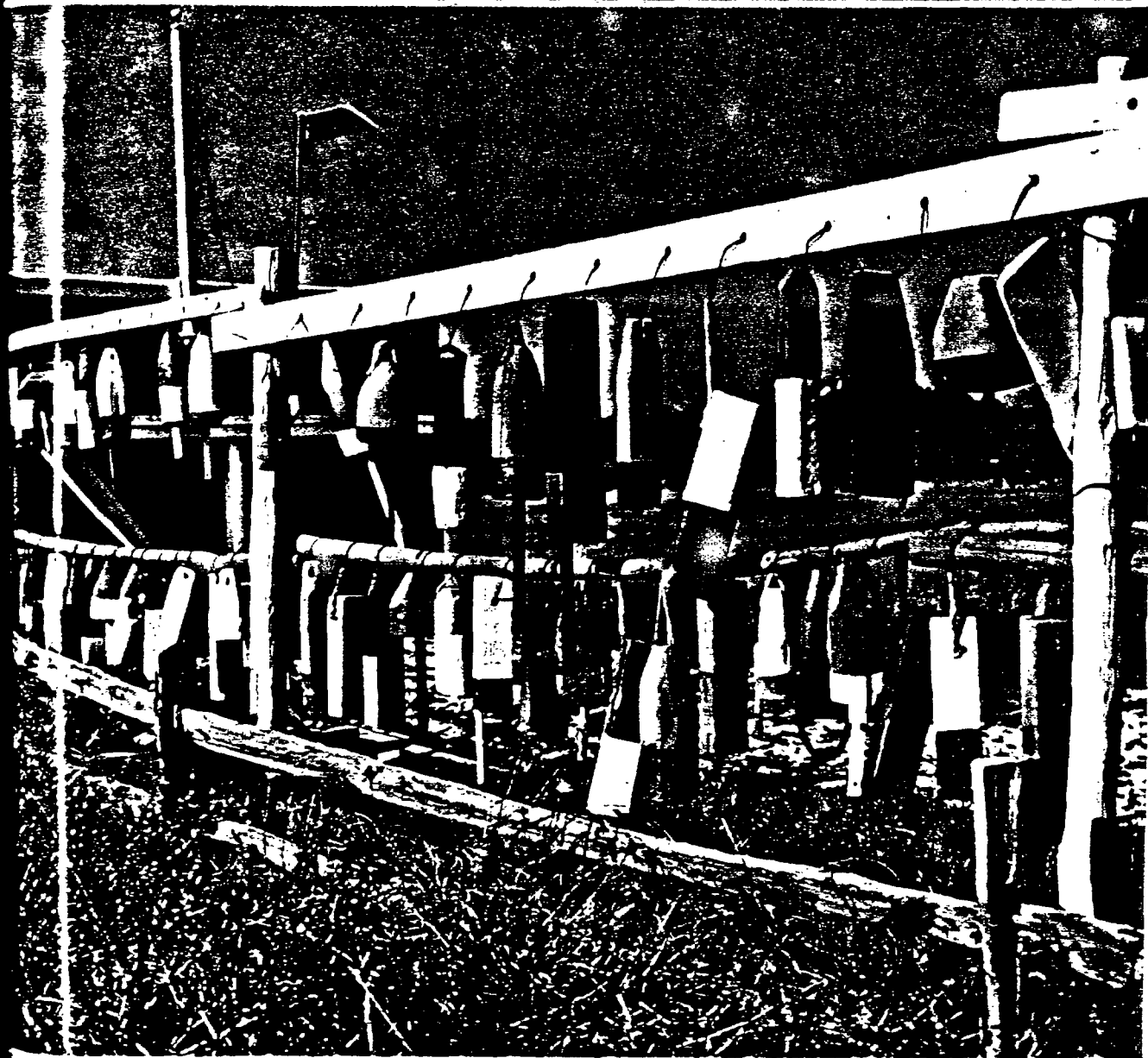
ations, offer a wide variety of technical aids and, through national advertising, help them sell leaded gasoline. Since this gasoline is used in engines, a continuous fuel-engine research program is constantly in progress. Finally, because these engines are used in many types of vehicles — cars, trucks, buses, tractors, airplanes — special Ethyl activities have been developed in each specialized field.

Each of these services is a facet on the Ethyl service diamond — important individually, but whose true worth can be measured only in terms of the entire program.

ETHYL CORPORATION • New York 17, New York



ETHYL NEWS



AUGUST - SEPTEMBER • 1951

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IN THE

ETHYL NEWS

AUGUST-SEPTEMBER 1951

Wallace F. Armstrong, a member of the Ethyl Corporation manufacturing department for the last 12 years, has been named manager of the company's new chemical plant now under construction near Houston, Texas, and scheduled to go into operation next year.

In his new capacity, Mr. Armstrong will be in charge of the production of tetraethyl lead and the other special-purpose chemicals to be manufactured at the Houston facility. This plant, like the one at Baton Rouge, will be completely integrated for the manufacture of "Ethyl" anti-knock compounds.

Mr. Armstrong is a graduate of the University of Florida, having obtained his B.S. degree in chemical engineering in 1938 and his master's degree in 1939. He joined Ethyl Corporation in the latter year, being first assigned to the Research Laboratories in Detroit for a period of three months. Upon his transfer to the Ethyl plant in Baton Rouge, he served as a data engineer and operations supervisor, and subsequently was promoted to superintendent of ethyl chloride operations. He has held the latter position since 1945.

Mr. Armstrong's memberships include the American Chemical Society and the American Institute of Chemical Engineers.

HOME FRONT AIR FORCE

3

Little heralded, but an integral part of America's air might, is the Civil Air Patrol. From sinking enemy submarines in wartime to performing flights of mercy in peacetime, rely on the CAP.

COLLECTORS' ITEMS IN OIL

7

A casual visit to a little New England secondhand store was the start of it all. Now, oilman Ernest Miller's collection of oil memorabilia is rated one of the largest in the world.

CLINICAL AID FOR MOTORISTS

11

The latest addition to Ethyl's parade of educational presentations is a mobile show called the Product-Sales Clinic. Units are touring the country to advise service station personnel how to answer unjustified complaints about gasoline and oil as the cause of automotive troubles.

IDYL OF AN ISLAND KING

14

This is "must" reading for anyone considering the purchase of an island. Other readers, who harbor no such water-logged ambitions, will chuckle at the experiences of this island-owner.

BUILT-IN OCTANE NUMBERS

16

Here is a capsule review of mechanical octane numbers to date, and a discussion of the avenues open to gaining more such units in future engines.

DISPATCH FROM SPAIN

20

A timely, on-the-spot report of Spain's current position in regard to automotive transportation and petroleum.

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.

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Manufacturer of "Ethyl" antiknock compounds, 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; Herbert A. Savage, secretary

ETC 32395

HOME FRONT AIR FORCE



Born an almost unwanted child ten years ago, the Civil Air Patrol, through its countless deeds of mercy and daring, now has won its wings as an official U. S. Air Force auxiliary

IN LOS ANGELES, a dentist sheds his white tunic and rushes to a nearby airport to pilot his private plane in a three-state search for an overdue fishing party.

In Klamath Falls, Oregon, a housewife leaves her dishes in the sink, plants a quick kiss on hubby's cheek, and dashes out of the house to fly as a qualified observer in one of the search crafts.

In Bremerton, Washington, a local businessman offers his services as a licensed amateur radio operator.

All this activity in such separated points adds up to just one thing — the Civil Air Patrol in action.

Little known or appreciated by the general public, the Civil Air Patrol — or CAP, in this age of alphabetization — now flies on 65% or more of all search and rescue missions in this country. In all kinds of weather, day and night, its members help locate and rescue passengers and crews of downed airliners and military planes, missing fishing and hunting parties, adventuresome boys who get lost in the woods — in fact, anyone who needs help of this kind.

CAP performs countless other functions, too. When you read about a rare serum being raced

across the continent to save the life of a little girl, or of a sick man being flown out of his backwoods shack to a large city hospital, chances are Civil Air Patrol is performing the act of mercy.

In wartime, the CAP is on the job more than ever. During World War II, its members flew more than 24 million miles over water to spot — and bomb — enemy submarines. Their small planes, or "puddle jumpers," were equipped with demolition bombs hung from improvised bomb-racks. In another wartime operation, members of the CAP's southern liaison patrol logged more than 30,000 flight hours along the Rio Grande, checking illegal border crossings between the United States and Mexico.

Still other major CAP contribu-



Air search-and-rescue is one of CAP's major peacetime functions. Here, pilots are briefed before taking off on such a mission. Lost or stranded parties spotted by aerial observers are brought to safety by Civil Air Patrol ground rescue squads

tions to the war effort were military courier flights, or the flying of military mail and urgent repair and replacement parts between Army bases; towing targets for anti-aircraft gunnery and searchlight practice; aerial inspection of camouflages and smoke screens; radar training flights; and other special missions that relieved military planes and personnel for combat duty.

In any new all-out war, the Civil Air Patrol will be ready to do all these things again, as well as carry out the vital civil defense assignments that will be entrusted to it.

Almost Abolished

CAP will be ten years old come December first. This anniversary will find it a potent, respected official auxiliary of the U. S. Air Force. That's a rapid climb for an organization that originally found itself a somewhat unwanted baby, and which in 1945, with World War II almost at an end, came within a wingtip of being abolished because of curtailed Air Force funds.

Originally organized by a group of over-age or otherwise service-exempt private pilots and aviation

enthusiasts who wanted to serve their country, Civil Air Patrol had been made the air division of the Office of Civilian Defense. Then, in April, 1943, after 17 months of outstanding war contributions, it was transferred to the Air Force by Presidential executive order. Congress, in 1946, made it an official Air Force auxiliary.

Today, the founding organization of ten years ago, can list these assets: A wing headquarters in every state, and in the District of Columbia, Alaska, Hawaii, and Puerto Rico; a total of close to 1,500 groups, squadrons, and flights located all over the map; and an active membership of more than 52,000 men and women, plus some 38,000 cadets — boys and girls between the ages of 15 and 18. Just about half of CAP's 10,000 pilots own or operate their own aircraft, ranging in size from tiny single-seaters to the larger DC-3's.

Civil Air Patrol members are sup-

The CAP offers a variety of jobs in the air and on the ground for both men and women. The girl sergeant shown here belongs to a Patrol first aid team

plied with surplus G.I. uniforms to wear while performing their official duties, and aircraft owners are reimbursed for the gasoline and oil they consume on authorized flights. But that's as far as financial reward goes. Members want nothing more. They are in CAP for two reasons — a love of aviation, and a strong desire to be of service in times of emergency.

Browse through the individual member file cards in CAP's national headquarters record room at Bolling Air Force Base in Washington, D. C., and you'll find that Americans of every age, every walk of life, and every color and creed belong to Civil Air Patrol. Hollywood stars like Brian Donlevy and Myma Loy are CAPers, and so are golfer Sammy Snead and other sports personalities. Clergymen of every faith belong, and many of them, aside from serving as unit chaplains, are active CAP pilots, observers, and radio operators. But, for the most part, CAP is made up of everyday, ordinary Americans whose interest is in the air.

Civil Air Patrol's activities are so



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During summer encampment, cadets take "orientation" flights. The CAP, however, does not give actual flying instruction

widespread and so diverse that even those who have never been up in a plane, or perhaps have no desire ever to fly, can render valuable service. There are administrative details to be attended to, and records to be kept. For those who want ground work that is more romantic and exciting, there are CAP mobile support units and the radio network to be manned.

Mobile support units have been formed in virtually every state, and their services have been offered to the governors of the respective states, to be at their exclusive command in an emergency. Trained particularly for duty in case of enemy air attack. Mobile Supports have their own portable power generators, and rescue, reconnaissance, and communication teams. All will know exactly what to do should an enemy strike.

The CAP radio network is manned by amateur operators, or "hams," who belong to Civil Air Patrol. The network, largest in the world, includes 7,000 stations across

and up and down the entire United States. CAP officials claim that no matter how severely enemy attack or sabotage may cripple other means of communication in the nation, the "ham" network will continue to function.

As vital as CAP's senior (age 18 and over) division is to national defense and comfort, the emphasis within the Civil Air Patrol itself today is on the fast-expanding cadet program. The long-term goal is

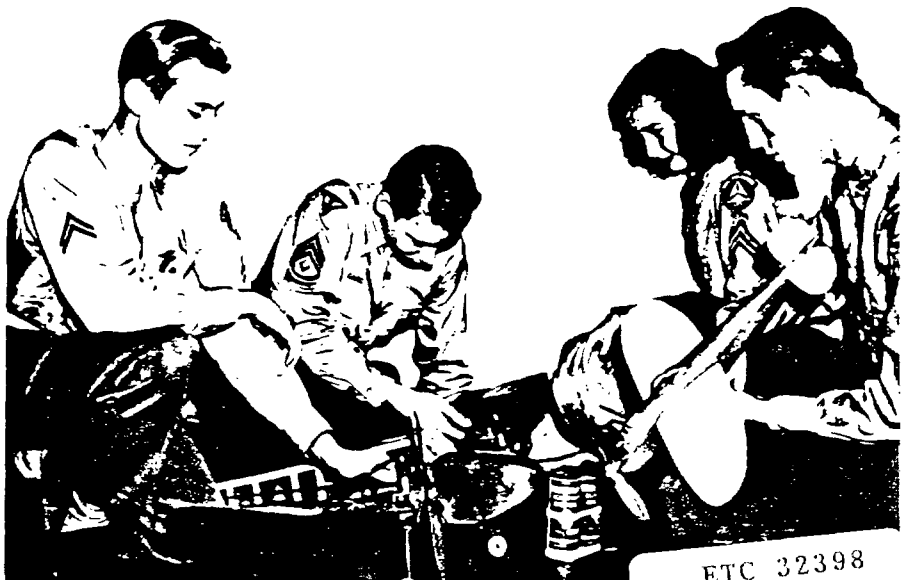
100,000 cadets. Right now, that quota is about 40% met. At the latest listing, New York led the states in the number of enrolled cadets, closely followed by Massachusetts, California, and Michigan. California, on the other hand, is far and away the leader in regard to senior, or adult, CAP members. Texas is second, New York is third, and Florida and Pennsylvania are virtually tied for fourth.

High School Course

The sole reason for maintaining a 100,000-strong corps of youngsters, says the Civil Air Patrol, is to keep a segment of the civilian population air-minded, so that its individual and collective skills can be called upon if and when needed, in either peace or war.

As part of this program, high schools in 43 states, and in Alaska and Puerto Rico, now offer an accredited one-year course in aeronautics. Open to students on an elective basis, the course employs the Civil Air Patrol Aviation Study Manual as its text. Some of the teachers are themselves senior CAP members, and many of the students are cadets, although they do not have to be to take the course. The high school training gives thorough

Model airplane building — a part of the cadet program — has helped teach many of CAP's younger members something of plane design



ETC 32398



U. S. air cadets, arriving in Canada, are greeted by their Dominion counterparts. The CAP exchange program helps create an international brotherhood of air-minded youngsters

coverage in such subjects as navigation, meteorology, theory of flight, and communications. In some towns where the regular course is not taught, senior CAP members give weekly after-school instruction.

Cadets, like senior CAP members, are volunteers, and may leave the Civil Air Patrol at any time. Although they wear handed-down Army uniforms, they are subject only to the discipline of the civilian officers of their CAP units, and do not take orders from the military. The only requirements for joining the CAP cadet program are that the boy or girl be an American citizen between the ages of 15 and 18, and that he or she have parents' consent. CAP encourages its cadets and other members to learn to fly, but does not give flight instruction. This the cadet or senior must take, at his own expense, under authorized private flying instructors.

Highspots of cadet training come during the summer months. Then, select — and selected — boys scatter throughout the nation, even the world, in programs designed to increase their knowledge of, and

stimulate their interest in, aviation.

Each August, for instance, 120 outstanding male cadets, recommended by their wing (state) headquarters, visit various foreign countries while that nation's "exchange" youngsters are observing military air operations in the U.S. This year's exchange program included many South American and European countries, as well as Canada. Simply stated, the purpose of this project is to create an interna-



Maj. Gen. Lucas V. Beau, commanding general of the CAP

tional brotherhood of friendly air-minded youth.

Here in the United States, during the summer, thousands of CAP boys and girls spend two weeks in encampment at an Air Force base near their home. Everything is "on the house," except a charge for meals, which the individual or his state or local CAP unit pays. During the two weeks, the cadets follow closely the military life prevailing at the base. They live in the same sort of quarters, and eat the same meals and in the same mess halls as do Air Force personnel. Much of the two weeks is taken up with a rigorous 80-hour course of instruction in such subjects as jet propulsion, radar, meteorology, airplane engine mechanics, aircraft familiarization and flying safety.

Goal of CAP

With an adult organization of proved ability ready to serve in any current emergency, and a far-sighted training program for the adults of tomorrow, the Civil Air Patrol is both prepared for the present and preparing for the future. Lucas V. Beau, an Air Force major general who is its commander, has summarized the aims of the CAP in these words:

"There is a role in the future of aviation for every young man and woman in America today — whether he flies the airplane, builds it, designs it, or merely recognizes its importance in our civil and military activities. We in the Civil Air Patrol believe it essential that every American appreciate the facts of life of this air age."

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COLLECTORS' ITEMS IN OIL

It's only a hobby with him, but oilman Ernest Miller's collection of petroleum documents is one of the largest

AROUSSED FROM HIS SLEEP by the insistent jangling of a bell, Ernest Miller threw back the bedclothes and groped for the bedside telephone.

"Hello," said a voice. "Can you tell me where Colonel Drake, the oil well driller, was born?"

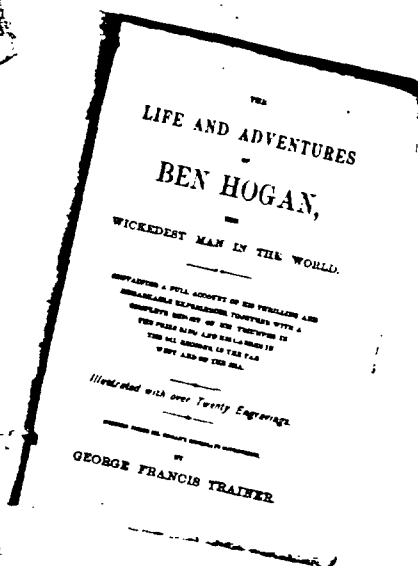
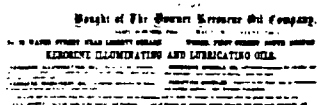
"Colonel Drake? Sure," the interrupted sleeper replied. "He was born in Greenville, N. Y., in 1819."

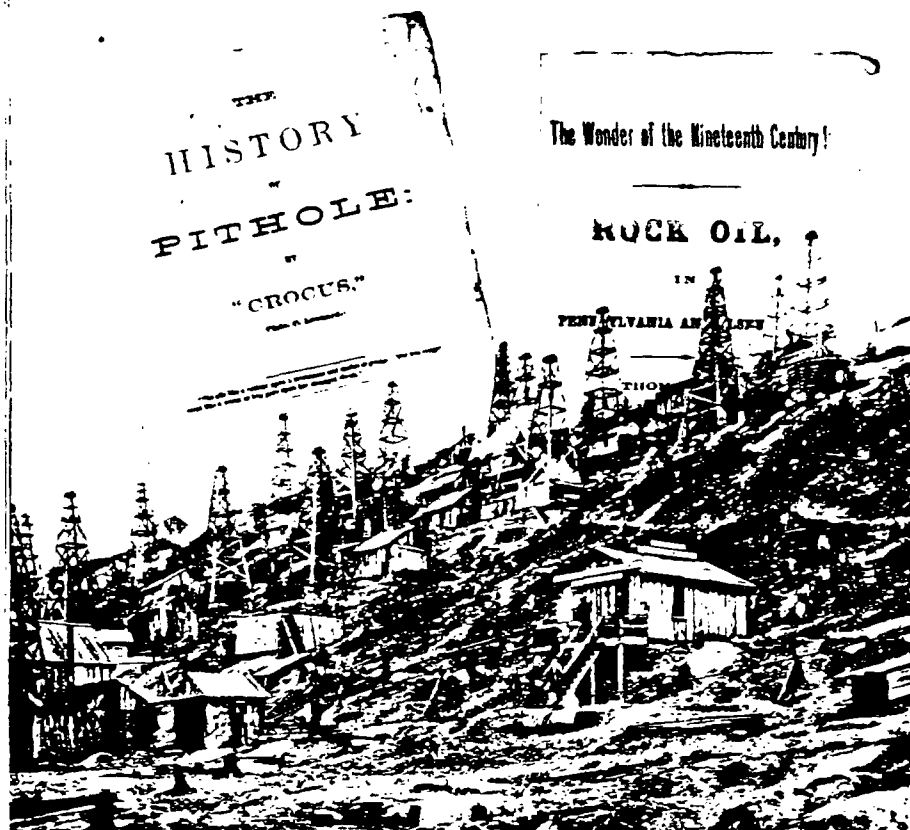
This midnight telephone call to young oilman Ernie Miller hints of his growing reputation as an authority on petroleum industry history, through his hobby of collecting oil memorabilia. The collection, an ever-growing one, is unique in itself. But it is all the more significant when you realize that Miller is not a professional collector, that whatever attention he pays to his items comes at the end of his work day as a salesman for the West Penn Oil Company of Warren, Pa.

Containing more than 2,000 books, maps, letters, pictures and other historical material, the Miller collection is believed to be the largest private one of its kind in the country. Valued at several thousand dollars, it has made an unusual



Top, Mr. Miller scans one of his several historical newspapers. The Miller collection exceeds 2,000 items, a few of which are pictured here





Pithole's history and the Rock Oil volume — each a rare collectors' item — were written soon after the discovery of oil

hobby for its owner, who has been acquiring it piece-by-piece during the last 15 years.

Many of the items in the collection are real museum pieces. Take Thomas A. Gale's *The Wonder of the Nineteenth Century! Rock Oil in Pennsylvania and Elsewhere*, for instance. This volume, which Miller rates as his rarest, is one of but three known copies in existence. It was written in 1860, the year after Drake struck oil at Titusville, and is the first book devoted exclusively to petroleum in this country.

A pile of musty old papers in a little secondhand store in an obscure Maine town was the hiding place in which Miller found the collector's item that started him saving historical oil pieces. Relatively new in the industry then, Miller nevertheless had a consuming interest in anything to do with petroleum. This he came by naturally, since his

father is a lifelong oilman, just as were his two grandfathers.

A special representative in New England for the Pennsylvania Grade Crude Oil Association at the time, Miller frequently found himself alone in unfamiliar towns with time on his hands. Not one to waste an opportunity like this, he took to frequenting book stores, secondhand shops, and country auctions.

Treasured Find

Browsing around this particular Maine store one day, he unearthed a valued 80-year-old oil company stock certificate. One of many such items in his collection now, that early discovery had Miller jumping with joy. It was a certificate for three shares of stock in the Pennsylvania Rock Oil Company, the firm that commissioned Colonel Drake to drill for oil. The certificate, dated Dec. 22, 1855, reportedly is the only

one to have survived the 96 years.

Thirty-nine-year-old Ernie Miller has devoted countless spare-time hours to traveling and letter-writing in quest of worthwhile mementos of the early days of oil. Adding to the collection today, however, is easier than it used to be.

"At first booksellers seemed only little interested in petroleum, and I had to hunt and dig for every item," he explains. "Time and effort have paid off, however. Now many bookmen send me everything they find dealing with petroleum. Librarians bring items to my attention and so do book scouts, auctioneers, antique dealers, and friends."

For several years the indefatigable Miller searched in vain for *The History of Pithole*. This was the only book written about and printed in that fabulous western Pennsylvania town that sprang from cow pastures, mushroomed to a community of 15,000, and then disappeared completely, all in a brief space of two years back in the 1860s. All copies of the book seem to have disappeared from the face of the earth. Then, one day he sauntered into an out-of-the-way antique shop and found not one but two copies standing side by side on a shelf.

Part of the value of the Miller collection can be attributed to the variety of its material. For instance, the personal feelings of early oil speculators, not easily discernible in standard industry histories, come to light in a perusal of some of the collection's letters. Written to families and friends back home, they reflect something of the hardships and heartaches early oil prospectors endured in their quest for black gold.

You can read what one Captain Daniel Jones experienced. Writing from Rouseville, three miles from Oil City, on a Sunday afternoon in April, 1865, he sorrowfully in-

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formed his wife back in Boston that his well "pumped water for a little while, and then gassed very strong. Shortly after, it threw up oil and mud about ten feet and then came clear oil. But after pumping two or three barrels, it stopped short and we have not been able to get anything out of it since."

After reporting this disheartening turn of events, the letter goes on to relate the type of thing that kept Jones and other speculators optimistic. "Just think," he wrote, "Dr. Egbert, who owns half with me, sold 1/12 of a well 18 rods away for \$300,000."

A copy of the first government document on petroleum, the *Report of the United States Revenue Commission on Petroleum as a Source of National Income*, issued in 1866, is another of Miller's rarities. But the most comprehensive government document of all on the industry is the famous Peckham report of 1882, another Miller item. No

rarity, the Peckham report is nevertheless valued at from \$15 to \$25 a copy on the strength of its extraordinarily complete bibliography of nearly all types of oil literature and its descriptions of early drilling methods, refining processes and other developments.

Not all of the items in his collection are of a technical and purely historical nature. Some, like the complete collection of dime novels with an oil background, give the material a lighter side. Eight in number, the thrillers of the rags-to-riches Horatio Alger era boast such provocative titles as *Fred Fearnot and the Oil King*, or, *The Tough Gang of the Wells*; *Struck Oil*, or, *The Boy Who Made a Million*; and *The Bradys in the Oil Country*, or, *The Mystery of the Giant Gusher*.

Of the many different types of oil memorabilia, the dime novels are currently the most sought after, according to Miller. The fact that they are relatively inexpensive is obviously one reason for their popularity among collectors.

The plot of *Struck Oil*, or, *The Boy Who Made a Million* is typical of the dime novels. "In this ac-

count of right triumphing and virtue being rewarded," Miller relates, "Harry Dane, a poor Indiana farm boy, becomes a highly successful oil producer. But after refusing to sell out to unscrupulous competitors, he is beset by such difficulties as attempts to set fire to his properties; competitors buying up the pipelines and refusing to transport his oil; a railroad tank car full of nitroglycerine sent careening into his properties; and kidnappers trying to make off with him and the key officers of his firm. How the modest hero manages to thwart these and other attempts to ruin him and his business, retains his fortune and enables his company to pay substantial dividends, make up the plot of this particular thriller."

A Light Note

Another segment of the light side of the Miller collection is its complete file of 14 oil-inspired songs of the middle 1860s. Practically unheard of today, most of them enjoyed only limited popularity when they were written and soon died out completely.

The Petroleum Court Dance, one of these pieces of sheet music, contained advertisements for the New York, Philadelphia and Baltimore Consolidated Petroleum & Mining Company. The firm's properties were pictured on the brightly lithographed cover. The back pages gave a detailed description of the oil territory owned by the company and hinted of good returns for the prudent investor. Still other songs were titled *Have You Struck It?*; *It*, or *Way Down in Bennisylvania*; *Petroleum's What's the Matter*; and *Petroleum Gallop*.

In harvesting his collection, Ernie Miller has learned that even the most unlikely looking papers sometimes prove interesting. A statement

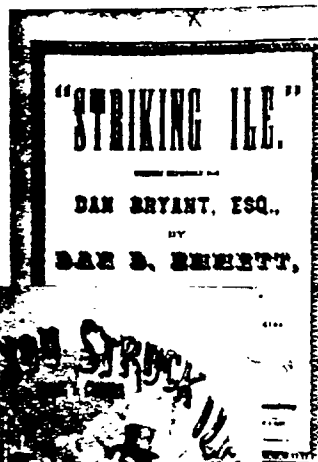


Reading by the light of an old kerosene lamp, many a boy has thrilled to the old dime novels about oil. Miller has eight of these in his collection





The discovery of oil inspired a rash of songs relating to petroleum, none of which achieved great popularity. In several tune titles, oil is spelled "ile"



issued by the Downer Kerosene Oil Company of Boston in 1860, setting forth that company's claim to ownership of the name "Kerosene," is an example. An announcement on the reverse side warns that "Whereas, Kerosene is the Trade Mark; and, whereas, it has come to our knowledge that other persons, either fraudulently or through ignorance, are selling in the market under that name common Coal Oils, of dark color, offensive smell, and poor quality for burning or lubrication; and Kerosene Oil adulterated with Camphene, Burning Fluid, Coal Tar, Rosin Napthas, Fusil Oil and other

deleterious substances, to the damage of both ourselves and the consumers: The present is to Caution our customers and consumers generally, against said imposition; and we would request, that when doubt exists in regard to having obtained the pure Kerosene Oil, that samples be submitted to us for examination, and proof furnished, that the proper legal measures may be taken to protect us in our just rights against all persons unlawfully using the same."

Miller has devoted one complete section of his historical oil materials to maps that date back to the time of the very first oil wells. Many of

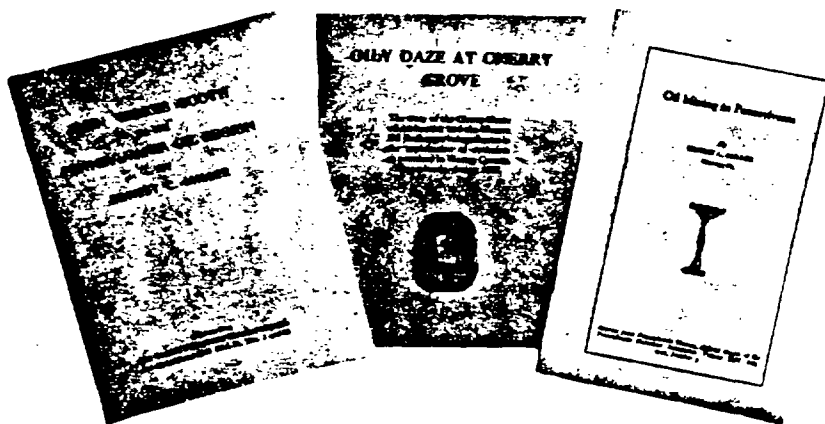
the maps are hand drawn on linen. Others are printed in as many as six colors. Carried in the pockets of early oil prospectors, they show hard wear and innumerable folds.

One of the most prized of Miller's maps is one showing the "Middle District" oil field. This covers the famous Cherry Grove field in Warren County which lasted for one year and then declined as rapidly as it had developed. The field produced 40,000 barrels a day and was served by five pipelines, the largest pumping station in the world, and a narrow gauge railroad before the bubble burst.

Miller keeps most of his material in his home, but the collection has grown so large in recent years that he has had to rent office space in Warren in which to store some of the material. Beyond that, he has given part of the collection to a library. Another part was listed in a printed catalogue that was sent to private and institutional collectors. Some of the material is always being sold or is out on loan to industrial firms, research workers and educational institutions.

Although it takes an ever-increasing amount of his time, Miller's collecting remains a hobby. But if the wells of northwestern Pennsylvania ever run dry, he has an avocation that he could readily turn into a fascinating and profitable vocation.

In addition to gathering old oil mementos, Ernest Miller has authored several historical papers on the subject of petroleum. The title pages of a few of these are shown, right



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CLINICAL AID FOR MOTORISTS

A new Ethyl exhibit suggests one means that oil companies may use to dramatize the high quality of petroleum products

IT'S A FUNNY THING about quality. You can talk about it and write about it. But trying to demonstrate it visually—to show what actual quality is—is something else again.

Throughout the land, there probably is no one who isn't aware that the quality of petroleum today is the very best that modern technology permits.

Yet, what could a service station dealer, for instance, do if a motorist drove in and asked to be shown the quality in a gallon of gasoline? No more than he could uncover a container of motor oil and say "see that quality floating around there on top" could the service station at-



The Product-Sales Clinic begins with a review of the operation of the gasoline engine. A special cut-away model (above), shows how each engine part functions

tendant point to the actual goodness in gasoline.

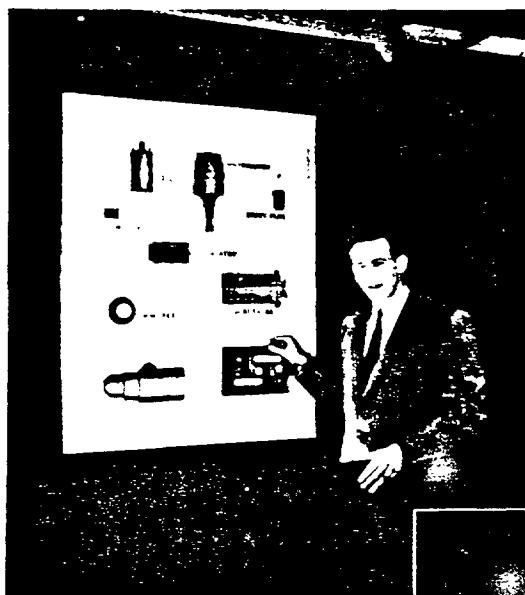
If the quality of petroleum products as such cannot be viewed, it at least is possible to point out the



Many of the working models used in the Clinic are 100 times actual size. Here, an oversized exhaust valve is being displayed. The audience is reminded that while car owners often blame gasoline for valve burning, actually this condition usually results from improper seating of the valve

many good things that modern-day gasolines and oils achieve, and the bad things they are not responsible for, in the operation of an automotive vehicle.

As a service to the oil companies which are faced each year with the need to interpret these facts, Ethyl's sales department experimented with dramatic stage techniques as a means of demonstrating the high quality of present-day petroleum products. The result is the Product-Sales Clinic—a unique illustration of one way to interpret the oil industry story



Next to be explained is the automobile's basic ignition system. The flow of electrical power from the battery through the entire system is shown clearly by illuminated wires. Service station men who are familiar with the ignition set-up, it is pointed out, find many opportunities to render extra service to motorists

about gasoline and lubricating oil quality.

Surveys prove that in instances where a motorist blames a particular automotive trouble on the gasoline and oil he is using, that criticism almost always is unwarranted. The real causes of most such complaints, it has been established, lie in unusual driving conditions or lack of proper engine maintenance.

With that fact in mind, the Product-Sales Clinic discusses each engine part separately in a series of

Right, in reviewing the distributor and its functions, the two engineers who conduct the Clinic employ a large model with movable — and removable — parts. The model enables the audience to see exactly what takes place inside the distributor as the spark is either advanced or retarded



More and more, replacement spark plugs are becoming an important sales item to service stations. For that reason, the Ethyl service show pays considerable attention to plugs — and the need for dealers to supply plugs tailored to the operating requirements of each individual motorist's automobile

demonstrations designed to give the audience a more intimate knowledge of their workings. Not only does the Clinic explain why petroleum products are seldom, if ever, at fault for mechanical failures. It also points up, on the affirmative side, that petroleum products impart added operating ease to most engine parts, so long as a vehicle continues to receive the proper attention.

A visual demonstration of petroleum products and engines in action, the Clinic explains the interdependent relationship of fuels, lubricants, and engines.

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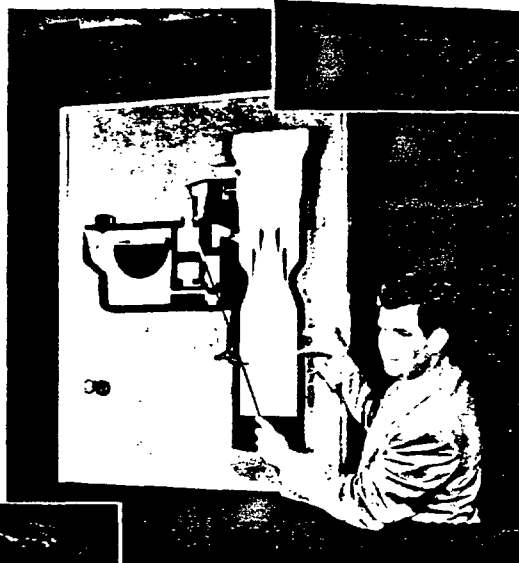


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At the outset, the audience is taken on a verbal tour of an engine to give "a clear picture of the job the working parts have to do and how they affect your customers' satisfaction with your products." Then follows a discussion of the various parts and why their improper care sometimes leads to unjustified motorist complaints against gasoline and lubricants.

The use of huge working models (some 100 times actual size) painted a variety of brilliant phosphorescent colors, special lighting effects, and other modern stage techniques all help to make the discussion more fully understood. The model carburetor, for instance, is 36 inches high and is made of plastic. Through the use of colored liquid, the audience is able to see clearly the job the carburetor does in formulating the fuel-air mixture, and why, if this unit is not operating properly, it can cause car troubles that the layman might be inclined to blame upon the petroleum products he is using.

Right, a vivid picture of what happens to oil under even normal driving conditions. In this demonstration, water, unburned gasoline, dust, carbon, and metal particles — all absorbed by oil in an operating engine — are added to clean oil, and the entire lot whipped together. The result: oil that should be changed at regular intervals



Left, this cut-away view of the carburetor aids in pointing out some of the troubles that can occur in this unit, and perhaps result in unjust criticism of gasoline and oil by the auto owner



An actual engine demonstration of the extra value of "Ethyl" gasoline rounds out the Product-Sales Clinic. The Clinic is the story of fuels and engines in action, and serves as one example of how the quality of petroleum products can be dramatized

Some of the principles discussed in the Product-Sales Clinic are familiar to many, but not everyone understands all phases of the fuel-engine relationship. Thus, those who witness the educational presentation can expect to gain a new insight into the rich role that gasoline and oil quality plays in the mighty drama of automotive transportation.

That information, in turn, should help those in the oil industry to answer erroneous complaints about petroleum products, and to help motorists achieve maximum car performance through the use of the best grades of fuels and lubricants.

Idyl of an Island King

SOME PEOPLE may still have their vacations before them, but, me, I've just had mine — on my own private little island.

As usual, after my annual adventure in the offshore wilds of Maine, I find it somewhat trying to readjust to civilization with its razors, electricity, and television. But I wouldn't exchange the fun I have on my vacation island for all the Dagmars in the world.

I've learned a pile of things — most of them the hard way — since that day, a few years ago, when I first set eyes on "the island." I've learned that you'll be much happier on an island if you are a combination marine navigator, long-distance swimmer, outboard motor mechanic, carpenter, plumber, woodsman, zoologist and weather prophet. A sprinkling of that old pioneering spirit will help, and if you're at least half crazy, so much the better.



"I decided to own this . . ."

I didn't know all this, of course, when I bought my island. My first taste of such life had been as a pampered guest on a beautiful isle in one of the big, wild lakes of eastern Maine. Under those circumstances, I flourished on island life because guests don't have much work to do. All I did, in fact, was

You don't have to be crazy to run a private little isle all your own. But — take it from one who knows — it helps

By Norman Odell

fish myself groggy, sleep, and eat delicious meals.

Ah, me, I didn't know when I was well off.

During one of my exploratory sorties on the lake in pursuit of scrappy small-mouth bass, I happened upon a small, abandoned island. Almost obscured by huge pines, spruces and balsams was a beat-up four-room cabin, its windows boarded, porch sagging, chimney half gone with the wind.

To sneak a look inside I started to pry loose one of the window boards. Three black things smacked me in the face. When I had extricated myself from unattached porch flooring I saw that they were bats — the healthiest specimens I'd ever met.

As I hate bats more than anything, except maybe turnips, this encounter would ordinarily have been enough to discourage my island-owning ambitions. But an impertinent island-bound red squirrel, perched on a nearby tree, laughed hideously at my plight. Then and there I decided I would own this island and bring forth upon it a lovely vacation hideaway.

Reclining on the defunct porch, propped against a trembling roof support, I began to envision my island five years hence. There would be a sleek mahogany speedboat moored at the dock, several smaller craft fitted out for fishing in luxurious comfort, and a few select guests

in the best Abercrombie & Fitch togs sipping drinks served by an Algonquin Indian chief in full ceremonial dress.

As things have turned out, my daydream overlooked a few details. For instance, there's no electricity on an island two miles from the



"A man can dream . . ."

Maine wilderness shore unless you build your own private utility plant. And there's no indoor plumbing, no nearby grocery or delicatessen, no mail delivery or garbage collection, no telephone.

According to veteran islanders, though, you can get along nicely without these things. What most of us call "conveniences" are really just the opposite, they say. And rid of the so-called conveniences, you're free of the struggle with machinery that's usually out of order, clocks, trains, and a hundred other annoyances that make fertile ground for ulcers. With a little rationalizing, I've accepted this viewpoint.

The devious route I followed in tracking down the former owner of my island would befuddle a Maine guide, even one equipped with a bloodhound. The owner, when I finally located him, turned out to be a city chap who'd bought the island five years before as a present for

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his wife. His wife, it turned out, was allergic to outdoor life. She wouldn't think of getting more than two hundred feet away from her department store or her automatic washer, and "slacks" wasn't even in her vocabulary. Consequently, neither of them had ever set foot on the island.

At first, he refused to believe me when I told him the cabin was still standing. He told me it had been built originally in the early Twenties by an outdoorsman who disappeared and let his taxes go unpaid after spending twenty-two consecutive rainy days there. There was some gossip about suicide, but I didn't get the whole story.

The owner and I dickered about the price, even though I had the feeling he'd have forgotten he ever owned the place if I hadn't come snooping along. After a few drinks, he met my terms. I gave him \$500 for the island and he threw in an old boat, a 1926 model outboard



"We dickered about price..."

motor, and his half of the year's taxes. The latter came to \$4 and some odd pennies.

I had an island!

Having bought it, I now had to sell it to my wife. This took somewhat more finesse. Typical of the practical little woman who puts up with a husband's whims — which she doesn't pretend to understand — she met my announcement with such



"Kids can unfix more things..."

silly questions as: "Why did you have to buy an island 600 miles away?" and "How can we keep butter without a refrigerator?"

I'd expected some such reaction, and was prepared. After I straightened her out about the truly worthwhile things in life, treated her to a mink coat and a new convertible, she became quite agreeable.

Our first summer adventure on our island wasn't what some would consider a "vacation." Re-covering the roof so rain wouldn't pour through onto the springless bunks took ten days, with time off here and there for chopping wood to keep us from freezing on nippy July nights. Building a temporary dock of spruce trunks with a scout knife, dull axe and rusty nails required a couple more days, two barked shins and a case of chilblains. Keeping the ancient outboard motor wheezing consumed a good part of what should have been a half-hour trip, each way, to the village to stock up on perishables every other day. Fishing, somehow, didn't take up as much time as I had hoped.

By taking it easy and conserving our strength eleven months of the year, we've managed to accomplish quite a bit on our island during vacation weeks. When we left this summer we had the place liveable, in a manner of speaking. Of course, Maine winters can be pretty rigorous. We may find on arrival next year that windstorms, forty-below-

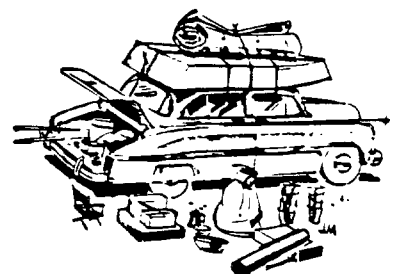
zero temperatures, and several feet of snow and ice have done minor damage such as tearing off the roof, capsizing the outhouse and splintering the dock. One thing we can count on — the bats will be there to welcome us.

We've faced all this before and we can do it again. There are darn few things that can't be fixed during a summer vacation if you're willing to put in eighteen-hour days and have your heart in it. We know the fishing is good. We've talked to people who have a place on the shore and who have time to fish.

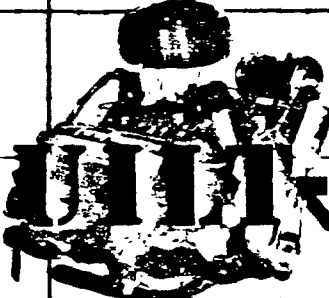
Since there were rumors that last winter had been a mild one in our part of Maine, we took along our own trouble this year just to keep in trim — our two boys. They can make more things to fix than the worst winter Maine ever saw.

But we're already looking forward to next summer's island junket with a sort of breathless expectancy. We'll take along all the things we've forgotten in other years: a larger car with heavy-duty springs that won't collapse under a 900-pound load of duff, an air rifle to shoot inquisitive bats off the rafters so we won't have to depend on a fish net strapped to an oar to bag the little monsters, and a dozen pails to tote water in case the pump handle still sticks.

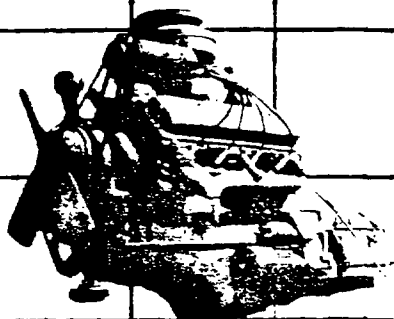
Most important, we hope to take along a new kind of courage that comes from pitting one's strength and matching wits against an island that wants only to be left alone.



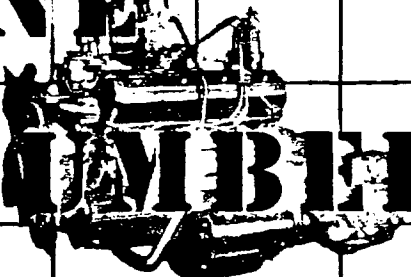
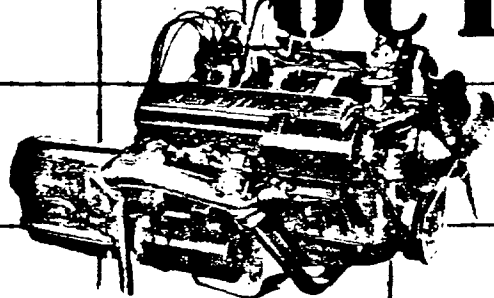
"Looking forward to next year..."



BUILT IN



OCTANE



NUMBERS

Design and structure changes which enable engines to make fullest use of current fuels add up to what we know as mechanical octane numbers

THERE WAS A TIME when it was unnecessary to specify what kind of octane numbers one was talking about. An octane number was an octane number—a unit of the antiknock quality that the petroleum industry built into gasoline.

Now, motorists are beginning to hear about two different kinds of octane numbers—mechanical and chemical. Most car owners, while they may not have heard them described as such, have at least a nodding acquaintance with *chemical* octane numbers. They understand, generally, that these are provided by the refiner—and are obtained by blending "Ethyl" antiknock compound with finished gasoline, and by employing modern petroleum refining processes.

There is nothing new about *mechanical* octane numbers so far as automotive engineers are concerned, but it is only recently that the general public has heard the term. It is not an easy term to define. However, in a paper before an American Petroleum Institute group earlier this year, C. L. McCuen, general manager of the Research Laboratories Division of General Motors Corporation, gave what many consider a readily understood definition of the phrase.

What They Are

He explained mechanical octane numbers this way:

"Anything we do to the engine which will allow it to operate without knock on lower octane fuels, we say increases the 'mechanical octane numbers' of the engine. These are built into the engine by

the automotive engineer. As a matter of fact, ever since the problem of knock was recognized, automotive engineers have attempted to control it through mechanical design. In doing this, we have aimed at maximum utilization of the fuel octane numbers supplied by the petroleum industry."

Just as the petroleum refiner has increased antiknock quality and otherwise improved his gasoline year after year, so has the automotive engineer developed changes in engine design and structure which have allowed automobile power plants to take fuller advantage of available fuels. Each individual improvement in fuel quality and engine design has been significant in itself. But, it is only when these gains are considered as a whole, and over the span of the last 25 years, that the big result stands out clearly. Then, one can appreciate why the constant joint progress of the petroleum and automotive industries has made it possible for

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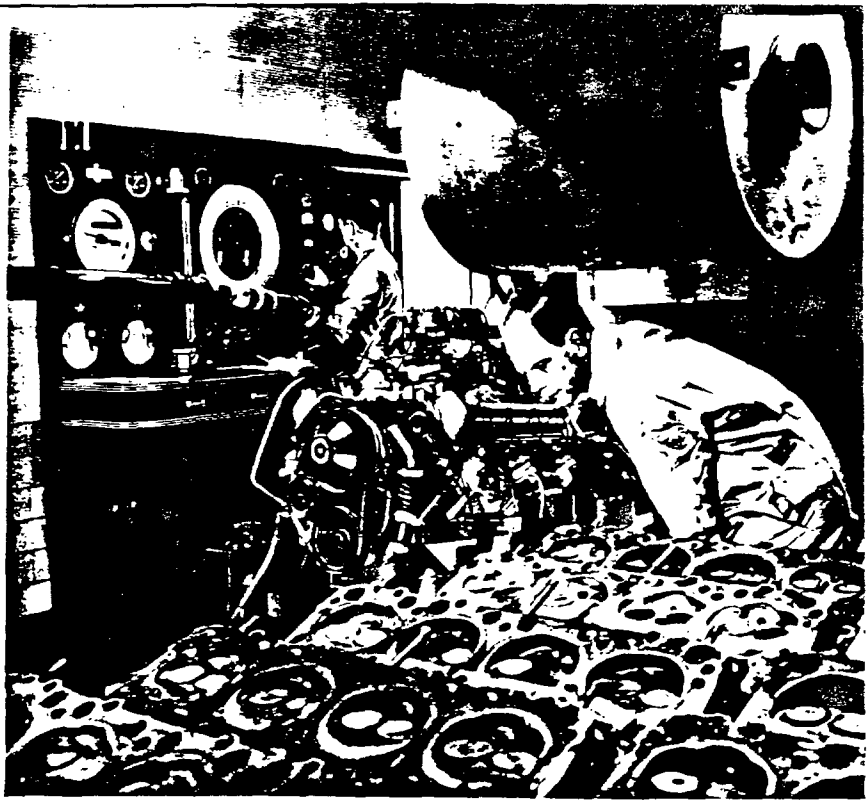
As a matter of fact, the automotive industry has attempted to solve mechanical design problems aimed at increasing the efficiency of the fuel system by the petroleum refiner has quality and efficiency in gasoline. The automotive industry has made changes in engine design which will give the power advantage of individual efficiency and engine efficiency when these are taken as a whole. In the last 25 years it stands out that we appreciate progress of automotive industry impossible for

two gallons of today's gasoline to do the work of three gallons of 1925 fuel, and for average compression ratios to be 60% greater than those of a quarter-century ago.

During recent months, the results of the Ethyl Corporation's extensive work in the field of mechanical octane numbers have been placed before key personnel of oil companies throughout the country. Earl Bartholomew, general manager of the Ethyl Research Laboratories at Detroit, and other company representatives are conducting this program. For those who desire it, their technical presentation, entitled "Mechanical Octane Numbers," is available in booklet form from the company's regional offices located in New York, Chicago, Tulsa, and Los Angeles.

To appreciate the significant role which mechanical octane numbers play in automotive progress, it must be remembered that these units are considered to be improvements in the design of engines which do one of two things:

1. Result in better acceleration and hill-climbing ability or lower fuel consumption without the necessity of using fuel of higher antiknock quality; or
2. Enable engines to make more effective use of gasolines having high "sensitivity," such as those in



In its research, Ethyl conducts engine tests using cylinder heads which incorporate various combustion chamber designs

general use today which have a considerably higher rating by the Research than by the Motor method.

Examples of improvements in engine parts that provide mechanical octane numbers of the first type are centrifugal and vacuum spark-advance mechanisms that retard the spark timing at low speeds and full throttle — when the tendency to knock is usually the greatest. The mechanical octane numbers thus gained permit the use of a higher

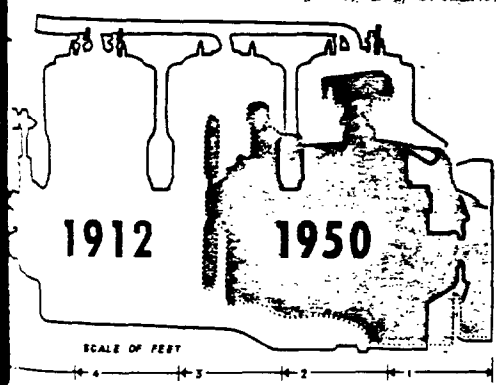
compression ratio than would otherwise be possible without fuels of higher antiknock quality.

The Second Type

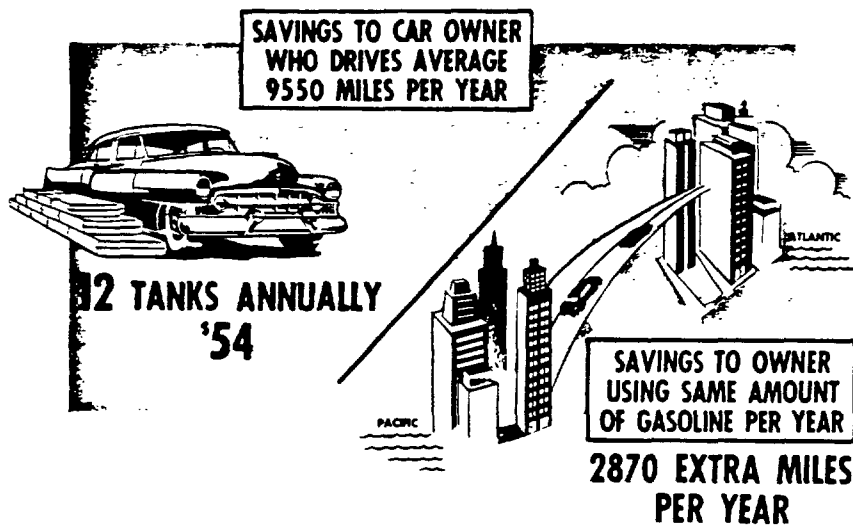
Certain design changes which have had the general effect of reducing operating temperature have added mechanical octane numbers of the second type — those which enable engines to make more effective use of modern highly sensitive gasolines.

Among these design changes are the substitution of down-draft carburetors for the up-draft type, the extension of water jackets to the full length of cylinders, and the replacement of multiple-baffle mufflers by those of the straight-through type for more rapid evacuation of exhaust gases.

Another change that has long offered possibilities for more mechanical octane numbers is in combustion chamber design. Research has demonstrated that if increased



Chemical and mechanical octane numbers have brought about noteworthy changes in engine size, compression ratio, and fuel mileage. The modern engine (outlined here against a 1912 model) develops more than twice as much power in less than half the size



As illustrated by this sketch, increased engine efficiency since 1930 alone has helped the motorist stretch his gasoline dollar greatly

turbulence can be imparted to it, the intake air-fuel mixture will burn at a faster rate. This reduces the time during which knock-inducing high temperatures may be built up in the combustion chamber. Combustion chamber designs that increase turbulence and speed up combustion thus make it possible to use higher compression ratios with any given fuel. They also enable engines to make better use of sensitive fuels and so achieve as much as 30% greater fuel economy.

Ethyl's many laboratory and road tests highlight some of the improvements in automobile performance which result from added mechanical octane numbers.

1950 vs. 1921

In one comparison, the performance of a 1921 automobile was measured against that of a 1950 model equipped with an experimental engine of advanced design for which a number of cylinder heads, with a range of compression ratios, were available. When the compression ratio of both engines was 4.5 to 1, the older engine knocked considerably on a low-octane fuel of the

type used in its day, while the heavier 1950 vehicle was knock-free on the same gasoline and showed better acceleration and fuel economy, thanks to its added mechanical octane numbers.

In another series of tests, the performance of this same 1950 model experimental engine was compared with that of a standard production model 1939 engine. Because of the additional mechanical octane numbers built into the modern engine, both its power and economy were significantly better than those obtained on the 1939 engine at the highest compression ratio suitable for use with gasoline whose antiknock quality (78.3 octane number) was similar to the average premium fuel available immediately prior to World War II.

If the 1950 engine had been installed in the 1939 automobile, acceleration, hill-climbing ability, and fuel economy would have been improved by at least 10%. If the rear-axle gear ratio had been changed to maintain the same level of acceleration after the modern engine was installed, gasoline economy would have been improved still further.

The history of engine design shows that most power plant developments which bring about better utilization of fuel antiknock quality at any particular octane number level also enable an engine to yield an unusually high gain in fuel economy from gasolines having higher antiknock quality, if the compression ratio is properly adjusted. When fuel antiknock quality in the above tests was raised to 92.8 octane number, along with the appropriate increase in compression ratio, the 1950 engine yielded almost a 47% greater increase in miles per gallon than did the 1939 power plant.

Better TEL Use

The ability of the modern engine to make better use of improved fuel antiknock quality results in a more efficient utilization of tetraethyl lead. The addition of three milliliters of tetraethyl lead to a base stock of the current type of premium gasoline permitted a rise in the compression ratio of the 1950 engine that yielded an 18% increase in fuel economy. This was 50% greater than the economy gained by a cor-

OUR COVER: Lobster pot buoys drying out at Provincetown, Cape Cod. Kodachrome by A. Devaney, Inc. **OUR PICTURES:** Pages 3, 4, 5 and 6, courtesy Civil Air Patrol; pages 7, 8 (except old Pennsylvania oil scene), 9 (except woodcut), and 10, courtesy Ernest Miller and Gel Howell; pages 14 and 15, illustrations by George Meese; page 17 (bottom) and 18, courtesy General Motors Corp.; page 20, Philip Gendreau; pages 20-21 (bottom) and 21 (top), courtesy Spanish Tourist Office; page 22 (top), Oliver W. De Wolf; page 22 (bottom), courtesy California Texas Oil Co., Ltd.

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responding increase in the compression ratio of the 1939 car.

While great advances have been made in adding mechanical octane numbers to engines in recent years, several possibilities remain for developing still more.

One avenue that has been explored for a number of years is a dual-fuel system. This would add a secondary fuel of higher antiknock quality, or a fuel additive (such as "Ethyl" fluid), during that brief period of engine operation when the tendency to knock is the greatest. But such systems have largely been limited to experimental use, because of the cost and complication of the extra "plumbing" involved. Also, after quick opening of the throttle, there is a momentary lag in the flow of the secondary fuel into the cylinders, with the result that knocking may occur during this period.

While it is generally agreed that improvements in combustion cham-

ber design, as mentioned earlier, add mechanical octane numbers, complete advantage of this type of engine alteration cannot be taken until the problem of carbon deposits is licked. This problem is one that is as old as gasoline engines themselves. Over the years, the knock-inducing carbon deposits have been combatted with varying degrees of success by a number of chemical and mechanical means. The most satisfactory solution to the problem, however, would be to modify all gasolines and engine oils so that they would reduce the tendency of deposits to cause an increase in knocking.

Need Combustion Data

Another possibility for more mechanical octane numbers is in the design of a distributor that would minimize variations in spark timing in the different cylinders of an engine. If this can be done, engines will be able to take even fuller

advantage of the greater potential power in premium gasoline.

The basic research on combustion currently being conducted is an example of oil-automotive industry cooperation that promises to provide future benefits for motorists. Strange as it may seem, little is really known about the process by which gasoline burns in the internal combustion engine, although this process is fundamental to an engine's operation. Fuel and engine technologists are convinced that it will be possible to build better engines that will utilize better fuels once additional fundamental information about the combustion process becomes available.

With this goal, the laboratories of the two industries are carrying on a variety of projects aimed at producing such data. The increased knowledge that comes from this and other research will form the foundations upon which fuels and engines of tomorrow will be built.

NEW SALES TRAINING CENTER

As a service to the many oil companies which have home or regional offices in New York City, and to local automotive groups, the Eastern Region of Ethyl Corporation's sales department has opened a permanent meeting and training center, centrally located in midtown Manhattan.

Occupying the first floor of the four-story structure at 234-240 East 39th Street, in the Grand Central area, the new Sales Training Center offers both Ethyl and customer oil companies a convenient and ready location for the conduct of sales promotional and educational meetings. The Center will be under the general supervision of William J. Rusher, of the Eastern Region.

Formal opening of the Sales Training Center will take place late in August. At that time, oil company representatives in New York will attend special showings of the Product-Sales Clinic, a new Ethyl Cor-

poration service program (see page 11). Thereafter, the auditorium will be available for the presentation of this and other Ethyl shows and services, and for use by oil companies.

There is adequate seating space in the auditorium for 100 persons, plus all the room necessary for any exhibits and stage presentations. Chassis dynamometer facilities will be available to aid in the solution of engine complaints, and for those meetings which require the indoor operation of a motor vehicle. Storage space is ample, and an unloading dock at truck tailboard height makes it easy to deliver and remove heavy items to be used at any gathering. Public lots and garages are conveniently located for the parking of private automobiles.

In instituting the Sales Training Center, Ethyl does so in the hope that it will prove of value and convenience to the area's oil companies.

DISPATCH FROM SPAIN

By Oliver W. DeWolfe

(Ed. note—Mr. DeWolfe, a veteran American newspaperman, is now on a tour of the free countries of Europe. The report that follows was filed directly from Spain. Based on Mr. DeWolfe's firsthand observations, the story is especially timely in view of improving Spanish-American relations.)



MADRID—An ancient Chevrolet, vintage 1928, wheezed up in front of Madrid's luxurious Palace Hotel to discharge passengers. A curious Spanish-speaking American asked the driver what he wanted for the outmoded taxicab.

Without hesitating, the driver quickly reeled off a peseta figure. After a pause for some mental arithmetic, the American exclaimed in amazement:

"You want \$1,500 for this cab! Are you serious?"

The driver was.

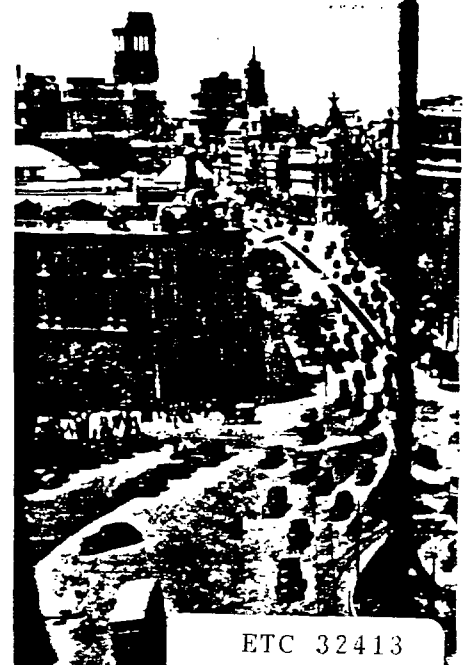
In Spain today, a small prewar Citroen is valued by its owner at \$1,250. The operator of an equally elderly, but much larger, Hotchkiss appraises his vehicle at 55,000 to 60,000 pesetas, but volunteers that the owner would not sell it for less than 100,000—around \$2,500 at the free market exchange rate of approximately 40 pesetas to the dollar. The

age of these vehicles and the asking prices are indicative of the state of Spain's motor transport.

For a population of more than 28 million, Spain has an estimated 110,000 vehicles, of which only about 60,000 are passenger cars. Virtually all automobiles, with the exception of those owned by the government and the extremely wealthy, are obsolescent if not downright obsolete. The Spanish manufacture no cars—although they hope to do so—and their truck production falls far short of making up for the annual attrition of the 50,000-vehicle fleet. Last year, Spain imported only 1,542 trucks and 2,768 cars, less than one-third the number considered necessary as replacements.

Trucks are valued at roughly twice their domestic United States price, while automobile selling prices are astronomical. A

\$1,600 American car, for instance, requires an outlay of \$6,300 in dollars plus 33,500 pesetas, the equivalent of \$840 more. This includes customs duty, a complicated Spanish import levy called Fondo de Retorno (which figures out at



263% of the original price), a luxury tax, and the car itself. The reason for the heavy fees is not primarily to provide money for the government, but to discourage private individuals from importing cars because Franco's government is short of foreign exchange.

Needs U. S. Aid

Spain can make few, if any, improvements in her motorized transportation without outside help, and that primarily means aid from the United States. While the Spanish government to date has preferred to treat its requirements for economic and military assistance separately in conversations with American officials, transportation must be taken into account in both. It is the bridge between the two types of aid, without which neither can do its job properly in a common defense effort.

Spain must have more and better highways and transport, as well as increased and improved railroad trackbeds and rolling stock. She also needs more petroleum to meet immediate needs, to say nothing of the oil that will be required in future years for a growing population and an ambitious industrialization program.

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With the castle of Coca, near Segovia, as a backdrop, a plodding donkey and a modern bus offer this striking contrast of transportation progress

Gasoline is rationed on a vehicle horsepower basis. The basic allotment, which has been increased and decreased from time to time in accordance with the supply position, now ranges from 15 liters (approximately four U. S. gallons) to 250 liters a month.

In addition to the rationed supply, there also is a black market in gasoline for motorists who can afford to pay five or five and one-half pesetas a liter, or approximately one peseta more than the legal price.

Visiting motorists are required to get government gasoline coupons, which, in Madrid, means a trip to the Banco de Espana, the only agency authorized to issue them. This is both a slow and an expensive arrangement. An American must pay for his "tickets" in dollars at an exchange rate less favorable than that of the free market — an example of Spain's multiple exchange system which so complicates the import-export transactions. It figures out to \$18.40 for 100 liters, or approximately 70 cents a gallon. The "tickets" are

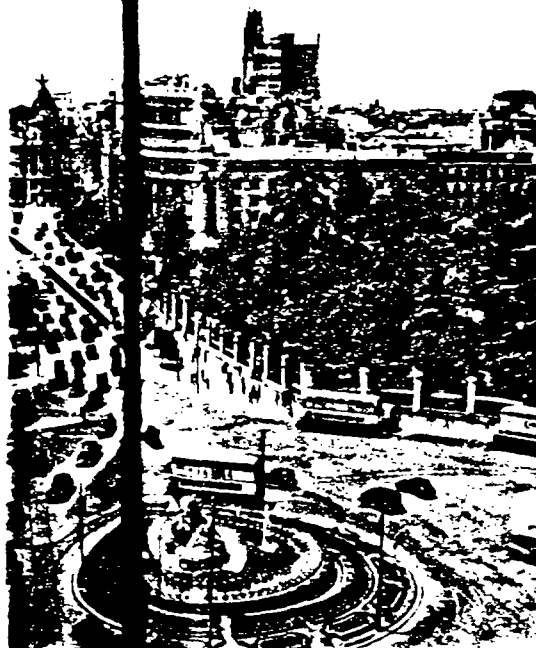
exchanged for gasolina at a filling station. Occasionally, it's possible to get fuel without coupons, but the motorist always runs the risk of finding himself with an empty gas tank and a "ticket-minded" filling station operator at the same time. The quality of motor fuel throughout Spain is fair, but that of lubricants, unless they are imported, is dubious.

Road-Building Plan

Madrid is the hub of the Spanish highway system, most of which was constructed between 1926 and 1932 and now is in varying states of deterioration. The highway leading from San Sebastian to Burgos to Madrid is, on the whole, relatively good. By contrast, motorists are advised not to try to drive from Granada to Valencia because of the extremely poor state of the highway.

The government has approved a 3.2 billion peseta five-year plan for improvement of the country's 11,000 kilometers of highway, but modern road-building machinery must be imported if the job is to be accomplished anywhere near on schedule. Much of the highway repair and construction work still is done by hand.

For the capital of a country that has only about 110,000 motor vehicles, Madrid presents a picture of considerable automotive activity





Single gasoline pumps are more common than service stations in Spain. Here, a car is being fueled from such a pump on the road to Toledo

Spain has no oil wells of its own, and thus depends entirely upon offshore crude and processed petroleum with one important exception. This is the oil-bearing shale near Puertollano in the province of Ciudad Real, south of Madrid. The Empresa Nacional de Calvo Sotelo, a subsidiary of "INI," the state's Instituto Nacional de Industria, has set up a plant in the area and is now processing about 1,000 metric tons of shale a day. This production is expected to be doubled when the plant finally goes into full operation. A French-controlled plant, although with a smaller capacity, also is operating in the area.

Big Shale Deposits

The shale deposits are among the world's largest. The Spanish hope eventually to be able to process about 30,000 metric tons of lubricants, 30,000 tons of motor gasoline, 25,000 tons of aviation gas, and 13,000 tons of paraffine annually.

There also are plans to build a plant for processing lignite in northwest Spain, and additional oil drilling operations are contemplated despite the failures of the past.

In another move toward greater self-sufficiency in petroleum, refinery operations have been stepped up. An American company, Caltex Oil Products Co., holds a 24% interest in a refinery near Cartagena, which started operations last year. The initial throughput was 5,000 barrels of crude daily, processed into low octane motor gasoline, gas oil, fuel oil, and kerosene. When completed, probably by the middle of 1952 if materials are available, the refinery will have a 30,000 barrel-a-day capacity and will produce, among other things, a higher octane motor fuel.

The Compaine Espanol de Petroleos, S. A., refinery in the Spanish-owned Canary Islands is gradually increasing its capacity toward a goal of 20,000 barrels a day. Currently this refinery is processing something between 16,000 and 17,000

barrels of crude oil daily.

As a result of the shale and refinery improvements, Spain now is supplying an estimated 47% of its domestic consumption of processed petroleum products. This compares with only 25% supplied two years ago.

At the present rate of consumption, experts expect that the country ultimately will supply between 80 and 90% of its required petroleum products. One source familiar with the Spanish oil position estimates that the country now consumes 470,000 metric tons of motor gasoline a year; 500,000 tons of fuel oil; 260,000 tons of gas oil; 51,000 tons of lubricants; 62,000 tons of asphalt, and 38,000 tons of kerosene, plus many tons of special petroleum products.

This, then, is Spain's position today as a visiting American finds it. As time goes on, and relations between the Western Allies and Spain continue to improve, the nation may be able to look forward to more and better petroleum products and general improvement in its highway transport system.

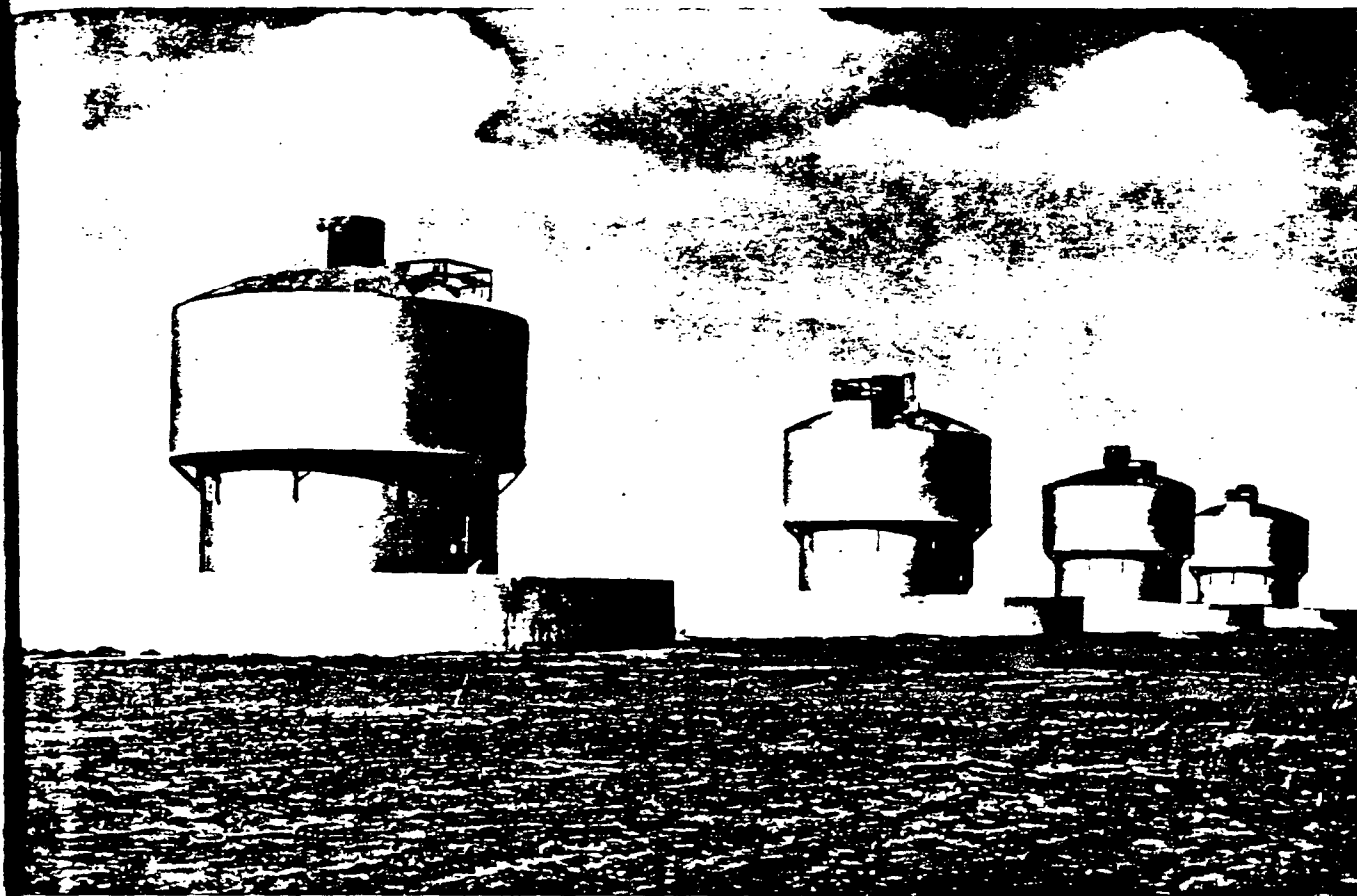
Below, gasoline and kerosene storage tanks at the refinery near Cartagena. Scheduled for completion in 1952, the refinery will have a 30,000-barrel-a-day capacity



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STOCKPILING FOR SECURITY

Each passing month adds to the strength of the nation's mobilization effort. In many fields of industry, new plant capacity is being completed, new men are being trained, and America's inventories of ready materials, both for the armed services and the civilian economy, grow larger.

One of the finished materials now being put aside against the threat of future emergency needs is "Ethyl" antiknock compound.

A key product in maintaining the quality of aviation gasoline, as well as that of both military and civilian motor fuel, the usage of tetraethyl lead fluid was restricted on March 1. Since that time all production of tetraethyl lead in excess of the quantities allocated to oil companies by the Petroleum Administration for Defense has been placed in storage as a reserve. Benefited by production records above previous goals, the stockpiling of "Ethyl" antiknock compound is a reassuring and growing reality.

To disperse this stockpile for maximum security, two new storage facilities are being constructed. Along with the storage available at two manufacturing plants and two terminal storage points, these new Ethyl facilities will add room for an additional 15 million pounds of antiknock compound (10 million pounds TEL content).

As a further means of insuring adequate supplies of antiknock compounds for both military and essential civilian gasoline in the event of emergency, the Petroleum Administration for Defense recently queried oil companies about their willingness to provide tetraethyl lead storage capacity at their refineries. "It is important to consider the dispersal of at least a portion of the reserve at or near the locations of the final mixing with gasoline," the PAD pointed out.

The oil industry in America is so large and so widely dispersed that no enemy attack or action can reasonably be expected to reduce the supply of gasoline below emergency requirements. All who are concerned with the maintenance of satisfactory quality for that gasoline, for both military and civilian needs, are aware of the importance of antiknock compounds. The vehicles upon which our civilian economy moves, as well as military engines, have been developed to standards of efficiency and economy which call for high octane gasoline.

The PAD program to encourage storage of antiknock compounds at refineries, and Ethyl Corporation's program to provide extra facilities for storage near principal refining areas, are two examples of the mobilization effort which is strengthening our national security.



"SHARE THE KNOWLEDGE"

... a basic principle of Ethyl service

For the past twenty-seven years Ethyl technologists have been investigating the behavior of fuels, antiknock compounds, lubricants, engines, and engine components.

The knowledge gained has not gone into some vast secret storehouse. Quite the contrary. Bulletins, reports, and other literature flow in a steady stream to refiners, automotive manufacturers, tractor makers, fleet operators and others to whom such technical information is valuable.

For example, a total of 56,000 Ethyl Techni-

cal Notes have been distributed in the past twelve months, and a large number of individual queries have been personally answered.

Information in the files of our research laboratories is available to refiners and their technical staffs. Our research people are always ready to consult with them on specific problems. Often we are able to save a refiner considerable time and money because of the information we are in a position to supply. Sharing knowledge of fuels and engines with our customers is one of our most important services!

ETHYL CORPORATION • New York 17, New York



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ETHYL NEWS



SPECIAL
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IN THE

ETHYL NEWS

OCTOBER 1951

The scene above—a black and white reproduction of the four-color view on the front cover—is one common to all colleges and universities these days, as campus walks come alive again with students making their way to and from classes after the summer vacation.

The photograph was taken on the campus of Duke University, which is picturesquely situated amid an 8,000-acre woodland on the outskirts of Durham, N. C.

The large, stately building in the foreground is Kilgo Tower. A dormitory, it was named for John Carlisle Kilgo, who was president of Trinity College, the forerunner of Duke University, from 1894 to 1910. There are no fraternity houses at Duke, so practically all students live in dormitories.

Looming majestically in the right background is the tower of Duke Chapel, which rises 210 feet above ground level. The Chapel is a landmark of the South and annually is visited by tourists from all corners of the globe. Modeled after the famous Canterbury Cathedral in England, the Chapel sets the Gothic architectural style for the other buildings on Duke's West Campus. In all, the main unit of Duke consists of some 40 buildings, all of them constructed of native North Carolina stone.

EDUCATED AMERICANS OR TRAINED ROBOTS? 4

The answer to which type of graduates our colleges and universities are turning out is provided in this thought-provoking discussion by Benjamin Fine, the noted education editor of The New York Times.

THE TRAIL OF THE ARBUTUS 10

Even though it suggested a theory that proved wrong, the trailing arbutus played a significant role in the development of "Ethyl" antiknock compound. The romantic story of this "successful failure" was told during Charles F. Kettering's recent civic birthday party in Dayton.

ACS DIAMOND JUBILEE MEETING 13

The long-to-be-remembered 75th Anniversary Meeting of the American Chemical Society is reported in a special 12-page section.

ETHYL—AN ADVENTURE IN CHEMISTRY 24

Because Ethyl Corporation is so closely identified with the development and marketing of gasoline antiknock compounds, its corollary role as a chemical producer is not generally known. Here are reviewed some of the unique aspects of the company's chemical operations.

MOST LIKELY TO SUCCEED 29

It takes more than just good classroom averages to succeed in the business world. College graduates—past, present, and future—should find this article both revealing and stimulating.

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, 100 Park Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compounds, 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; Herbert A. Savage, secretary

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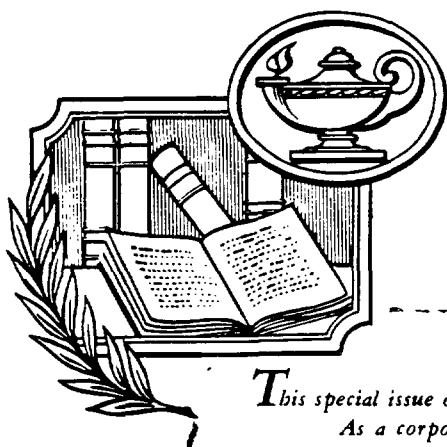
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This special issue of Ethyl News is dedicated to Education and Chemistry. As a corporation, our interest in higher education in the United States is that of both an employer of graduates and of an industry whose existence depends upon the maintenance of the ideals which have made our country what it is today. As an employer and an industry, we are selfishly concerned with the kind of education available today—and tomorrow—to the young men and women of America.

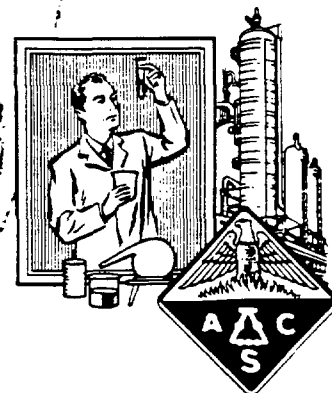
Because of the competitive urge which impelled the forward progress of American industry, employers, up to a few years ago, were interested primarily in well-trained technicians. It was assumed, because of a lack of militant competition between ideologies, that all college graduates were good citizens as well as well-trained chemists, engineers, doctors or teachers.

This assumption does not seem to have been justified. Industry has found that technical training did not, per se, encompass appreciative attitudes toward good citizenship. Something seems to have been missing in the education of America's young men and women. Have our colleges and universities neglected their responsibilities to train the "whole man"? Has industry itself been at fault in showing a lack of interest in the type of education that leads to good citizenship?

In seeking the answers to questions such as these, we have turned to Benjamin Fine, Education Editor of The New York Times and nationally-recognized lay leader in the field of education. We believe our readers will be interested in his provocative discussion. Still another stimulating article questions the validity of the conception that high scholastic marks are the sole requisite of the man "most likely to succeed."

The major event in the world of Chemistry in recent weeks was the fruitful Diamond Jubilee Meeting of the American Chemical Society. Because of the widespread interest in this meeting among both educators and chemists, this special issue also contains, in pictorial form, a capsule report of the world-significant ACS assemblage.

THE EDITORS



ETC 32420

An outstanding education writer examines our colleges and universities and asks whether they are graduating . . .

EDUCATED Americans or TRAINED Robots?

By Benjamin Fine

Education Editor, The New York Times

THIS COUNTRY BOASTS the best technical schools in the world. Students from every part of the globe enter our professional schools. Everyone admits that we have the scientific know-how, and that most of our colleges have the best instructors, the best laboratories, and the best equipment money can buy.

But merely possessing the best schools is not enough. It is what those institutions teach, and how they teach it, that is important. And the plain fact is that, while our colleges and universities are producing expert engineers and master scientists, they are almost completely ignoring instruction in subjects that would make these people *educated* Americans as well as *trained* technicians. We must do more than send men into the community as scientific "brains." We must teach them to think beyond their own skills, and to analyze the issues at the polling booths as studiously as they

construct bridges and atom bombs. In short, colleges must educate our young people to be alert, knowing American citizens.

In the past, all too few of us have shown any real understanding of the wellsprings of America, or of the ideology of economics that has made this nation great. The absence of college courses dealing with such matters is an omission that only now is coming into focus. The institutions of learning alone cannot be blamed for this oversight, for few businessmen, even though they know the "knack" of free enterprise and support this system with their every energy, can express exactly what it is they believe in.

Fortunately, many schools are now beginning to recognize the importance of giving their students more than just a technical education. Some have added courses in the liberal arts, in the humanities, and in social responsibilities. It is to

the public good that colleges are now asking themselves: What value is it to the community, the state and the nation if we send out incomparable engineers who do not understand the essential roles of capital and labor in the industries to which they expect to contribute their technology? With the world split in two and with the United States facing a life-and-death ideological conflict, it is absolutely essential that our technically-trained experts understand how to keep the freedoms of democratic tradition alive.



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The time has come, I hold, for the technical, professional and scientific institutions of higher learning in this country to broaden their educational base far more than they already have done.

Many institutions devote only a fraction of their four-year curriculum to non-technical subjects. This is the age of specialization. I know of engineering programs that devote one, or two, half-year courses to non-technical subjects — just for the sake of the record, perhaps. A man can, in many schools, get his engineering degree, or a degree in forestry or some other profession, and have taken, at the end of his four years, only a 15-week course in Business English and another course in Economics I. The rest is all strictly vocational.

Of course, more education in the liberal arts or general education for technical or professional students is not enough. By themselves, the liberal arts will not teach a student to become a "good citizen." Something beyond that is necessary.

There is an urgent need to give students fundamental courses in American institutions. They should be taught what democracy means, what our way of life truly is, and why it must be preserved. It is high time, too, that our colleges offered technical students — as, indeed, they should to students in any branch — real down-to-earth courses on what the American free enterprise system is, how it works, and why it must be defended.

Students should be taught that if the American system of economics

is not perfect, it is the best system yet devised for free men. This fact should be inculcated in their minds so deeply that they will be ready, without any mental conflict, to defend this "way" with their very lives if need be. We need not fear the results of the ideological struggle if young Americans rightly understand the goals, the traditions, and the rich meaning of our democratic ideals.

Role of Science

Put in simpler words, technically-trained men need to understand the purpose of their sciences in our type of industrial civilization. They must recognize and appreciate the freedoms that Capitalism provides for them and for the other citizens of the free world. They must also see clearly the dangers that threaten us from Communism. When they have been armed with these facts, they will be in a better position to help America win the ideological war now being waged. If our technically-trained men knew more about the origins, the early development and the sacrifices that have been made to build the United States, they would be more likely to bend every effort to protect it from external as well as internal dangers.

Colleges must, even at this late date, begin to acknowledge industry and business as one of the great facts of America. All too often, professors and instructors are not versed

in the ways of free enterprise. This fact was borne out by the President's Commission on Higher Education when it reported, "Thinking college administrators have for years been asking, usually in vain, for teachers . . . with less narrow interests and more intellectual curiosity and aliveness, teachers with more stimulating personalities and more experience with the world off campus."

The road ahead is clearly marked. Education and free enterprise must come to understand each other's missions and then join together in a concrete plan of action, if our colleges and universities are to be equipped to provide a full, rich education in the socio-economic phenomenon that is the U. S. system.

I have been talking about a good education for engineers and chemists. Obviously, everyone, whether a labor leader, a school teacher, a farmer, or a bank president, needs and should have the same education in good citizenship. But this should be underlined: Does it seem too much to hope that men who are training to enter the management ranks of corporations should train also to be leaders in their companies and in their communities so that

Without doubt, America has the world's best scientific schools (left). But, as Dr. Fine points out, our institutions must do more than train engineers and technicians (right). They must offer courses that will mold useful citizens



ETC 32422

they can help our society grow stronger, as well as help our technology progress?

A late survey of 35 leading technical schools, located in all sections of the country, reveals widespread interest among educators on the question of how to develop more liberal arts-minded engineers and chemists. Every one of the college officials reached in my study agreed that technical and professional schools have the responsibility to prepare their students for citizenship as well as to be competent technicians. Many college heads indicated that this was the "number one job" of their own institution.

Agree on Value

The survey also disclosed that, without exception, the nation's leading engineering deans agree that liberal arts, the humanities and general education courses are important for engineering and other professional students. Without such courses, they pointed out, it would be difficult, if not impossible, for students to get a clear picture of the social, economic and political prob-

lems confronting us. Liberal arts, they are convinced, could give their students vision to see beyond their own technical subjects.

Several institutions, such as Rice and Cornell, have established five-year curriculums for their engineering students instead of the traditional four-year course. This has been done to provide more time for the students, and thus permit them to take additional courses in the liberal arts and the humanities. To quote Dr. W. H. Masterson, assistant to the president at Rice:

"The new five-year engineering program was inaugurated to broaden engineering students in the basic sciences and to widen their knowledge of the humanities. Rice Institute feels that its purpose is to produce a more well-rounded man, as well as a highly competent engineer. The fifth year provides elective courses in the pure sciences as well as in the humanities."

California Institute of Technology and Carnegie Institute of Technology have been leaders in providing technical students with a solid humanistic and liberal arts foundation.

In the 15 years that he has been on the staff of The New York Times, Benjamin Fine has established a redoubtable reputation as an authority on both secondary school and college education. His series of articles on the teaching of American history in U. S. schools and colleges won the Pulitzer Prize for The Times in 1943 as "the most disinterested and meritorious public service rendered by an American newspaper during the year."

A native of New York City, Dr. Fine holds a bachelor's degree from the University of Rhode Island, and two master's degrees and a doctor's degree from Columbia University.

Besides his newspaper articles, he has written several books on education and educational publicity, and has lectured at colleges and universities throughout the country. He is the recipient of a number of special awards bestowed by educational organizations and institutions, and has received honorary degrees from five schools of higher learning.



Approximately 25 per cent of the engineer's program at Carnegie, for instance, is liberal arts subjects.

The late Robert E. Doherty, while he was president of Carnegie, listed as a "must" the intelligent development of values by students during their college years. He viewed it this way: "A democracy which must look forward to meeting the challenge of strong conflicting ideologies will need a new breed of professional men—men who not only can perform effectively in the technical part of their work, as they can do now, but who can also make intelligent decisions in the human-social realm and know why and on what basis they made them."

Yet to state it frankly, despite the few bright spots here and there, professional schools simply are not preparing students to think beyond their technical areas. As Dr. Doherty once observed: "There is ample evidence within my own observations and experience that in engineering when the student graduates from college, his recognition of the role of values in his life is little, if any, better than it was when he entered. Indeed, outside of the ministry, I have seen little evidence that the other professions are any better off in this respect than engineering."

"Uphill Job"

How much liberal arts are now offered to technical and professional students? The majority of colleges reached in my survey reported that they offer only between 10 and 20 per cent. That this is not enough is admitted by college deans. They say, in effect: "We are trying to liberalize technical training, but it's an uphill job. Tradition is against us."

Perhaps. But the times demand curriculums that are geared to fundamental knowledge—to ideals as well as to skills.

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Most colleges require specific liberal courses of their students, although the amount and number vary considerably. The required courses, as a rule, are based around English, economics, and history or government. In a number of institutions, certain elective subjects are permitted. This is particularly true during the first two years. After that, there doesn't seem to be much available time, in any of the colleges, for the liberal arts or the humanities.

Encouraging, however, is the fact that the proportion of liberal arts courses has increased in many schools during the last ten years. This upward trend is particularly true among the better engineering colleges. This is in keeping with the best thinking in the field. Engineering leaders have recommended that students get at least 20 per cent of their college program in the liberal arts and humanities.

Do technical students, generally, want to take liberal arts courses? The answer, sad to report, is no, they do not. But many colleges have found that when they try, they can whet student appetites. They can get students interested in the humanities, and frequently the interest will be retained even after the reins are loosened. Courses in the liberal arts seem to open new vistas for the technical students.

According to Dr. Walter J. Wohlenberg, dean of the Yale University School of Engineering, the liberal arts are a part of the cultural and educational background of the

Middlebury College (above) and Columbia University (right) are two of the institutions cooperating in five-year joint curriculums. A student studies for three years at a liberal arts college and then moves to a technical school to complete his education



human race, as well as are science and engineering.

"The problems of modern society stem from the whole of human experiences," adds Dr. Wohlenberg. "To understand and help in their solution requires a broad educational background. Thus, we at Yale recognize the desirability of a well-rounded education and believe that, in so far as possible, while still maintaining the professional requirements, it is essential to carry on the liberal arts."

The Real Shortage

His views are shared by Dr. C. P. Boner, dean of the College of Arts and Sciences at the University of Texas. Says Dr. Boner:

"It is my opinion that engineering and other professional degree programs should be based on a required program in general education consisting of at least one year, and preferably two years. The real shortage is not so much in professional people of narrow specializations, but in people of broader conceptions of the social and economic implications of their technology."

But it goes beyond the question of liberal arts or the humanities.

Much depends upon the attitude of the institution, the administration and the faculty members. Dr. Raymond Walters, president of the Uni-

versity of Cincinnati, put his finger on the problem when he said: "Quite as important as the emphasis on liberal arts courses in engineering education is the need for a humanistic spirit in teaching the technical courses themselves. Technical courses can be given a cultural aspect if there is a quality of humanism in those who teach them."

A new movement is on foot to provide this "quality of humanism." Various colleges are joining with engineering schools to develop five-year joint programs. This is known as the 3-2 curriculum. The student gets three years of undergraduate work and two years of engineering study. At the conclusion he receives two degrees — one from the liberal arts college, the other from the school of engineering.

Among the smaller schools, the cooperative program between Illinois College, a private liberal arts college, and Illinois Institute of Technology is typical. Students who enter this arrangement will attend Illinois College for three years and Illinois Tech for two. Upon successful completion of the five-year program, they will be awarded simultaneously the degree

of bachelor of arts from Illinois College and the degree of bachelor of science from Tech.

The program has been instituted so that students will have a wider background in the humanities before specialization. Two major advantages of the plan are cited by Illinois College. With a solid foundation in the liberal arts, the student may become a better specialist than with only technical training. And secondly, the student has three years in which he may change his goal without loss of time if he finds that he wants another profession.

Columbia, R.P.I., Carnegie Tech, Lafayette and several other colleges are supporting the three-two program. Lafayette, for example, plans to cooperate with 15 other colleges in this project. The curriculums of the liberal arts colleges for engineering students will be slightly modified to meet engineering requirements.

Despite the urgent need for better *educated*, as contrasted to *trained*, technical and professional graduates, the emphasis, even where liberal arts courses are given, is upon the technical aspect of the subject. Frequently, liberal studies in engi-

neering colleges are offered to make up elementary school deficiencies. Engineering colleges insist their students know algebra and physics. They are not particularly concerned whether the students can read and write English correctly.

Recognizing this defect, Dean John Day Larkin, of Illinois Institute of Technology, notes that an increasingly complex society makes it impossible to segregate science and technology from their human and social consequences.

Face a Challenge

"There is no denying the fact that the staff responsible for teaching the humanities and social sciences in an engineering college faces a challenge," Dean Larkin comments. "The glamorous appeal of science and technology is so compelling that something drastic should be done to preserve the last vestiges of our humanistic culture."

Here is a tremendously important field — one that should receive the thoughtful attention of all intelligent educators and civic-minded industrialists concerned with building a better democratic society.

University presidents and deans are fully aware of the problem. Many are doing something about it. But, in the main, it must be repeated, our technical and professional schools are training men and women to be highly-skilled technicians and not wide-awake, well-rounded citizens. What can be done to change the situation?

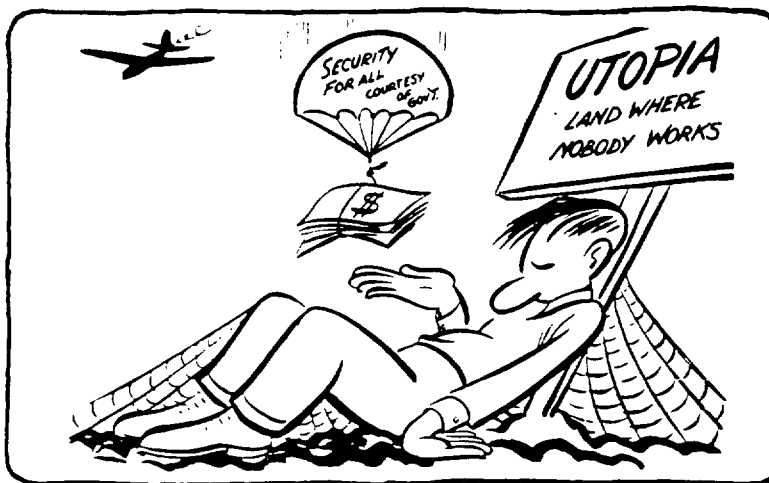
In this connection, I believe the remarks of Frank Abrams, chairman of the board of Standard Oil Co. (N. J.), are worth noting. Speaking at New York University, Mr. Abrams said:

"Business requires technically-trained individuals, but above all else, men with a capacity for fair dealing — men with mental honesty and a willingness to consider the viewpoints of others. A technically-trained mind which cannot understand people, which has no faith in the fundamental integrity of others, which lacks patience and willingness to work with others in a mutual cause, is of limited value.

"You will remember the Oxford professor's description of a technician as 'a man who understands everything about his job except its ultimate purpose and its place in the order of the universe.' Business needs much more than technicians. We need in our leadership, above all else, the vital factor of character and human understanding."

I have my own program for bringing about better educated engineers, scientists, professional persons and technicians. Five very necessary steps, as I see it, are:

1. More Liberal Arts—Increase the proportion of the curriculum that is now devoted to the liberal arts. The engineer and chemist should have at least 20 per cent—better still, 25 per cent—of their programs in the humanities and the liberal arts. Make these liberal arts



The mistaken belief that the government will assure their security is one of the points the author has in mind when he reports that many college graduates do not appreciate the nation's true democratic ideals

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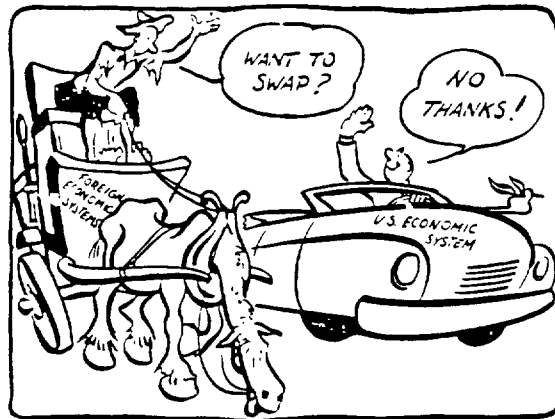
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courses more dynamic, more mean-
ingful, more exciting to the student.
They must not be "snap courses"
that one has to take before enter-
ing upon the "important subjects."
Rather, the liberal arts should be
woven into the technical program
of the institution and made an es-
sential part of the undergraduate's
entire course of studies.



2. Develop Better Citizens —
Schools should help prepare their
students to become better citizens,
as well as competent technicians.
The colleges should stress the im-
portance of the democratic tradi-
tion and the free enterprise system.
They should at all times emphasize
the duties and responsibilities, as
well as the rights and privileges of
citizenship.

3. Education and Industry —
Closer cooperation between educa-
tion and industry is necessary. Both
are working toward the same goal
— to raise our standard of living.
From the technical and professional
colleges come the "seed corn" for
industrial concerns and business or-

*Typical of industry's recent ef-
forts to familiarize undergraduates
with the free enterprise system is a
New Jersey Chamber of Commerce
program in which business leaders
address groups of college students*

ganizations. Industry should encour-
age colleges to educate their students
to be more alert citizens, better-read
individuals, men and women who
understand and appreciate the bless-
ings to be found in America.

**4. Financial Support from Indus-
try —** Industry should support
schools more than it now does. More
scholarship and fellowship aid is es-
sential. The more
industry contrib-
utes to the techni-
cal and professional
colleges, the less
need the schools
will have for Fed-
eral support. Dur-
ing the past aca-
demic year, the
Federal govern-
ment provided
more than \$100,-
000,000 to colleges
and universities for
research work of

all sorts. During the same period,
industry contributed approximately
\$25,000,000.

The law concerning unrestricted
gifts to educational institutions by
corporations should be clarified.

**5. Community-Conscious Engi-
neers and Chemists —** Make the
graduates of our technical schools
more community-conscious. A good
program will stress the importance
of working toward an improved
community, a better nation, a more
democratic world. Courses should

be offered that will teach demo-
cratic ideals.

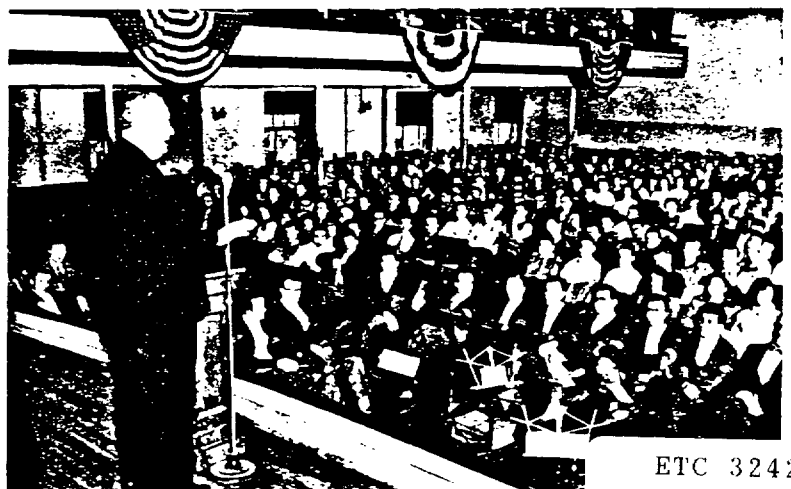
There are other ways, of course,
that the technical programs can be
strengthened. The above five-point
plan of action, though, might serve
as a starter.

We cannot win any war — a "hot"
one on the battlefields or a "cold"
one for the minds of men — unless
we have a strong, united citizenry.
We need men and women who be-
lieve in no other system than de-
mocracy. Citizens who not only
understand the meaning of the dem-
ocratic tradition, but who are will-
ing to fight and die to preserve our
way of life.

Cites Spy Trials

As recent spy trials have shown,
a technically-trained mind, no mat-
ter how brilliant, does not assure the
nation of a loyal, patriotic citizen.
We must go beyond that. It is essen-
tial that our engineers, our scientists,
our chemists — yes, and our doctors,
our professional corps — understand,
appreciate and uphold the duties, re-
sponsibilities and privileges inherent
in being a free American citizen.

Let us humanize the technical
professions. A technical education is
an asset in a world torn asunder
with ideological conflict. But our
nation cannot grow to its full po-
tential stature unless and until our
schools prepare their graduates to
be *educated* Americans and not just
trained robots.



The Trail of the Arbutus

(Ed. Note—Like the American Chemical Society, Charles F. Kettering reached the age of 75 this year. To honor him, on August 29, a civic birthday party was staged in Dayton, where he launched his eventful career as a world-famed scientist and inventor. Ethyl Corporation was one of several business firms that paid tribute to "Boss Ket" on the occasion—by, among other things, distributing a commemorative booklet entitled "The Trail of the Arbutus." That booklet is reprinted here.)

EARLY IN THE SPRING, sometimes even before the snow is gone from shady spots in the woods, the trailing arbutus blooms. Kettering remembered that. From some forgotten boyhood inspection, he remembered the arbutus and the detail of its leaves. They are lighter on the underside and the green color is flecked with red. Kettering wondered if maybe the red color let the arbutus absorb more heat than other flowers in the woods. Could that explain the early blooms? Maybe he should tell Tom Midgley about the arbutus; it might be a clue that would help Tom prove his theory about gasoline knock.

Tom Midgley's theory at the time was that knock had something to do with volatility. Since kerosene knocked worse than gasoline, he reasoned that maybe the kerosene vapors were full of little droplets that did not vaporize until after combustion started, and then went off with

a bang. Tom was trying to find out if that were true. He had hitched a crude indicator on an engine to check what was going on inside—really it was a sort of camera that gave a rough picture of engine knock. Thirty years later, "Tab" Boyd described the indicator as supplemented by "two pieces of lath, two shingle nails, and a tomato can. Out of those parts a film drum was made which could be rotated—by hand—in the path of the beam of light from the indicator. A piece of photographic paper was put around the tomato-can drum and secured there by rubber bands. Then, with the engine running under knocking conditions, Mr. Kettering spun the tomato can on its shingle-nail pivots and Mr. Midgley opened the shutter of the indicator." The materials were simple but the research was fundamental, and the picture on the film proved that knock is accompanied by a sudden violent rise in pressure many millionths of a second after combustion is started by the spark plug.

The next morning was almost gone before Kettering saw Midgley and talked about the color of arbutus leaves. No one remembers who, but in that conversation about the ar-

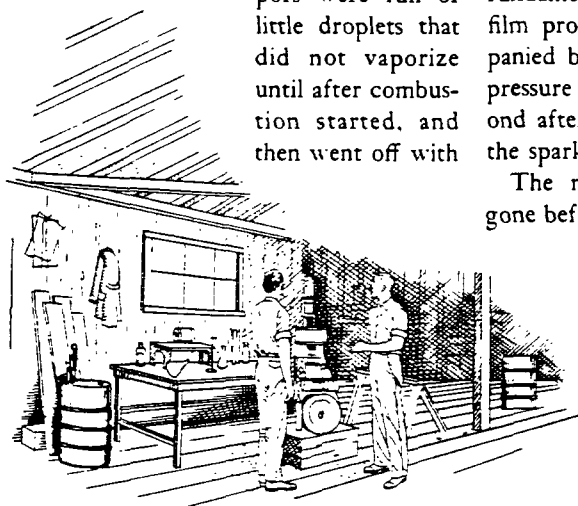


In his optimistic birthday remarks, "Boss Ket" predicted further scientific advances for the human race

butus either Kettering or Midgley suggested that by dyeing kerosene red, it might absorb heat faster and vaporize those droplets.

When Midgley went to the stock room for some red dye, there was none. Fortunately, it was Saturday afternoon and the supply houses were closed. Midgley asked for a substitute—anything that would give kerosene a darker color. Fred Chase looked up and down the shelves of his stock room and suggested iodine. It was soluble in oil, so Tom Midgley promptly put some in kerosene, tested it in his engine and the knocking stopped. It was a very happy week-end.

When the stores in Dayton opened Monday, Midgley bought up every kind of oil soluble dye he could find. None of them worked. The beautiful theory of the arbutus had led to the discovery of an antiknock agent, but the theory was wrong. Color alone would not stop knock. Iodine



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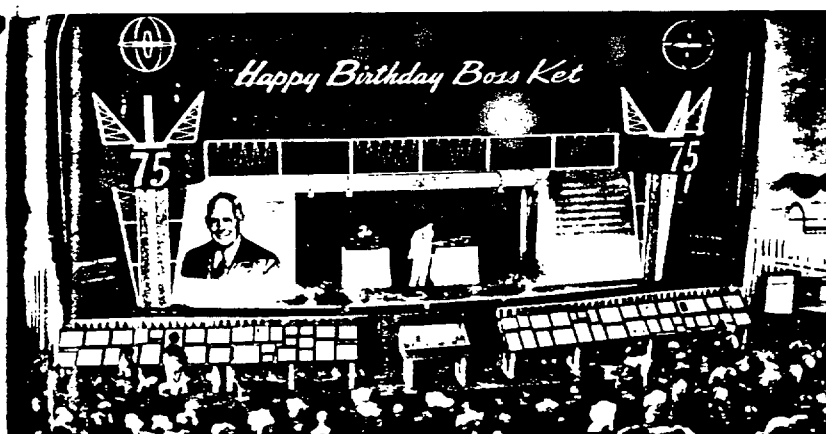
stopped knock, but it would ruin an engine. Midgley and his research team now had something sure to work on. A chemical, added to motor fuel, stopped knocking. Would some other chemical — with satisfactory characteristics — do the same thing? The long research took a new turn; definitely it was now a chemical search, through the mazes of the elements of the periodic table and their compounds to the goal ahead — some chemical compound that could be sold as an antiknock.

The story is famous now, one of the many and typical legends of

career as a chemist. When he went to work for Kettering in 1916, he was a young inventor with only a few years' experience added to his college training as a mechanical engineer. After his knock-stopping assignment turned into a chemical search, he studied chemistry with an insatiable thirst. He worked in the old tobacco warehouse that was Kettering's laboratory, often late into the night, and then went home to read any book on chemistry he could find. Somewhere, he and the "Boss" were sure he would find something. He found the compound

precedent whatever, only occasionally does anything go right; and at least ninety per cent of the time it goes wrong. New and unexpected difficulties have to be overcome, and, even after long searches yield a new discovery, nobody knows how to produce the product, or anything about its use." But under Kettering's leadership and with his inspiration, the team kept on. Tom Midgley, Jr., the mechanical engineer who became a chemist; T. A. Boyd, Midgley's right arm throughout the search; and Carroll A. Hochwalt, who even then was a brilliant young chemist with an uncommon knack for making strange chemical compounds. This was the team and theirs the final victory. Midgley often said insufficient credit was paid to his assistants, particularly Boyd, whose accuracy and patience supplemented Midgley's impulsive genius to see that they learned something from each failure; something that justified going on.

Meanwhile, Kettering's laboratories became a part of General Motors. The first tetraethyl lead ever used as antiknock material was made by "Ted" Hochwalt working under Tom Midgley's direction in the Fuel Division of General Motors Research Corporation at Moraine City, Ohio, in December, 1921. With a reaction of lead chloride and zinc ethyl, he got a spoonful of the desired compound — but it was enough to change a whole gallon of gasoline from a rattling, knocking nuisance to a smooth-running motor fuel.



Dayton's Memorial Hall was converted into a "Wonderland of Science" on the occasion of the public birthday celebration

Kettering's mind and his leadership of men. Tom Midgley paid tribute to this leadership when he introduced his "Boss" to the annual meeting of the American Chemical Society in 1944. Here are Midgley's words: *"I am not overstating the case when I say that everything I have ever done, everything I have ever accomplished worthwhile, has been done under the magic spell of his inspiration."*

Tom Midgley was president of the Chemical Society then and also chairman of the board of directors, the only man to be so honored with both posts, but he did not start his

eventually, of course, and along the way he became one of America's great chemists.

The theory of the arbutus was only one of the happy mistakes that pointed the way. Several discouraging years followed as Midgley and his antiknock team explored one and then another blind alley. In Kettering's words, *"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*

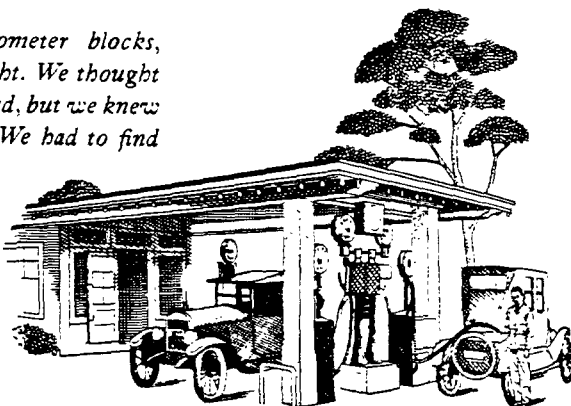
Often in the five years between the discovery of the antiknock properties of iodine and tetraethyl lead, the search would have been dropped by daunted men. Several times after it became a General Motors project Kettering had to go to Mr. Sloan to get more funds, and Sloan's patience and faith must also be reckoned in the support that gave Ethyl a chance to exist. The color of red that is so prominent in Ethyl history was used exclusively on the ledger pages for ten long years.

After the discovery, Midgley said that. "The popular idea might be that when we found tetraethyl lead we shouted hosannas for it, and all marched in to ask the boss for a raise. Actually, there wasn't a pause in the program. We started spending more money, doing more research, and looking for other ingre-

engines on dynamometer blocks, running day and night. We thought we knew what we had, but we knew very little about it. We had to find the answers, the right answers, to many questions.

"For example, we found that we needed ethylene dibromide to mix with the tetraethyl lead. And if we were ever to sell enough of the compound to make the discovery a real commercial success, we would need a lot of it. Bromine was then an expensive chemical used primarily for making photographic plates and headache powders."

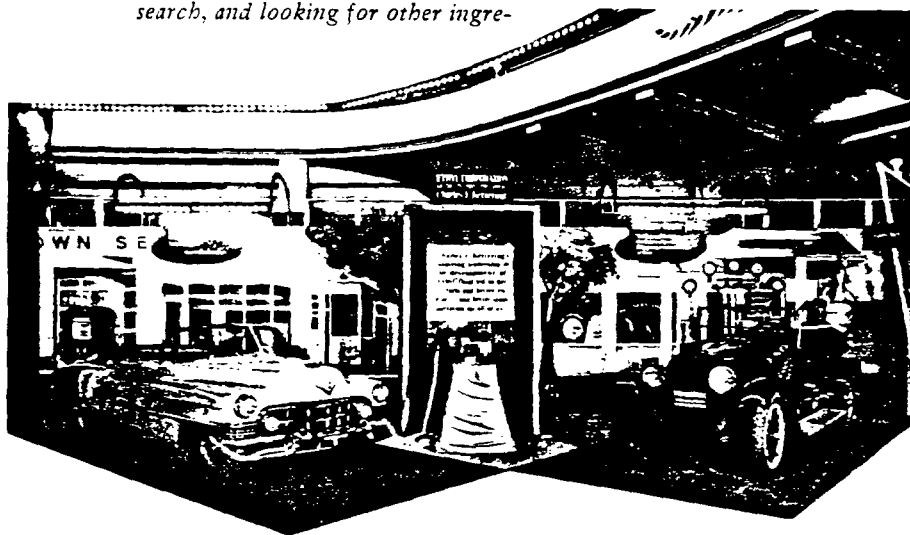
The need for bromine sent Ket-



"mining" the wealth of the oceans.

On the morning of February 2, 1923, "Ethyl" gasoline went on sale at the Refiners Oil Co. station at Sixth and Main Streets in Dayton. Soon, a line of cars was waiting at the "Ethyl" pump. In April, a separate company, General Motors Chemical Co., was formed to handle this enterprise, with Charles F. Kettering as president. A little more than a year later, the Ethyl Corporation was formed and Mr. Kettering was also its first president. He continued in that office until April, 1925. He has been a director, of course, from the beginning and always attends the monthly meetings of the Ethyl board.

Throughout the life of "Ethyl" gasoline and the men who developed it, nursed it through the "shirt-losing period," and guided it to eventual success, the genius of Kettering has been ever apparent. He conceived its need, supervised its discovery, fought its failures, preached its virtues, and dreamed its destiny. He even chose the name and wrote the first advertising. As might be suspected, he is rather proud of how things have worked out. He has always had a very warm spot in his heart for "Ethyl." On his 75th birthday it is a pleasure to remind him that the five thousand men and women who work in his "Ethyl" business revere him.



Ethyl's exhibit at the Dayton birthday "party" employed modern and ancient cars, to point up how Mr. Kettering's leadership in developing "Ethyl" fluid led to better fuels and better engines

dients to go with tetraethyl lead, to make up a commercially practical compound that could transfer the antiknock qualities of tetraethyl lead to a gallon of gasoline. Thousands of miles were run in various types of automobile tests, hundreds of hours of operation were put in by

tering to Tunis, while others went to Mexico and Palestine to explore possibilities there. No direct success came from those ventures either, but later Kettering put his researchers to work to find a way to extract bromine from sea water, which led to the first commercial process for

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INDUSTRIAL AND
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NO MATTER how
you look at it — from
the standpoint of at-
tendance, work ac-
complished, or what
else — there never

was an assemblage of the American Chemical Society like the week-long Diamond Jubilee Meeting last month. For a fortnight, starting Labor Day (two international bodies of Pure and Applied Chemistry were in session the following week), chemistry was the main topic of conversation on the sidewalks of New York and "all around the town." *Ethyl News* makes no attempt here to report the eventful meeting in detail. It is hoped, however, that the pages of candid photographs which follow will convey something of the spirit and flavor of the ACS' 75th birthday party.



First-day registrants included E. N. Schubert, of U. S. Department of Agriculture; W. Carl Wooten, of Tennessee Eastman; F. C. Giove, of Dictaphone Corp.; and R. C. Tallman, research director of Lion Oil.



Top, two university professors — C. S. Marvel, of Illinois, and William J. Bailey, of Maryland, chat after registering . . . Above, Wheeler Lovell, of Ethyl, and Guenther Von Elbe, of the Bureau of Mines, thumb through the ACS registration card file.

SIGNING IN

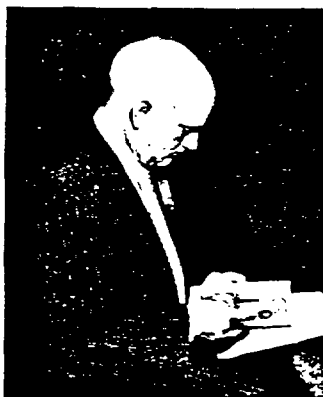


MORE THAN 14,500 men and women, representing all branches of chemistry the world over, registered for the ACS meeting, making it, by far, the best-attended session in the organization's 75-year history. Registration facilities were maintained in the Statler, convention headquarters, and two other large New York hotels.

Below, looking over registration literature is Irving Flaumenhaft, president of Lacquer & Chemical Corporation.



Above, at a registration room writing table are Leon Sweet, research director of Parke, Davis; Alexander Moore, also of Parke, Davis; Mrs. N. Howell Furman, wife of the ACS president; and T. R. Riethof, Purdue student.



Below, a busy spot at the Statler Hotel convention headquarters was the counter where members obtained tickets for plant tours, special meals and other such events.





Midgley won many chemistry honors. In left photo, he receives the 1937 Perkin medal from Marston T. Bogert (left) . . . Right photo, the ACS board in 1937, when the Society was chartered by Congress. Midgley is third from left in front row, and Dr. Parsons, author of the accompanying tribute, is second from right.



essors — C. S. Marvel, I. Bailey, of Maryland, Above, Wheeler Lovell, I on Elbe, of the Bureau n the ACS registration ile.

Statler Hotel conven-
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A TRIBUTE TO TOM MIDGLEY

By Charles Lathrop Parsons

Honorary Co-Chairman, ACS 75th Anniversary Meeting

HAVING ATTENDED my first annual meeting of the American Chemical Society back in 1893, I'm what you might call an old hand at this sort of thing. In the 58 years since then, 40 of them Secretary of the ACS, I have come into contact with countless men of outstanding character and ability.

Thomas Midgley, Jr., was certainly one of these men. Many times during the recent Diamond Jubilee Meeting, it occurred to me just how much Tom would have liked to be counted among those present.

The world owes a great debt to Tom Midgley, he who was so versatile that he could graduate from col-

lege as a mechanical engineer and then become one of the truly great industrial chemists of all time. So, too, is the American Chemical Society obligated to Tom for his tireless service in its behalf. For ten years, from 1934 until his death in 1944, he was chairman of the Society's board. When he died, he also was the ACS president.

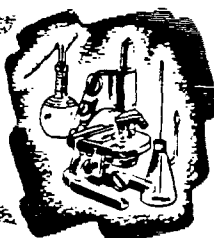
Despite his other many and varied activities, he gave himself wholeheartedly to the American Chemical Society, and died serving it in a dual manner that no man had or has since. During his tenure, Midgley was the ACS. He will ever be one of us.



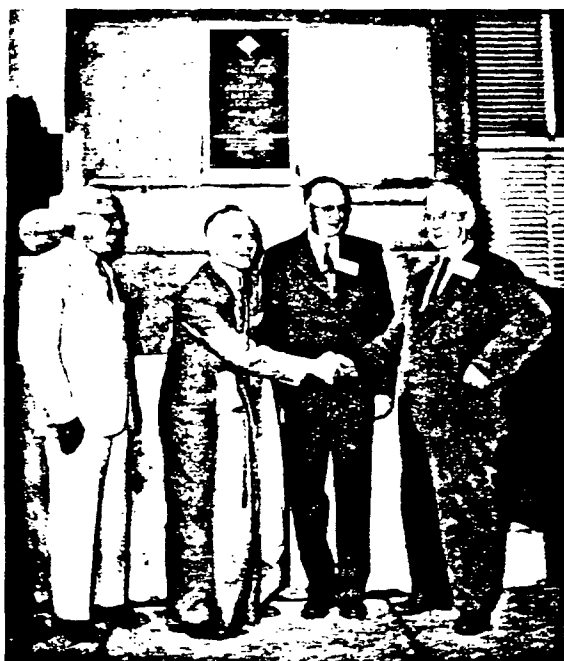
The ACS postage stamp was a popular item. Above, making purchases at a special post office sub-station are Prof. Cecil E. Boord, of Ohio State; E. A. Murphy, of Dunlop Rubber; and J. H. Kerrick, of Philadelphia and Reading Coal and Iron . . . Right, first-day-cover buyers included Ralph F. Phillips, of Sugar Research Foundation; Prof. J. T. Edsall, of Harvard; and Maurice D'hont, of Louvain U., Belgium.



SPECIAL EVENTS



WITH THEIR several special events, the first three days of the Diamond Jubilee Meeting were especially busy ones. On Labor Day afternoon, first-day arrivals witnessed the unveiling of a plaque in Washington Square on the site of the first ACS meeting. That evening they heard a speech by New Jersey's Governor Driscoll, N. Howell Furman's presidential address, and saw E. J. Crane awarded the Priestley medal. ACS commemorative stamp ceremonies were held at New York's main post office on Tuesday. On Wednesday afternoon, James B. Conant, president of Harvard, spoke at the Ceremonial Session, and that evening ACSers heard addresses by Vice President Alben Barkley and C. E. K. Mees, vice president of Eastman Kodak, at the Diamond Jubilee banquet.



Above, ACS dignitaries taking part in the plaque ceremony were Arthur B. Lamb, past president; Alden Emery, executive secretary; N. Howell Furman, president; and Charles L. Parsons, former secretary.



E. J. Crane (right), editor of *Chemical Abstracts*, received the coveted Priestley award for 1951 from Dr. Furman at Monday evening's General Meeting.



Osborne Pearson, assistant postmaster general; Albert Goldman and Charles Horowitz, New York postmaster and deputy mayor; and Dr. Furman at the stamp ceremony.



Banquet scenes: Left, Vice President Barkley, principal speaker . . . Above, ACS 75th birthday cake passing behind Detlev W. Bronk, Johns Hopkins president; Joseph Jordan, of The Israel Chemical Association; James B. Conant, president of Harvard; and Naoto Kameyama, of The Chemical Society of Japan.

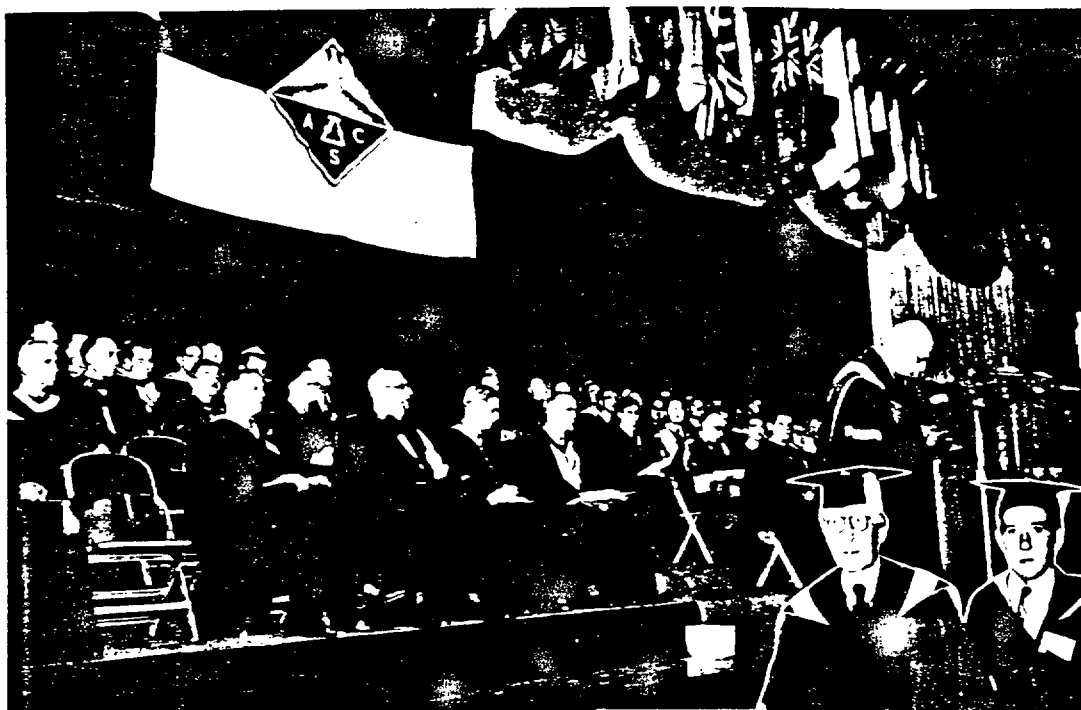
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ty of Japan.



Representatives of foreign and domestic scientific societies honoring the ACS, wearing their academic robes, hoods, and decorations, sat under a colorful array of national flags at Wednesday afternoon's Ceremonial Session.

Right, Marston T. Bogert, honorary co-chairman of the 75th Anniversary Meeting, who gave the response to greetings from foreign societies, as he entered the Ceremonial Session with Sir Eric Rideal, of England, who extended the greetings.



Below center, Pierre Jolibois hands ACS President Furman a message from Société Chimique de France. This ritual was repeated 118 times as American and foreign delegates presented congratulatory scrolls.

Below, Robert E. Wilson, chairman of Standard Oil of Indiana, with the scroll he presented on behalf of the American Petroleum Institute.



Above, John R. Kuebler, national secretary of Alpha Chi Sigma, discusses the afternoon program with Dr. Conant, the featured speaker of the session.

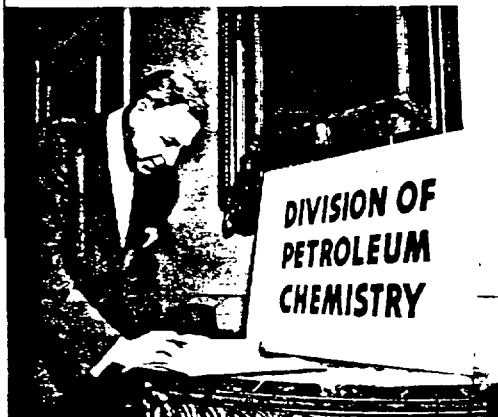
Below, E. V. Murphree, president of Standard Oil Development, was heard at the Petroleum Technology session.



Below, Graham Edgar, Ethyl vice president, reported on tetraethyl lead progress.

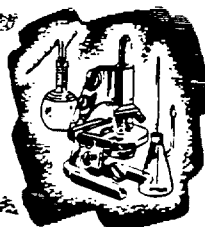


Below, R. J. S. Pigott, director of engineering for Gulf Research and Development, reads his paper.



A leading symposium was that on 25 Years of Progress in Petroleum Technology, held on Thursday and Friday mornings. The large Thursday morning audience, typical of those which attended all sessions of the ACS meeting, is pictured above. The symposium was sponsored by the Division of Petroleum Chemistry.

IN SESSION



DEALING WITH SUBJECTS that ranged, alphabetically, from antibiotics to water corrosion, some 80 symposia were held during the ACS meeting. Nine hotels were required to house the various sessions. More than 700 papers were delivered at the symposia, which were sponsored by the Society's 20 scientific and technical divisions.

Right, F. E. Brauns, Institute of Paper Chemistry, and Prof. F. F. Nord, of Fordham U. The latter gave a paper before the Colloid Chemistry group.

Below, John F. Crowther, of Stauffer Chemical, enjoys a between-sessions chat with Dean Joel H. Hildebrand, of University of California, one of nine award winners announced during the ACS meeting.



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Among those greatly responsible for the success of the Diamond Jubilee Meeting were Prof. N. Howell Furman, ACS president, and Charles A. Thomas, ACS board chairman and Monsanto president.



General chairman of the 75th Anniversary Meeting committee was John H. Nair, of Thomas J. Lipton, Inc.



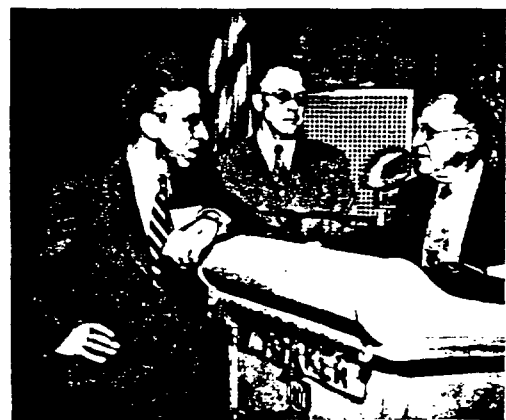
President-elect of the American Chemical Society is Edgar C. Britton, organic research director of Dow Chemical.



W. W. Umbreit, of Merck; Peter Regna, of Charles Pfizer & Co.; and Prof. H. E. Carter, of University of Illinois.



Norris W. Rakestraw, editor of *Journal of Chemical Education*, and R. V. Gooding, of Illinois State Normal.



Right, above, pesticides symposium speakers L. W. Hazleton, of Hazleton Laboratories, and Prof. R. L. Patton, of Cornell, chat with J. L. St. John, session chairman. . . . Below right, Prof. Max Lauffer, Pittsburgh U., with Biochemistry paper-givers Prof. Gerhard Schmidt, of Tufts, and Dr. Erwin Chargaff, of Columbia.

Making up this intent threesome are Umberto Pomilio, of Argentina; Prof. Efisio Mameli, of University of Padova, Italy; and Marson Lucio, also of Padova.





The activities of the American Chemical Society were discussed in many radio and television broadcasts emanating from New York. Here, above, Anita Schuster, of Union Carbide and Carbon, is interviewed by Jimmy Powers, of station WPIX.



THE DISTAFF SIDE



Above, en route to a symposium, a lady chemist is snapped in a characteristic female pose. She is Miss Janet McMahon, of the Quartermaster Depot in Philadelphia.



The Women Chemists' luncheon head table: Dr. Ines Keszler, of Buenos Aires University; Dr. Eunice Flock, Mayo Foundation; Mrs. Hugh S. Taylor, wife of the Princeton dean; Lady Gertrude Robinson, of England; Mrs. N. Howell Furman; Dr. H. Marjorie Crawford, Vassar professor; Dr. Evelyn McBain, of India; Dr. Gladys Emerson, of Merck; Dr. Mildred Hicks-Bruun, technical writer; and Mary Alexander, Universal Oil Products.



Speaker at the Women Chemists' luncheon was Dr. Evelyn McBain, whose husband is director of the National Chemical Laboratory in Poona, India. With her is Dr. Gladys Emerson (right), winner of the ACS Garvan medal for 1952.



Mrs. Paul Goodwin, wife of a General Electric chemist; Miss Gladys Swope, of the Argonne National Laboratory; and Dr. Edna Roe, of London's Royal Cancer Hospital, form this pleasant threesome.

Below, two research chemists from Detroit enjoy a lull in the busy Diamond Jubilee Meeting schedule. They are Dr. Frances Lamb, of the Ethyl Research Laboratories, and Dr. Mildred Rebstock, of Parke, Davis.



SIDE



T. A. Boyd, General Motors consultant, and Mrs. Boyd obtain their tickets for a reception from Walter Guyer, of Standard Oil Development.



In this social hour group are E. E. McSweeney, Battelle Institute; Mrs. McSweeney; Alfred Clark, Phillips Petroleum; and F. C. Croxton, Battelle.



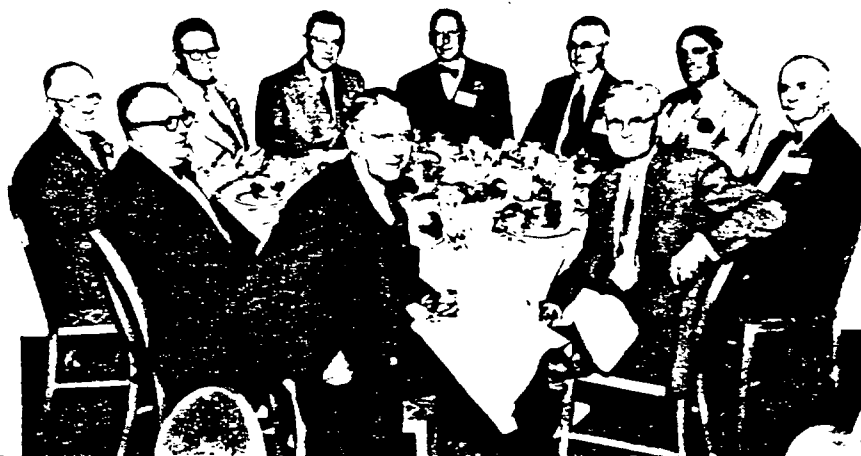
SOCIAL HOUR

GROUP MEALS and social hours, always a feature of ACS gatherings, reached a new high in popularity. Scores of breakfasts, luncheons, receptions, and dinners were held, as alumni bodies and other groups took advantage of the opportunities for assembling members and friends in good fellowship.



Above, Cecil L. Brown, Standard Oil Development; Kenneth Mulford, Atlas Powder; J. R. Frorer, Atlas Powder vice president; and Wayne E. Kuhn, of The Texas Company . . . Left, the Rice Institute luncheon head table included W. H. Lane, Monsanto; N. H. Marsh, American Cyanamid; Lester LaGrange, Monsanto; Prof. W. O. Milligan, of Rice (standing); G. L. Bushey, Department of the Army; Frank H. Hurley, American Cyanamid; L. D. Wareham, Shell Chemical; and R. D. Burleson, of Merck.

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A table at the Division of Rubber Chemistry 25-Year Club luncheon. Pictured are W. O. Hamister, Naugatuck Chemical; B. R. Silver, New Jersey Zinc; W. C. Geer, retired B. F. Goodrich vice president; A. A. Somerville, R. T. Vanderbilt Co. vice president; R. P. Dinsmore, Goodyear vice president; E. B. Curtis, R. T. Vanderbilt Co.; Earl B. Busenbarg, B. F. Goodrich; H. A. Winkelmann, Dryden Rubber; Alfred A. Glidden, consultant; and W. E. Kavenagh, of Goodyear.

HOSPITALITY LOUNGE

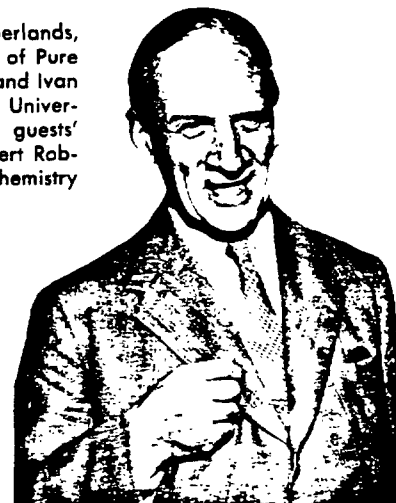


Above, Glenn T. Seaborg, University of California professor and atomic scientist, is interviewed over the air by commentator Barbara Wells.

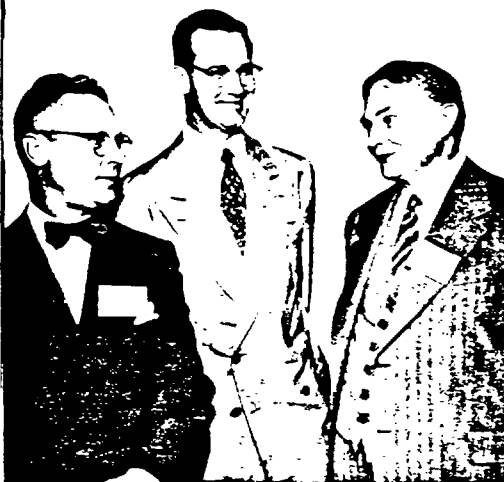
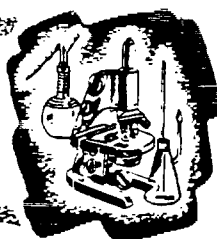


Above, H. Malissa and Hans Lieb, both of the Technical University in Graz, Austria, study a chemistry display in a department store window.

Left, Hugo R. Kruyt, of The Netherlands, president of the International Union of Pure and Applied Chemistry; Mrs. Kruyt; and Ivan Stranski, rector of Berlin's Technical University, in the doorway to the foreign guests' lounge . . . Right, England's Sir Robert Robinson, winner of the Nobel Prize for chemistry in 1947.



HERE AND THERE



Prof. E. T. McBee, of Purdue University; O. E. Kurt, of Ethyl; and S. M. Cadwell, U.S. Rubber research and development director.

Right, E. I. Stearns and S. I. Gale, of American Cyanamid, and R. R. Coles, Hayden Planetarium chairman, lectured on "Chemistry on a Cosmic Scale" at four special Planetarium shows presented by American Cyanamid for ACS members.



ETC 32439



Lieb, both in Graz, display in a low.

At the M. I. T. luncheon head table were J. M. DeBell, of DeBell and Richardson; John L. Parsons, of Hollingsworth and Whitney; John J. Healy, Jr., of Monsanto; J. F. Walker, of Du Pont; A. C. Cope, head of M. I. T. chemistry department and an ACS director (standing); Lawrence Flett, president of American Institute of Chemists; D. F. Gould, of The Borden Co.; Dean M. P. Etheredge, of Mississippi State College.



Left, M. H. Arveson, technical director of Indoil Chemical Company. Mr. Arveson is a member of the ACS board of directors.



Among the scores of special group luncheons held during the ACS meeting was that of the Medicinal Chemistry Division. The guest speaker at this event was Dr. Leonard Scheele, surgeon general of the U. S. Public Health Service (above).



Above, Howard Blakeslee, Associated Press science editor (standing), was main speaker at the ACS News Service breakfast. At his left are Walter Murphy, director of the ACS News Service; James Stack, managing editor, ACS News Service; and F. A. Smith, publicity chairman of the ACS North Jersey section.



Above, Lewis Sarett, of Merck (left), with Tex McCrary, on the "Tex and Jinx" television show . . . Right, two Brooklyn Polytechnic Institute professors —C. F. Hiskey and Herman Mark. The latter headed the Diamond Jubilee hospitality committee.



Below, heading for home after the greatest ACS meeting in history is Prof. Ernst A. Hauser, of M. I. T. and Worcester Polytechnic.



ETC 32440

ETHYL - AN ADVENTURE IN CHEMISTRY

A growing number of important and useful chemicals stem directly from Ethyl's unique tetraethyl lead operations

By Christopher C. Vogel

As the American Chemical Society celebrates its 75th anniversary, the occasion prompts an informal review of Ethyl's chemical operations. The integrated nature of Ethyl's manufacturing operations has led to its extensive participation in three separate chemical fields — electro-chemical, petro-chemical, and metallo-organic synthesis. Many of its staff chemists, who have long been associated with Ethyl, are also active members of the ACS. This review, therefore, has been prepared in the hope that it may be of interest to those in the chemical field who might like to know some of the unique aspects of Ethyl's chemical operations.

• • •

ETHYL CORPORATION has been so closely identified with the development and marketing of gasoline antiknock compounds, through the years, that its corollary role as a chemical producer is not generally known. And yet, besides "Ethyl" antiknock compound, the "Ethyl" trade-mark also identifies such other products marketed by Ethyl as sodium (metallic), salt cake, benzene hexachloride — technical and high gamma, lindane, liquid chlorine, ethylene dichloride and oil soluble dyes. Moreover, its operations entail the manufacture or use, in substantial quantities, of numerous other products (see inside back cover).

The need for this wide range of materials stems primarily from the Corporation's manufacturing requirements for "Ethyl" antiknock compound, its principal product.

"Ethyl" antiknock compound consists basically of tetraethyl lead, the active antiknock ingredient, and ethylene dibromide and ethylene dichloride. To these are added a small amount of kerosene and dyes, the latter purely for identification purposes. As can be seen, the manufacture of this one finished product, besides drawing upon numerous raw materials, entails a rather complicated series of chemical operations and involves a substantial plant investment. As a measure of this investment, Ethyl has since 1945 invested over \$100 million in improvement and expansion of its manufacturing capacity.

The unique nature of Ethyl's manufacturing requirements has brought it into the electro-chemical and petro-chemical fields and into metallo-organic synthesis. Tetraethyl lead, the antiknock agent, is produced by the reaction of ethyl chloride with a lead-sodium alloy. Production of these intermediates — sodium by the electrolysis of salt, ethyl chloride by the hydrochlorination of ethylene — together with the final reaction to make tetraethyl lead, accounts for Ethyl's participation in these fields on a rather substantial scale.

The need for these and other

processes, in a highly specialized form, was evident from the start. For example, when the antiknock properties of tetraethyl lead were first discovered, it was originally decided to manufacture the compound by the reaction of ethyl bromide with a lead-sodium alloy. Subsequently, however, it was learned that a process based on ethyl chloride was far more economical and efficient. Adoption of the ethyl chloride process has led to very extensive work in this field and to some notable accomplishments.

Research on Halides

In another direction, an interesting phase of research and development work related to scavenging agents for tetraethyl lead.

It was early recognized that an adequate scavenging agent would have to be incorporated in the antiknock compound in order to carry off the lead vapors formed in an engine during the combustion of leaded gasoline. Painsstaking research pointed to the halides — to ethylene dichloride and ethylene dibromide in particular — as the most effective. Combining with the lead vapors, these halides could carry them off in the exhaust gases in the form of lead chloride and lead bromide, in which form they are dissipated in the atmosphere.

From the standpoint of raw material needs, ethylene dichloride presented no particular problem. But the indicated requirements for ethylene dibromide far exceeded the world's production of elemental

ETHYL

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bromine by then-existing methods. Ethyl's search for bromine led to sea water, wherein bromine normally exists in the ratio of 67 parts of bromine to every million parts of water. Successful development of a process for extracting bromine from sea water — by substituting chlorine for bromine in the various bromides — marked the first large-scale commercial use of one of the materials, other than salt, to be found in sea water. Today, the Ethyl-Dow bromine extraction plant at Freeport, Texas, is a testimonial to the success of this method.

In addition, some special considerations were involved in the manufacture of a lead alkyl on a large scale. Tetraethyl lead, as is well known, is produced by an exothermic reaction, and is highly toxic in its concentrated form. For that reason, comprehensive safety precautions were necessary throughout each manufacturing step.

All of these things, then — unusual raw material requirements,

specialized manufacturing processes, elaborate safety procedures — had to be developed and unified in order to produce one final product, an antiknock compound.

The tetraethyl lead operations gave rise to broad experience in producing ethyl chloride, producing chlorine and sodium, and in combining molten sodium with molten lead to form an alloy, as well as in synthesizing an organo-metallic compound. These intermediate operations, in turn, have led Ethyl to the most basic of chemical sources — to such things as salt, sea water, petroleum hydrocarbons, soda ash, pig lead and hydrogen — in an effort to increase manufacturing efficiency and lower unit costs. These separate advances, in turn, have all been translated into the over-all manufacturing operation. As one result, one tetraethyl lead unit today is nearly as productive as three units of years ago.

Reflecting its low cost and economic value, tetraethyl lead has

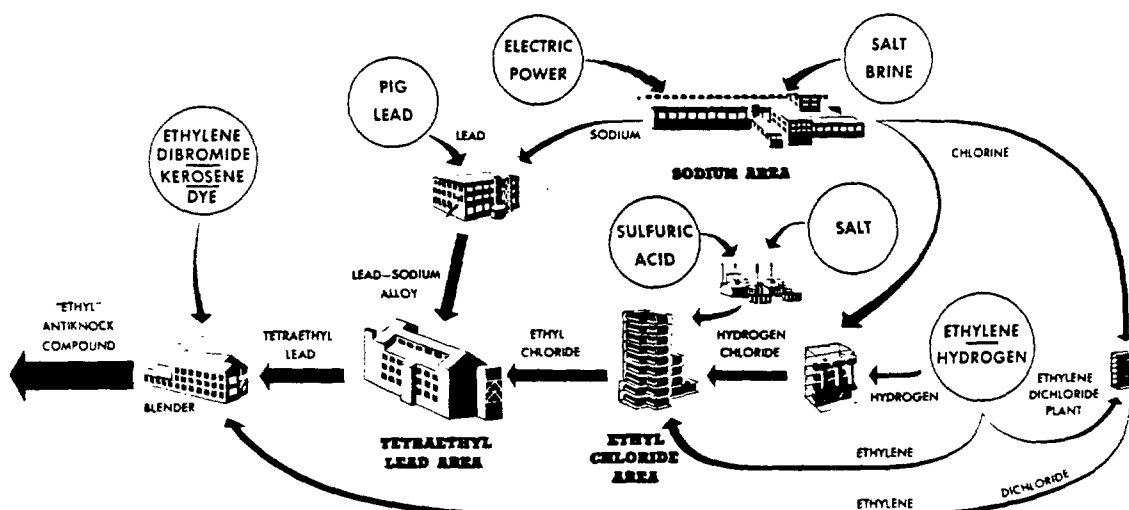
come to be used in over 95% of all gasolines consumed. Meanwhile, the increasing demand for tetraethyl lead, through the years, has also brought Ethyl's various intermediate operations to major stature. Today, Ethyl is the world's largest producer of antiknock compounds. It is also a major producer of sodium, ethyl chloride, chlorine, and other products.

Additional Capacity

A broad expansion in manufacturing capacity was completed in 1949 at Ethyl's manufacturing plant in Baton Rouge, La. In addition, a second increase in manufacturing capacity is going forward with the construction of new chemical plants at Houston, Texas. These plants are scheduled to be completed within the next year.

Related to individual chemicals, this continuing expansion has a two-fold objective. One goal is to anticipate future requirements of these intermediate chemicals for the manufacture of antiknock compounds. The second objective is to make

The schematic flow-chart shown below gives a ready picture of how "Ethyl" antiknock compound, the company's main product, is produced



(CIRCLES SHOW MAJOR RAW MATERIALS, CHEMICALS AND SUPPLIES NOT PRODUCED AT THE PLANT)



Ethylene dichloride and ethyl chloride are both produced in volume by Ethyl. Some of the specialized manufacturing units required in the production of these chemicals are shown here

available, on the open market, basic chemicals in which Ethyl has had long experience and for which there appears to be a growing need and application.

Ethyl's position in these various chemicals has come about as a step-by-step process of evolution. And yet, intensive work in these intermediate processes has uncovered some interesting possibilities. Ethyl chloride provides a good example.

New Method Pioneered

Historically, the manufacture of ethyl chloride by the hydrochlorination of alcohol is the oldest one in use. Prior to World War II, however, this process was warranted only when the price of ethyl alcohol, particularly from molasses, was attractive. Accordingly, Ethyl during the 1930's pioneered in the production of ethyl chloride by the ethylene process, which proved far more economical and efficient.

During World War II, however, in the course of its continuing research work on ethyl chloride, Ethyl developed a process based on the chlorination of ethane. This process could make use of the waste streams given off by the ethylene

process. It yielded a mixture of ethyl chloride and dichloro ethanes, from which mixture the ethyl chloride could be separated by fractionation. It also yielded hydrochloric acid as a by-product. The ethane process was of distinct value to Ethyl during the war emergency period.

With the return of peacetime, the ethylene process asserted itself as the most efficient and economical under ordinary circumstances, and it is on this process that all of Ethyl's ethyl chloride operations are presently based. Nevertheless, its wartime ethane process gave Ethyl valuable experience in photochemical chlorination, and research and development work continued in this direction. Capitalizing on the know-how gained in chlorinating ethane, Ethyl turned to the chlorination of benzene, and in 1949 began manufacturing the insecticide, benzene hexachloride.

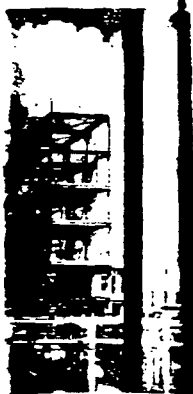
BHC, as is well known, is a highly effective agent against the boll-weevil, the cotton aphid, and a host of other harmful agricultural pests, acting as a stomach poison, a contact poison, and a fumigant. BHC, moreover, has played an important role in the large production, and

high yields per acre, that cotton farmers have enjoyed of late.

To date, six isomers of BHC have been isolated; of these, however, the gamma isomer is the only effective toxicant. BHC is commonly used in conjunction with other insecticides. For example, the most widely used cotton dust is the so-called 3-5-40 mixture, consisting of 3% of gamma BHC, 5% of DDT, and 40% of sulfur. Such a balanced insecticide is effective against all cotton insects.

BHC is manufactured in technical grades for use by agricultural chemical manufacturers in compounding finished insecticides. The most widely used technical grade of BHC, at present, consists of a 12% to 15% gamma concentration. From a standpoint of manufacturing operations, it is possible to go from a low gamma concentration to, say, an 80% gamma concentration or even to lindane, which is 99% or higher in gamma concentration. These high gamma concentrations are in many ways more desirable than the low gamma forms.

For the last several years, Ethyl has been manufacturing low gamma BHC in commercial quantities for formulation into a cotton dust. In



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that cotton of late. of BHC have however, the only effective nonly used in r insecticides. widely used -called 3-5-40 :% of gamma d 40% of sul- insecticide is cotton insects. ed in techni- agricultural ers in com- ecticides. The chnical grade consists of a concentration. manufactur- possible to go concentration na concentra- ane, which is mma concen- gamma concen- ways more gamma forms. l years, Ethyl ng low gamma quantities for cotton dust. In

addition, it is now preparing to make available, in growing quantities, supplies of high gamma BHC and lindane. The latter is highly useful against flies and mosquitoes, soil insects, and livestock and forage, fruit and vegetable crop insects.

Use Inactive Isomers

As can be seen, then, work on a single intermediate chemical process related to antiknock compounds finds application in an entirely new field. And besides the direct use of the gamma isomer of BHC as an insecticide, the inactive isomers of BHC, recovered from the concentrate, can be converted into trichloro benzene. This material, in turn, has considerable promise as a raw material for other products, including agricultural chemicals. At the same time, the operation aids in the conservation of benzene and chlorine. In passing, it is interesting to note that the majority of useful agricultural chemicals are either halogenated compounds or organometallics, in both of which fields Ethyl has had wide experience.

A parallel illustration is provided by sodium. This intermediate for tetraethyl lead is also the starting point in many familiar industrial processes. Sodium in various forms is used for everything from manufacturing indigo dyes and bleaching textiles to preparing sulfa drugs and case hardening steel.

At present, the manufacture of tetraethyl lead is the largest single consumer of sodium. Nevertheless, other consumers of sodium have made important strides in recent years. For example, the production of synthetic detergents has risen to

the point where it is the second largest user of sodium. At the same time, sodium in various forms and derivatives shows promise of further important applications — in the manufacture of titanium, zirconium and synthetic rubber, and in the desulfurization of petroleum products, among others.

In Ethyl's role as a major producer and marketer of sodium, its research and development staff has been actively exploring present and projected uses for sodium in recent years. One of the most interesting materials investigated to date is dispersed sodium. Sodium in this form opens up the possibility of many new chemical reactions. For the benefit of those companies interested in exploring the uses of dispersed sodium, Ethyl's technical staff will assist in the proper preparation of this material. Thus, besides its production and bulk sale of metallic sodium for commercial use, Ethyl will make available experimental quantities of dispersed sodium.

Closely related to sodium in Ethyl's manufacturing operations is calcium. Ethyl has developed a method whereby calcium metal (crystalline) of unique properties is being produced. Physically, these calcium crystals are of such particle size that they can be readily fluidized; chemically, they are exceedingly active and have the desirable property

of low nitrogen content. Calcium metal, which acts as a powerful reducing agent, is one of the newest products to be added to those sold under the "Ethyl" trade-mark. It is presently being produced in pilot plant quantities.

In a different direction, it is interesting to see how long experience in one field finds application in another. From its years of intensive research work in antiknock compounds, Ethyl has not only gained fundamental knowledge about knock suppressors in gasoline; it has also gained valuable information about knock inducers. It so happens that what might be a knock inducer in gasoline may also be a valuable knock suppressor in, say, diesel fuel.

Cetane Improver

Over four years ago, Ethyl's research and development staff began an extensive investigation of potential cetane improvers for diesel fuel. Both a cetane improver for diesel fuel and an antiknock compound for gasoline are designed to promote efficient combustion. They accomplish this purpose, however, by opposite means. Tetraethyl lead promotes the efficient utilization of gasoline by slowing down the rate of combustion. On the other hand, a cetane improver promotes the efficient use of diesel fuel by increasing the readiness with which the fuel will ignite.

Ethyl is both a major producer and marketer of sodium. These are some of the special tanks used to store finished sodium at the Baton Rouge plant



During the research work, more than 300 different materials were tested as cetane improvers. They included a number of compounds which are known pro-knocks in gasoline. As it happened, one of these gasoline pro-knocks turned out to be the most efficient ignition accelerator for diesel fuel, from a cost-effectiveness standpoint, uncovered to date. That compound is amyl nitrate.

Preliminary Tests

While amyl nitrate has long been known in principle as a cetane improver, Ethyl's research staff developed an entirely new mixture. In fact, Ethyl's research work on the eight isomers of amyl nitrate disclosed a variation in effectiveness. The present compound is prepared from a mixture of primary alcohols.

At present, amyl nitrate is undergoing exhaustive tests in the laboratory and under service conditions. Plans for making the compound commercially available will be announced upon the completion of these tests. If successful, amyl nitrate promises to be of distinct

value to the oil industry, to diesel fuel consumers, and to the diesel equipment industry.

Among other things, it will assist the oil industry in meeting a demand for diesel fuel which has expanded fourfold in the last decade, and in balancing that demand with the sometimes competitive demand for other products. A cetane improver such as amyl nitrate can enable a refiner simply and economically to produce diesel fuels of the desired or specified quality. It can thereby promote a greater uniformity of diesel fuel quality throughout the country, resulting in better performance and improved fuel utilization for consumers. Amyl nitrate can convert ordinary heating oil into high quality diesel fuel.

Thus once again, Ethyl's accumulated experience in one field can find useful application in another.

A number of other parallel examples could be cited in which the Corporation's long experience in the antiknock field, coupled with the step-by-step evolution of its manufacturing processes, is valuable in other directions.

For example, during the war Ethyl adapted one of its manufacturing facilities to produce an ingredient for a synthetic rubber. After the war, this experience led directly to an improved process for making ethylene dichloride.

A Widening Role

Ethylene dichloride is primarily a scavenging agent for tetraethyl lead. But ethylene dichloride, as is well known, has other interesting uses. Similarly, ethylene dibromide, the second scavenging agent, also finds use as a soil fumigant. Or once again, ethylene — which Ethyl produces and uses in large volume for its antiknock manufacturing operations — is the basis for around 5% or so of the total synthetic organic chemicals produced in the United States.

Antiknock compounds, cetane improvers, agricultural chemicals, sodium, chlorine — these are only some of the many avenues of pursuit that intensive work on one single product has opened up. In a way, each of them is an interesting episode in Ethyl's widening role as a chemical producer.



The several chemicals sold by Ethyl find many and varied end uses. Sodium, for instance, goes into the manufacture of synthetic detergents, "Ethyl" fluid improves the quality of motor fuel, and BHC helps control cotton pests and others

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High scholastic grades alone are no guarantee of success after college. Extracurricular activities, leadership ability, personality and many other requisites all enter into the picture

By Thom Yates

WHEN the American young man trooped off to his college campus this fall, he headed toward the greatest opportunity to succeed in business that has ever favored any generation of students.

What with the Communist threat, the A-bomb, cold and hot wars, and all the other uncertainties of the world, that's a pretty strong statement and may have to be proved. It can be—in the following four summations. Based, for the most part, on replies to a special *Ethyl News* survey of 33 leading colleges

and universities, the facts are these:

1. Most of us go through life being told, and believing, that only class valedictorians get to be officers of corporations and other business firms. That's a myth that we all grow up with, and that grows up with us. It could have been proved long ago that the man who gets the highest marks is not necessarily the "most likely to succeed," but this obvious fact is constantly ignored.

2. Before Korea, students training to be engineers and certain other technical professionals were cautioned that they were getting into overcrowded fields, that they would

have to beg for jobs. (Two examples: A 1949 bulletin by the Bureau of Labor Statistics predicted that "in the next few years . . . the number of graduates will greatly exceed the demand for graduate engineers." *Life* magazine, in a June 1950 issue, said that, with 50,000 graduates then competing for 18,000 vacancies in the engineering profession, "many engineers will find it wise to switch to sales or other non-technical jobs." College placement directors queried in the *Ethyl News* survey said that such mistaken forecasts are greatly responsible for the current shortage of technical graduates.)

The result is that today there are 60,000 unfilled engineering jobs alone in industry and government, simply because there aren't enough trained men (and women) to go around. The shortage is said to be only temporary, but most manpower experts see it continuing for another six to ten years. That indicates assured employment, under excellent job starting conditions, for graduates of all classes at least through 1957.

3. The physical expansion of American industry is proceeding at a tremendous rate, and seems destined to continue in the future. As industrial expansion continues, so will the need for more and more trained graduates.

4. Industry's interest in, and support of, promising college students is at an all-time high. In addition to its time-honored practice of awarding generous scholarships and grants-in-aid, business is sponsoring several new programs. Notable among these are the hiring of undergraduates for summer employment, so the man and the company can look each other over before either makes a final choice, and the engaging of military-bound graduates on a basis of reporting for work after their period of armed forces service is completed.

Together, these four items add up to unparalleled business success opportunities for the man now in college and even those who will not enter higher learning for a few years yet. For students, they are bright rays of sunshine piercing the overcast international sky.

None of this is by way of saying that the college student can let down, secure in the knowledge that industry will beat a path to his dormitory a few months before graduation and plead with him to accept one of several juicy positions of-

Factors such as the military draft, curtailment of veteran education under the G.I. Bill of Rights, and the smaller number of boys and girls of college age due to low Depression birth rates will result in a college enrollment decline of some 275,000 students during the current school year. Last year, approximately 2.5 million youths attended colleges, universities, normal schools, and other institutions of higher learning. This year, according to the U. S. Office of Education, the figure will fall off to about 2,225,000.

fered. Right now, industry needs all the technical men the higher schools can turn out. But they must be just that — men, and men who are not afraid of climbing the ladder the hard way.

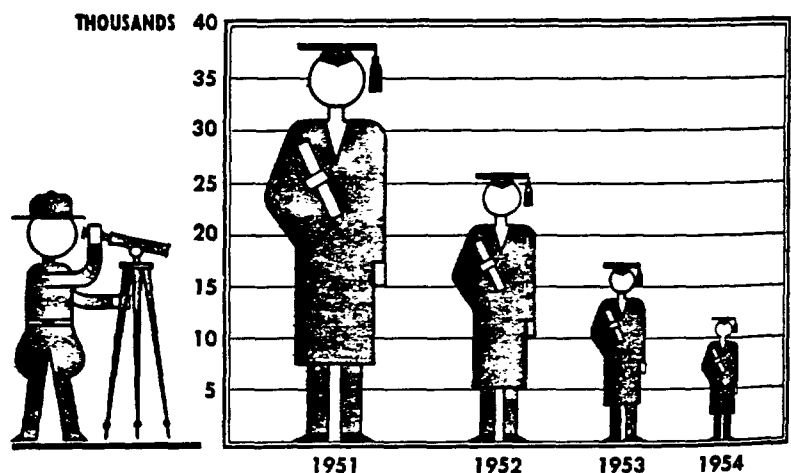
They don't have to be the high I. Q. boys of their graduating class, either. The day is past when industry seeks employees only from the top scholastic level of a graduating class. Intellect always has been, and always will be, a requirement for success in business or any other endeavor. The modern executive, however, is struck from a new die.

He has learning to be sure. But he also is endowed with such other human attributes as personality, character, determination, ambition, leadership ability, and a sense of human relations.

No one would deny the necessity of intelligence for succeeding in any endeavor, but the distinction here is between the so-called bookworm and the intelligent person who is alert to the worlds outside his own specialized orbit. A story is told about Robert E. Wilson, board chairman of Standard of Indiana, which illustrates the versatility of men "most likely to succeed."

Twenty years ago, when Dr. Wilson was head of the Development and Patent department of the Indiana company, the group of young and energetic engineers and lawyers in his department spent many of their after-work hours in spirited contests of golf, bridge, badminton, chess, checkers, and other such pastimes.

"Bob Wilson," recalls one eyewitness, "liked to take part in these games whenever he could, much to the despair of the boys who thought they were pretty good in these endeavors. Then, too, we used to play



Latest estimates indicate a sharp falling off in the number of graduating engineers — to a meagre 12,000 three years hence

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From top to bottom, these photos illustrate three ways in which industry is aiding education — by hiring college professors, granting scholarships, and providing in-plant training

a lot of badminton in the gymnasium of a church on Chicago's South Side. A typical night's program would include doubles, mixed doubles, and singles. Wilson somehow always seemed to be on the winning side."

At this point, his associates hatched a good-natured conspiracy against Dr. Wilson. The best player in each of the various sports and games was to undergo professional coaching, and "when he thought the time was right, take on the boss and really humble him." But the plan backfired. None of the self-appointed experts, even with outside coaching, could beat the "boss" with any consistency. It was quite a time before Dr. Wilson ever learned of the scheme to unseat him as local

champion of every extracurricular activity he put his hand to.

Dr. Wilson happens to be one of those leaders of industry who posted exceptionally high grades in college. But the point of the anecdote is that, along with classroom honors, the man who is singularly successful often exhibits ability in everything he undertakes, be it badminton or chemistry.

What It Takes

In his introductory statement to a recent biographical volume about the men voted in one poll as America's 50 foremost business leaders, B. C. Forbes, the editor and publisher, wrote:

"Profound study of the records of America's most successful men

30 years ago and then again today reveals that patience, perseverance, stick-to-it-iveness, and unflagging courage are requisites.

"Neither birth nor education, neither nationality nor religion, neither heredity nor environment are passports or obstacles to the highest success in this land of liberty and democracy.

"Worth alone counts.

"The only caste in America is merit. A price has to be paid for success. Almost invariably those who have reached the summits worked harder and longer, studied and planned more assiduously, practiced more self-denial, overcame more difficulties than those who have not risen so far."

Then, in the biographical book itself, it is learned that Winthrop W. Aldrich, board chairman of Chase National Bank, was "competent but not superb in his studies" at Harvard. Richard R. Deupree, chairman of the Procter & Gamble soap company, never attended college. Neither did Charles R. Hook, chairman of Armco Steel.

Paul G. Hoffman, former president of The Studebaker Corporation and now Ford Foundation director, quit the University of Chicago after his freshman year. Henry J. Kaiser, the ship and automobile builder, ended his formal education at the eighth grade in order to go to work at the age of 13. At Yale, says Leroy A. Lincoln, chairman of Metropolitan Life Insurance Co., "my grades were just average." Edward V. (Eddie) Rickenbacker, president and general manager of Eastern Air Lines, went to work at the age of 11 and never attended a school formally after that.

Outside the business ranks, too, are unlimited examples of men who became leaders in their fields without the benefit of a high scholastic

rating. Thomas A. Edison enjoyed little schooling, and when he did attend was almost invariably at the bottom of his class. A cadet named Dwight Eisenhower, when he graduated from West Point, stood 61st in a class of 164, or in the middle third. At Harvard, Franklin D. Roosevelt achieved only average grades, and later barely got through law school.

From these examples, and the fact that the premium is off mere high grades alone, college students not destined for the top scholastic levels can take much heart. They should note, however, that in virtually every case, America's top industrialists, regardless of their classroom marks, were active leaders among their fellow students.

In his senior year at Cornell, John L. Collyer, president and board chairman of the B. F. Goodrich Co., was not only captain of the varsity crew but the head rowing coach as well. He also was president of the student council and of the senior class. Clarence Francis, chairman of General Foods Corp., showed a wide range of interests while attending Amherst. He was president of the dramatic club, member of the debating team, and a water polo player. Bernard F. Gimbel, president of Gimbel Brothers, Inc., was a four-sport athlete at the University of Pennsylvania.

In the years that lie just ahead, the selection of new employees from among the ranks of each succeeding class of college graduates seems destined to be on a "take anyone who gets a diploma" basis. This will be particularly true in the cases of graduating engineers, chemists, and certain non-technical students. The present shortage of such graduates will almost certainly get worse before it gets better.

But in the long run, the man who

wins out in business is the one who will bring a well-roundedness to his job. His athletic prowess as such will not count too much, but the fact that he obviously got along with his teammates will. Few companies will engage a man simply because he happened to be a debater, but they will appreciate that debating has helped the individual gain poise, self-confidence, and the ability to express himself clearly before strange audiences. Holding office in a fraternity is no guarantee of a position after graduation, but such an honor does tell interested business firms that the man apparently is liked by other people.

Around the Clock

A professor in one of the nation's best-known engineering colleges sums it up this way: "Companies now are giving a great deal of consideration to what a man has done with the 24 hours of each day, rather than just looking at his grade-point average. They're looking for good all-around men who they think have possibilities of developing and moving ahead with the company, and have qualities of becoming leaders. Personality, evidences of leadership, extracurricular activity, part-time employment, and scholastic ability are all rolled into one during job interviews."

Industry's task of finding sufficient well-rounded graduates with the proper educational background is aggravated at the moment, of course, by the drastic shortage of graduating engineers, chemists and other technical people. There are many explanations for the decline in the number of students taking degrees in these courses.

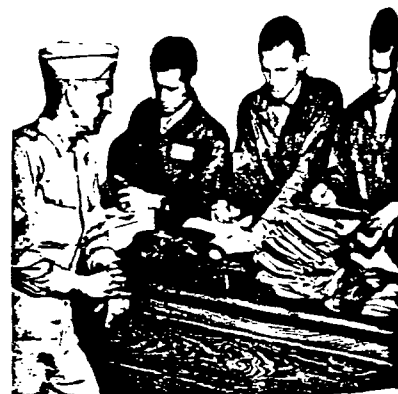
The nation's sudden involvement in a shooting war, with its attendant defense mobilization effort and Selective Service, is the reason that

springs to mind most readily. But there are other contributing factors — the various pre-Korea employment outlooks which foresaw an excess of engineers at this time, and the expiration of educational benefits for most World War II veterans.

It seems paradoxical that a Depression of 20 years ago should also enter into the manpower availability picture in these years of prosperity, but that is exactly the case. Shrinking family incomes of the Thirties resulted in shrinking birth rates from 1932 to 1939. The earliest of our Depression babies are just now turning college age, and that portends decreased college enrollments for the next seven years.

Figures from the 33 colleges queried in the special *Ethyl News* survey show what effect the low birth rates of two decades ago will have on college attendance.

The University of Pittsburgh reported it would have 30 per cent fewer beginning students in engineering and chemistry this fall than last year. The University of Tulsa anticipated about the same fall-off. Yale, which graduated 321 with engineering degrees in 1950 but only 235 this year, foresees a steady decline to a point where only 18:



In planning for the future, young men today must take the draft into consideration

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most readily. But contributing factors re-Korea employment which foresaw an excess at this time, and educational benefits of World War II veterans. It is logical that a decade ago should also have foreseen the unavailability of manpower in years of prosperity, by the case. Shrinkages of the Thirties in the declining birth rates in 1939. The earliest of babies are just now of age, and that post-college enrollments in years.

The 33 colleges quoted in *Ethyl News* surmise the low birth rates a decade ago will have a large effect.

University of Pittsburgh reported that only 30 per cent of students in engineering this fall than in the same fall-off. University of Tulsa reported 321 with enrollments in 1950 but only 182 in 1951, a steady decline where only 182



More and more students are going to be missing from the classroom as college enrollments drop during the coming years. The decline this year will be approximately 275,000 students

engineers will graduate in the class of 1954. While Rensselaer Polytechnic Institute expected five more students to enroll in chemistry this year than last, it estimated beginning engineering students would number 127 less. And so it goes all around the country.

Reverse Situation

Relief from the decreased enrollments, say educators, will not come until 1957 or 1958, when the first of World War II's outpouring of babies start their march to the ivy halls of learning. Then, the present situation will completely reverse itself. Colleges will be swamped by the young men and women, who, now as children, are so overtaking our primary and secondary schools.

The long-range effects of the forthcoming college enrollment sea-saw can only be speculated on at this point. One thing is certain, however. As the number of graduates decline, so will the number of available graduating technical peo-

ple. Institutions of higher learning this year graduated about 38,000 engineers (about half of whom were expected to enter the armed forces). According to estimates of the Engineering Manpower Commission of the Engineers Joint Council, the 1952 graduating classes will produce only about 26,000 men trained in that profession. In 1953, the total will slip to 17,000, and in 1954, it will stand at a meagre 12,000. Except that the figures would be different, much the same situation also exists in certain non-technical professions.

While little can be done to fill immediately the 60,000 engineer vacancies the Engineers Joint Council says now exist in industry and government, both business and the colleges, individually and jointly, are taking steps for the future.

Many colleges, Stanford and I.C. high among them, are accelerating their technical programs so that, by taking summer work, students can complete their courses in about three years. Wayne University also has instituted summer sessions for students who wish to speed their graduation. A recently-completed Science building at Wayne will double the number of students who can be trained for higher degrees in the field of chemistry. As part of its effort to combat the expected drop in enrollment this fall, Penn State prepared a special movie for showing to prospective students. Also, it waged a "talk up" campaign in which undergraduates returned to their respective high schools to impress upon those students the advantages and benefits of a higher education. Louisiana State University has opened its doors to more out-of-state and transfer students.

Similarly, industry has acted beyond its normal scope of support of students and education.

Several forward-looking companies this year signed up college juniors for summer jobs, with a view to training them preliminarily



For the future, they must take consideration

OUR COVER: Courtesy Duke University. **OUR PICTURES:** Page 4, Frederic Lewis; page 5 (inset), Philip Gendreau, and (bottom), courtesy Cornell University; page 7 (top), Philip Gendreau, and (right), A. Devaney; pages 8 and 9, cartoons by Warren King, courtesy *Popular Economics*; New York University; page 9 (bottom), courtesy New Jersey State Chamber of Commerce; pages 10 and 11, Camera Associates; page 12, Commercial Photos; pages 13-23, Camera Associates, O. Winston Link, and courtesy *Chemical and Engineering News*; page 28, Frederic Lewis, Ewing Galloway, and courtesy U.S. Department of Agriculture; page 29, Wide World, Monkmeyer, A. Devaney, and Frederic Lewis; page 31, Monkmeyer and Philip Gendreau; pages 32 and 33, Monkmeyer; page 34, A. Devaney.

INDUSTRY AIDS EMPLOYEE EDUCATION

AMERICAN INDUSTRY not only is cooperating to the fullest in worthy projects having to do with potential employees still attending college. It also is doing much to advance the education of present employees, particularly those who are considered "promotable" and those who have, because of the urgency of the times, been upgraded while lacking the full proper training.

Manufacturers and businesses in the Springfield, Ohio, area, for instance, have instituted a new program in cooperation with Wittenberg College to help supervisory personnel become more effective in their jobs. Foremen and other supervisors of the cooperating companies will spend a week at Wittenberg, during which they will take special courses in human relations, personal development, economics, and company operations. Some 800 men are expected to take the course the first year, and all will receive their regular salary for the week they spend in college. The salaries total about \$100,000. In addition, industry will pay tuition costs of approximately \$25,000.

Still a different type of "learn while you earn" program has been put into effect within many companies. This instruction is intended primarily for the employee who is ready for promotion, except that he lacks the proper full education required by the higher position.

Under the "tuition refund plan," the employee has the opportunity to acquire this knowledge at night or during free hours in a local school, college, or other institution of learning. Money-wise, it can either cost the employee nothing and the company everything, or the other way around.

Usually, the company refunds all or part of the tuition after the courses have been taken, depending upon the employee's classroom grade. An "A" mark, for instance, entitles the employee to a 100 per cent refund of his tuition, a "B" student gets back 75 per cent, and so on down the line.

A study of tuition refund plans by New York University's School of Commerce indicates that such students do very well scholastically.

before engaging them permanently when they graduate next June. In other instances, businesses employed students even though they might be earmarked for immediate military service. The graduate will take his job upon release from the armed forces. The placement director at one Southern university was so enthused by this plan that he extended "orchids to industry" for its encouragement of such students."

Several companies in various industries have either instituted new, or intensified existing, programs calling for the addition of professors to company payrolls for periods up to one year. All benefit from this arrangement. The hiring firm receives the fruits of the professor's long technical teaching experience. The instructor enjoys a "change of pace," and also gains assured employment at a time when many colleges must consider reducing their faculty staffs because of lowered incomes resulting from decreased student enrollments.

Then, to help both industry and students make wise employment selections, business is cooperating wholeheartedly in such projects as the Cooperative Engineering Program conducted by the Massachusetts Institute of Technology in conjunction with almost a score of industrial firms. Under this plan, selected engineering students spend six months in the plant of one of the cooperating companies after completion of their sophomore year. They attend summer classes to make up the time spent on the in-plant training program, and thus graduate on schedule with their class. The plan has a twofold purpose. It gives students an insight into industry's requirements so he can select the branch of engineering for which he is best suited, and it permits companies to evaluate individual students as to whether they like-

ly will succeed in the organization.

This is not the full roll call of industry's help-measures by any means. But these few examples should assure the college student that industry is definitely on his side in the struggle to win his proper niche in the business world. His I. Q. doesn't have to be 160 to gain that place. He just has to be himself—an intelligent, reliable, ambitious American young man.

*For the well-rounded graduate,
the opportunities to succeed
in life are virtually unlimited*



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Roll Call of Ethyl Chemicals

The production of "Ethyl" antiknock compounds and other chemical products sold under the "Ethyl" trademark is a highly complex scientific art. Scores of chemicals are required, to one degree or another, in the over-all manufacturing process. Below, to give the

interested reader some idea of the scope of Ethyl Corporation's operations in this direction, are lists of principal chemicals which are (1) purchased from outside sources, (2) made in the company's own integrated plant, and (3) sold by Ethyl to company consumers.

Ethyl PURCHASES

- Acetone
- Activated alumina
- Aluminum chloride
- Barium carbonate
- Barium chloride
- Benzene
- Calcium chloride
- Caustic soda
- Chlorine
- Ethyl alcohol
- Ethylene
- Ethylene dibromide
- Ferric sulfate

- Ferrous sulfate
- Graphite
- Hydrogen
- Kerosene
- Lead
- Lime
- Oil soluble dyes
- Propane
- Salt
- Salt brine
- Soda ash
- Sodium hexametaphosphate
- Sulfuric acid

Ethyl MAKES

- Antiknock compounds
- Benzene hexachloride
- Chlorine
- Ethyl chloride
- Ethylene
- Ethylene dichloride
- Hydrochloric acid

- Hydrogen chloride gas
- Lindane
- Nitrogen
- Salt cake
- Sodium
- Tetraethyl lead

Ethyl SELLS

- Amyl nitrate
- Benzene hexachloride (technical and high gamma)
- Calcium metal (crystalline)
- Chlorine
- "Ethyl" antiknock compounds
- Ethyl chloride

- Ethylene dichloride
- Lindane
- Oil soluble dyes
- Salt cake
- Sodium (dispersions)
- Sodium (metallic)

*You've probably never shaken this hand . . .
but you should*



It's the hand of a man who does more to boost your town . . . and the people in it . . . than almost anyone else you can mention.

He's your town's "Ambassador of Good Will," the first local man most visitors meet, and the only one many people passing through your town ever see.

He's the man by whom these people form their first judgments of your town . . . and to his credit, those first impressions are usually good.

By his hard work, his integrity, and, above all, by the cheerful way he constantly renders service, he has won the respect of all who know him, and the confidence of those who meet him for the first time.

His judgment on local stores, hotels, amusements, and services is constantly being sought, and his recommendations send a steady stream of customers to local businesses.

At your service during fair weather or foul, he's the man who changed the vocabulary of America—the man who, by his constant attention to duty and his eagerness to help, taught the motorists of America and his own townspeople that he operates not a filling station, but a service station!

This reminder of your service station's many services is brought to you by Ethyl Corporation, manufacturers of "Ethyl" antiknock compound used by oil companies to improve gasolines which are sold by more than 200,000 service stations.

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**ETHYL
NEWS**

NOVEMBER • 1951

ETC 32454



IN THE

ETHYL NEWS

NOVEMBER 1951

James E. Boudreau has been appointed director of public relations for Ethyl Corporation, succeeding Ralph C. Champlin, who has resigned to become a vice president of the Pennsylvania Railroad Company. Mr. Boudreau has been associated with Ethyl for the last 21 years in various sales, customer services, and advertising capacities.

He joined the Company in 1930 as a sales representative in New York State, and two years later was named manager of the New York division. He became manager of the Chicago division in 1936, and filled that post until 1942, when he was commissioned a captain in the Army. He served with the Sixth Service Command during World War II, and upon his release from duty in 1944 was named Ethyl's advertising manager.

The following year, when the Corporation's sales department was reorganized on a regional basis, Mr. Boudreau was appointed manager of the Central Region, with headquarters in Chicago. In 1950, he returned to New York as manager of marketing services for the sales department, the position he held until his recent appointment as director of public relations.

Mr. Boudreau is a native of Hoboken, N. J. He attended New York Military Academy, and was graduated from the United States Military Academy at West Point with the class of 1925.

TOMORROW'S SERVICE TODAY

3

Service stations along the fabulous New Jersey Turnpike, which opens this month, will be operated by Cities Service. The company's special dealer training program assures users of the super-highway of only the best in traditional petroleum industry service.

MEN HAVE A "NEW LOOK," TOO!

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If not in too many other things in this hectic world, the American businessman can at least find comfort in his clothes. You couldn't always say the same about our office apparel.

MID-AIR FILL UP

10

Once little more than an air show stunt, flight refueling may make one of the differences between victory and defeat in any future global war.

ATOMS, OILS, AND ENGINES

14

All too little is known of the peaceful uses of atomic energy. Here's one example of how radioactivity is being employed in oil and automotive industry research laboratories, to help produce better engines and better motor oils.

THE HEAT'S ON THE WOOLLY BEARS

17

The little caterpillars are carrying a big load on their fuzzy shoulders, as everyone — well, nearly everyone — wonders if they will be right again in their prediction of the coming winter weather.

RODEO ON WHEELS

20

When it comes to downright driving skill, it's hard to top the nation's truck drivers. Each October, at the annual National Truck Rodeo, the public gets a chance to see how it's done.

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, 100 Park Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compounds, 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;
Herbert A. Savage, secretary

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TOMORROW'S SERVICE TODAY

To provide the utmost in service to travelers of the New Jersey Turnpike is the aim of a special Cities Service dealer training program

A LOCATION beside a highway traversed annually by some eight million vehicles — a daily average of almost 22,000 — is truly a service station man's dream. Such a highway, carrying with it glowing service station opportunities, is the heralded New Jersey Turnpike, which is being opened this month.

But while the Turnpike offers an unusual business potential to the service stations that will be spotted along its 118-mile route, these retail outlets will have a far stronger obligation than merely supplying petroleum and TBA items to the car after car and truck after truck that are destined to roll in. The all-round service they render can be nothing short of that which motorists have come to expect at any of the nation's more than 200,000 service stations,

and, if anything, must exceed this high standard. Mindful of this fact, Cities Service Oil Company (Pa.) has effected a dealer training program designed to produce only outstanding personnel for manning the Turnpike stations. As is well known, Cities Service has been awarded the initial contract for exclusive operation along the new superhighway.

Legally, the company is obligated to operate its service stations in a manner that will reflect credit upon the Turnpike Authority and the State of New Jersey. But in the conscientious, highly-competitive petroleum industry, no such judicial orders are necessary. It is not surprising, therefore, that Cities Service has gone beyond what is required of



Stations along the Turnpike will be completely modern, as indicated by this scale model

it in its marketing plans for the Jersey Turnpike.

Initially, ten stations will be in operation along the Turnpike. Additional outlets, up to a total of 23, will be added as traffic warrants. Two of the stations, on opposite sides of the highway, are located near the Jersey end of the Delaware Memorial Bridge, which spans the Delaware River below Wilmington. This structure was opened last August. Two stations, again facing each other on the north and southbound lanes,

The New Jersey Turnpike is a toll highway. The toll plaza shown below is typical of those that dot the road's route



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The Turnpike cuts through New Jersey for 118 miles. Indicated on the map are the locations of the ten initial service stations

are at Woodbridge, between New Brunswick and Newark. Single stations are situated near Woodbury, Mount Holly, Hightstown, New Brunswick, Elizabeth and Secaucus. At intervals ranging from ten to 20 miles, this arrangement provides service stations for the entire length of the Turnpike, almost from its very beginning at the New Jersey end of the George Washington Bridge to the new Memorial Bridge over the Delaware.

Vary in Size

The stations themselves will vary in size and facilities. At some of the locations, the same building will house both the service station and a Howard Johnson restaurant. At others, there will be smaller lunchrooms, and two of the locations will have no eating facilities whatsoever. The number of service station bays at each site will vary from one to

three. Some of the stations will have five islands and some three. In either case, each island will be equipped with four fuel-dispensing pumps.

The entire Turnpike marketing program is unique in many respects. Taking their cue from the fact that the New Jersey superhighway is considered tomorrow's engineering feat come true today, Cities Service sales personnel have adopted "Tomorrow's Service Today" as the semi-official slogan of the company's modern dealer training program.

Under this program, personnel hand-picked to man the Turnpike stations undergo an intensive six-week course, covering every phase of operations. A converted garage in Newark, N. J., serves as the training center, with F. C. Haviland, Cities Service manager of sales training, in charge of the instruction.

In classes never numbering more than 30, the service station men-to-be receive both group and individual instruction. Throughout the entire six-week period, the value and necessity of service and courtesy are emphasized, re-emphasized, and then emphasized again. It is absolutely essential, the men are told, that they render prompt, satisfactory, and courteous service if the high standards of industry-wide service station operations are to be maintained on the Turnpike.

Each new class first receives a brief, but full, verbal introduction to the Cities Service company and to the New Jersey Turnpike. They are told of the company's rapid growth in petroleum marketing, especially

As part of their training, personnel for the Turnpike stations actually "practice" at established outlets like this

since the end of World War II, and learn that Cities Service now operates 17,000 retail outlets in all parts of the United States east of the Rockies. The information about the Turnpike ranges all the way from the history of its conception to the location of interchanges, mileage between any two given points, etc.

Following this, time is devoted to a preliminary discussion of the different grades of gasoline and lubricants. A period early in the course also is spent in acquainting the class with accepted customer relation techniques, such as greeting the driver and rendering eight-point service around the vehicle.

Steps Followed

With this background, the class is ready to plunge into the six-week course in earnest. In treating with each different subject matter, three basic steps are followed: (1), presentation, in which the matter is explained by the instructor; (2), demonstration, in which personnel see the particular service or repair job carried out; and (3), practice, in which personnel actually apply what they have learned.

Point three is accomplished at various Cities Service stations in and around Newark. The second, fourth, and last week of the course are spent at such stations, where the student



World War II, and he now operates in all parts east of the river. In connection with the instruction about the new way from the river to the city, the emphasis is on the importance of the gasoline, mileage and points, etc. is devoted to the importance of the difference and lubrication in the course of the training the class in the proper relation greeting the eight-point rule.

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and the class is the six-week training with matter, three days: (1), pre-matter is explained; (2), demonstration see or repair job practice, in actually apply. The accomplished at stations in and condition, fourth, course are spent the student

"practices" those things he has learned during the previous week's instruction.

The first week's instruction covers basic service, products, lubrication, and the like. Whenever possible, exhibits and "live" demonstrations are employed to add to the man's knowledge. For instance, Ethyl Corporation's latest educational show, the Product-Sales Clinic, will be seen by each class, to acquaint them with the many good things that modern-day gasolines and oils achieve, and the bad things they are not responsible for, in the operation of an automotive vehicle.

After a week spent at a service station for field training in basic service, the group returns to class for its third week of instruction. This is devoted to the so-called TBA — tire, battery, and accessory — items. The fifth week — which is classroom instruction, again after the class has gained a week's actual service station experience — concentrates on mechanical subjects. Time also is spent on customer relations, studying the various New Jersey Turnpike regulations that apply to service station operation, and learning the new, simplified accounting system that Cities Service is putting into effect for its superhighway stations.

Applicants Screened

In the sixth and final week, the student returns to a Newark area service station to review in the field all that he has learned in the classroom. No longer the novice that he was a month and a half earlier, the man is now ready for assignment to one of the outlets along "the world's most modern highway."

The recently-graduated first class of 30 men, which is forming the nucleus of the staff at each station, is typical of the type of men Cities



TWO EQUALS THREE

It is significant that the first formal use of the New Jersey Turnpike — itself a milestone in highway transportation — should have been an Oil Progress Week event that dramatized the fact that two gallons of gasoline now do the work of three gallons of 1925-26 fuel.

The "Two Equals Three" demonstration was held on the bright, but blustery, morning of the 18th of last month, before an audience of more than 300 members of the press, representatives of the oil and automotive industries, state and highway officials, and members of the New Jersey Turnpike Authority. Scene of the event, sponsored by the New York-New Jersey District of the OIIC and conducted by Ethyl Corporation, was a two-mile stretch of the new superhighway between Newark and Elizabeth.

To illustrate the quarter-century increase in the intrinsic value of gasoline, Ethyl engineers re-created the conditions that prevailed in the oil and automotive industries in the mid-1920's. Actual automobiles of that era were operated on fuels equivalent to those of the time.

Three of the four separate events that made up the hour-long demonstration were acceleration tests. By matching the actual road performances of modern automobiles against those of yesteryear's vehicles, the audience gained dramatic proof of the extra value of today's fuels.

The final event, a fuel economy run, was contested among four cars — a 1921 Cadillac, a 1928 Chrysler, and two late model Oldsmobiles with experimental engines. Of the latter, one had a compression ratio of 4.5 to 1, and the other 8 to 1. Each car was allotted one-tenth of a gallon of gasoline. The Cadillac and low compression Oldsmobile ran on 1925 motor fuel, the Chrysler on "Ethyl" gasoline of 1928 quality, and the high compression Olds on present premium gasoline.

From a standing start (top photo), each car was driven at a constant speed of 30 mph until its fuel ration became exhausted. Only the 1928 Chrysler and modern high compression Oldsmobile had sufficient fuel to reach at least the reviewing stand (bottom photo), which was 1,100 feet from the starting line. The Chrysler stopped dead soon after, however, while the modern car operating on modern fuel rode on for hundreds of feet additional to average 18.98 miles per gallon, even in the face of a lusty headwind. The 23-year-old Chrysler got 15.25 to the gallon, the low compression Oldsmobile 13.33, and the 1921 Cadillac only 11.64 miles per gallon. The high compression car, running on today's premium fuel, then, showed as much as 63 percent better fuel economy.

Truly, the Oil Progress Week demonstration along the super-modern New Jersey Turnpike was a vivid portrayal of one phase of petroleum's progress during the last quarter-century.



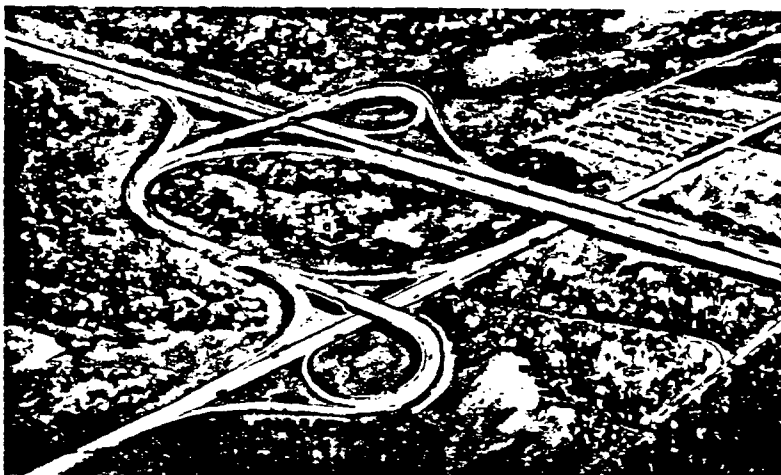
Service has selected for the important job of servicing the millions of cars and trucks that will ride the New Jersey Turnpike each year. The selected men were screened from among 450 applicants for the positions to be filled. Twelve are college graduates, and about half of the 30 had previous service station experience to one degree or another. So high-calibre are those who will operate the Turnpike outlets that Cities Service fully expects that many of its future marketing and sales personnel will be drawn from this group.

The company-operated stations where the specially-trained men will serve are, as might be expected, the last word in modernity.

24-Hour Service

At the outset, and probably through the coming winter months, six of the ten Turnpike stations will operate out of temporary buildings, due to unforeseen construction delays. Except for fuel pumps and the other outdoor hallmarks of any service station, the permanent buildings look for all the world like a California ranch home. But unlike as in a private residence, the lights will never go out at these stations. They will remain open 24 hours every day in the year, and always with a full

Below, a typical interchange for receiving and discharging traffic. The Turnpike has 16 such expertly-planned facilities



staff of competent personnel on hand ready to serve vehicles in need. An average 15 men will be assigned to each station for the round-the-clock operation, although some of the larger and more strategically located outlets will be staffed by 25 or more.

All stations along the Turnpike, regardless of their size or location, have complete facilities for servicing and repairing every type of vehicle. In addition to premium and regular grades of gasoline, diesel fuel will be available at special islands for truck use. Along with service that is courteous and intelligent, the emphasis will also be on speed. Up-to-date equipment will permit rapid oil changes, battery charges, tire repairs, and other basic fixes. Special lanes, leading into and out of the service station area, make it easy and safe for drivers to leave the high-speed superhighway. For those vehicles not fortunate enough to be able to reach a service station under their own power, Cities Service plans any-hour road service. To speed their dispatch and to enable them to coordinate with the police on traffic conditions, the road service trucks will be equipped with two-way radio.

As a further step to assure New Jersey Turnpike travelers that they will receive the utmost in traditional petroleum industry service, Cities Service has created a special sales group to supervise and coordinate

the activities of these stations. The new unit, headed by M. E. Powley, is the New Jersey Turnpike District. It functions as a part of Cities Service's Newark Division, of which J. L. Rieley is manager.

One has to know but little about the fabulous \$250 million New Jersey Turnpike to appreciate the extreme importance of serving the motoring public on this highway—and serving it well.

Vital Corridor

This will be the corridor through which will flow virtually all the highway traffic between New York and Philadelphia, the nation's first and third largest cities. At speeds up to 60 miles an hour, drivers will be able to slice just about in half the former driving time between New York and such points as Philadelphia and Wilmington. Eventually, when the proposed Maryland Expressway and other connecting links are laid, Washington, D. C., will be only a 4½-hour drive from New York, instead of the present seven. Peering even further into the not-too-distant future, the New Jersey Turnpike will be a key link in a network of superhighways that will enable an automobile to travel between New York and Chicago as fast as, or faster than, crack trains now make the trip.

The New Jersey Turnpike is a truly unique highway, presenting many challenging unique and different petroleum marketing and servicing situations.

But with hand-picked specially-trained personnel manning its service stations, and with a special sales organization to supervise their activities, Cities Service stands ready to deliver "tomorrow's service today" to the millions who will traverse the highway that once was a dream but now is a reality.

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MEN HAVE A "NEW LOOK" TOO!

The businessman may not have
noticed it, but his clothes have
changed — and for the better

PLAGUED AS HE IS by the head-
aches that go with doing business
in this topsy-turvy world, the
American businessman can find com-
fort where there was practically
none 30 years ago — in his clothes.
The most sensible apparel in history
allows him to sit, stand, and walk at
ease. Clothes-wise, he never had it
so good.

Men's wear has changed so much
in the last three decades that there's
little similarity between today's
comfortable, good-looking attire
and the constricting, lifeless gar-
ments of the early Twenties. In
those days, as we look back on them
now, the idea must have been to
give every man a toothpick-like sil-
houette. He was weighted down
and garroted by layer after layer of
heavy unbending garments. High
stiff collars, narrow-shouldered,
high-waisted, form-fitting jackets,
skimpily-cut, narrow-legged trous-
ers, and narrow, pointed shoes were
the order of the day. Somber grays,
browns and blues predominated. In-
deed, life and color were seldom to
be found in the costume worn by
the average male of that era.

Since then, men's clothes have
done an almost complete about-face.
They are now infinitely easier to
wear and are far more attractive.
Shirts have soft collars and are em-

bellished by
bright neckties.

Suits and top-
coats are cut on
full, but not exaggerated, lines and
are fabricated from lighter, more
colorful materials. And shoes are de-
signed with not only appearance but
also foot hygiene in mind.

Three factors, in addition to a
natural desire on the part of the
businessman for more comfortable
and better looking clothes, are re-
sponsible for ousting the drabness
and discomfort from men's apparel,
according to male fashion experts.
Not necessarily in the order of their
importance, these factors are: the
wife; an entirely different mode of
living; and a general improvement
in our living standards.

Wives Like Drape

The lady of the house rates credit
for an assist at least, for introducing
color to hubby's wardrobe. When
tailors and clothing manufacturers
were hesitant about marketing the
lighter, brighter clothes they had
created, it was the little lady's en-
thusiasm, almost as much as her

husband's, that
dragged them
out into the
open. And when
the British drape invaded our shores
in the early Thirties, milady's quick
endorsement helped clinch adoption
of it — with some variations.

Wives like the drape because its
wider, padded shoulders, full chest,
and taper to the waist make their
husbands — regardless of natural con-
formation — appear "he-men." Men
themselves appreciate that a modi-
fied drape is both flattering and
comfortable. They have ruled out,
however, the extreme drape which
was so popular with many "sharp"
dressers for several years.

While the white duster faded
from the scene with the coming of
paved roads and closed cars, auto-



The lady of the house, say men's fashion authorities, exerts more than a minor influence on her husband's choice of wearing apparel

mobiles are still a strong influence in male clothing styles.

Heated cars and public conveyances protect the average "nine to five" from winter's blasts for all but a few minutes a day. This protected environment has put a big dent in the heavy under and outer clothes market. Gone are the bulky ulsters of 45 to 60 ounces-per-yard material. Some men now feel the need for nothing heavier than a lightweight topcoat, with, sometimes, a zip-in lining. Gone, too, from the average office worker is the heavy wool union suit in which he once roasted and itched most of the day for the sake of a few minutes' warmth out-of-doors. Abbreviated shorts of cotton, rayon or nylon, and light knitted undershirts are now standard undergarments the year round.

The presence of a roof over his head most of the way to and from his job has also enabled the businessman to cut down on much of the winter and stormy weather impedimenta without which he once dared not face the elements. Far fewer are the number of umbrellas, rubbers, galoshes, mufflers and spats now in evidence. Raincoats, once a cumbersome burden, are now smartly styled. Some can be folded neatly and slipped into a jacket pocket when not in use.

The general upswing in living standards since the first World War has been a boon to both the clothier and his customers. The average man of the early Twenties had but two suits, one for Sunday and one for "everyday." When the everyday suit wore out, he moved the Sunday edition up to take its place and bought a new go-to-church ensemble. Since the Sunday suit was pretty dark — usually blue serge — this program resulted in a monotonous succession of drab suits. These days, many men find that they can afford from three to five suits, and that by alternating them each suit will last much longer.

Summer Suits

Too, modern shades and patterns lend color and distinctiveness to each suit. Glen plaids, bold tweeds, stripes, checks and other designs and brighter colors have done wonders to relieve the monotony of the somber suits of yesteryear.

The drab, fitted suit of the Twenties was, more often than not, a 12-months-a-year proposition. There were, of course, a few sports who showed up at the office in the summertime attired in blazers, "ice cream" flannels, and white or two-toned shoes. But while their costumes were flashy, they were anything but cool. Summer suits did not achieve any degree of popularity until just before World War II. Before that they were a luxury few men thought they could afford.

While men made few clothing concessions to summer's sizzling

The warmth and protection provided by today's well-heated automobiles have been partly responsible for the demise of heavy winter clothing

temperatures a generation ago, they usually made an exception in the case of headwear. By the time May rolled around, they were ready to swap their derbies or heavy felt hats for sailor straws or tightly woven Panamas. The latter reigned as the favorite summer hat until about ten years ago, when coconut straws and other lighter and better ventilated varieties came on the scene.

The aforementioned derby was a casualty of the late Twenties and is now worn by only a few individuals who prefer it to the lighter, softer felts that are the accepted headwear for all but the summer months. The felts can be worn snap brim, homburg, or whatever shape the wearer prefers. Their chief changes have been in weight (50% lighter in 25 years), and in width of brim and band. The very latest trend is back to narrow brims and conventional width ribbons. Colors, once universally dark, can now be anything from light browns and gray-greens to midnight blue or black.

Jumping from head to foot, shoes have followed the general trend to brevity, lightness, and comfort. Long gone are the days of high shoes the year round. Today's well-shod office habitant wears sensibly styled oxfords almost exclusively.

Just as summer suits have come into their own in the last decade, so, too, has cooler and lighter footwear. Hot weather shoes are characterized



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Compared with the stuffily-clad businessman of a generation ago, the two modern executives (right) present a picture of well-dressed, yet comfortable, informality



by their lack of avoirdupois, lighter hues, and foot-cooling ventilation provided by perforations or woven construction.

Odd as it may seem, the sportswear industry, born in the mid-Twenties, has had a pronounced effect on present-day business attire. After golfers, especially those with spindly or bow legs, forced the replacement of knickers with slacks, the sport jacket-slack combination became popular for informal wear. By the late Thirties, some men were even wearing them to the office.

The swing to informality has also helped sound the death knell for such items as full stockings and stiff collars. Now it's elastic top ankle socks and collar-attached shirts — with the rainbow the limit where color is concerned.

As part of the passing parade, even what we now consider conventional shirts are beginning to feel competition from a new entry in the field. This is the dual-purpose shirt with the "vanishing collar band." This version is advertised to look just as neat as a regular shirt when worn with a necktie, and yet convert into an open-neck sport shirt merely by removing the tie and opening the top button. No matter what type, shirts, once exclusively

white, have taken on color too, in the form of solid colors, stripes, checks and patterns.

No commentary on the modern man's clothes would be complete without a word about that small but popular piece of apparel that provides so much conversation and freedom of expression — the necktie.

Those Neckties!

Though ties no longer are adorned with stickpins, this lack has more than been offset by the use of patterns and colors. Everything from brilliant suns setting behind palm-fringed shores, through animals and flowers, to severe geometric patterns unstintingly splashed, sprinkled and daubed with bold colors are now available. Though the average businessman tries not to go too far overboard with his ties these days, his

cravats do reflect the informality and brightness that characterize modern apparel. Though they afford less area for color and design display, bow ties, long in an eclipse, have shown a marked revival since the last war.

Yes, from hat to shoe, there's more color and more freedom of movement in today's better looking, longer wearing, more sensibly styled clothes. And the improvements are continuing. Last year, for instance, several manufacturers introduced what they call a truly domestic suit — the "American lounge." Not extremely conservative, severely "English," or overdraped, it may be either single or double breasted and comes in a variety of fabrics and patterns. This "American lounge" and the so-called "Ivy League" model with its center coat vent, broad button spacing, rounded front, and natural but not extremely narrow shoulders now are popular with many men.

From head to foot, the American businessman presents a pleasant picture of easy informality. He is every bit as warm in winter, far cooler in summer, and much more comfortable and less weighted down the year round. He may look back with longing to the control-free business era of the Twenties, but clothes-wise, he assuredly has no desire to change places with his drab, severe 1921 counterpart.

Stripes, checks, plaids and bright colors distinguish the clothes on display in modern haberdasheries





Once a stunt, refueling in flight now is a routine procedure. One important result is that our bombers, by taking on fuel in mid-air, can reach enemy targets anywhere in the world

SLIGHTLY LESS than three years ago, even a world used to startling announcements was astounded to learn that an American bomber had flown around the world without ever once coming down to earth. There was nothing novel in the mere fact that an aircraft had circled the globe — planes had been doing that for a quarter-century and more. What made the flight of the *Lucky Lady II* headline news was that it had been accomplished non-stop. The answer? Refueling in flight.

No stunt, it is now public knowledge that the B-50 was dispatched

on its historic earth-girdling journey to serve notice on potential aggressors that the U. S. Air Force was, indeed, a global air force. No longer was any target, no matter where in the world located, out of the reach of our bombers. In that one flight, mid-air refueling had wiped out virtually all previous limitations on

the flying range of today's aircraft.

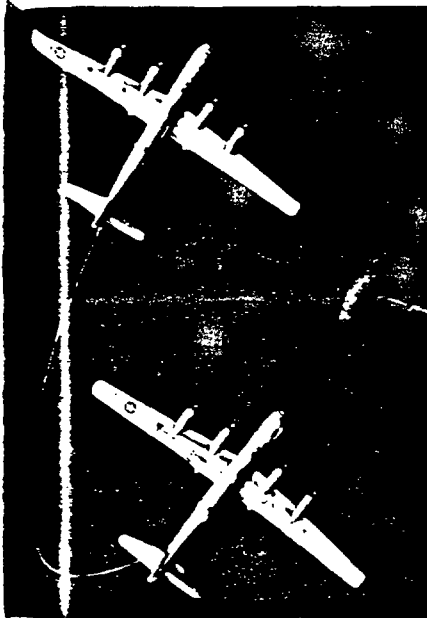
Recent developments in refueling techniques now permit many types of military planes, including both jet bombers and fighters, to replenish their fuel supplies while in flight. The use of special guide lights and anti-icing equipment overcomes the time and weather barriers. Flight refueling can be accomplished at any hour, night or day, and in virtually any weather.

What, specifically, does all this mean besides transforming our

Pioneers in flight refueling were these intrepid crew members of the famed "Question Mark." Gen. Carl Spaatz, plane commander, is at the extreme left



medium bombers into "intercontinental" bombers? Among other things, it means that jet fighters, heretofore limited in cruising distance because of their insatiable appetite for fuel, can now escort the intercontinental bombers on long flights. It means, too, that those military aircraft equipped for in-flight refueling can take off from shorter runways without cutting down on their maximum bomb or weapon



Refueling by the so-called hose-and-reel system. The aerial tanker (right) is feeding gasoline to a sister B-29 via a hose which the latter had grappled

loads. The difference, of course, is a lighter take-off fuel load.

The recent burst of enthusiasm for flight refueling does not imply that the mid-air transfer of fuel is exclusively an Atomic Age development. Recall the much-publicized endurance flights of the late 1920's and early Thirties, when such "stunts" were so numerous that the record for staying aloft changed hands as many as nine times during one year.

It was in 1923 when the first recorded attempt to transfer fuel from one flying plane to another was made. The trick was turned successfully at several air shows, chiefly by stunt fliers. That same year, two Army fliers at Rockwell Field, Calif., accomplished what aviation historians consider the first major flight refueling. Their plane twice took on gasoline (25 gallons the first time, 50 the next) from another plane, which passed the fuel through a 50-foot length of hose.

Nothing much was heard, or done, about flight refueling after that until January, 1929. Then, under War Department sponsorship, the now-famed *Question Mark* took to the air over Southern California. For more than six days, the plane remained aloft, receiving its fuel and oil from airborne "tankers." It was more than coincidental that the same Carl Spaatz, who, as Air Force chief of staff, spurred the post-World War II revival in flight refueling, was also in command of the *Question Mark* on its memorable endurance flight 22 years ago.

The success of the *Question Mark* inspired a rash of endurance flights by commercial pilots during the next few years. But again interest in flight refueling in this country waned, and it remained for the British to pick up the ball and run with it. The result is that two of the three major in-flight refueling techniques employed by the U. S. Air

Force today are British-developed.

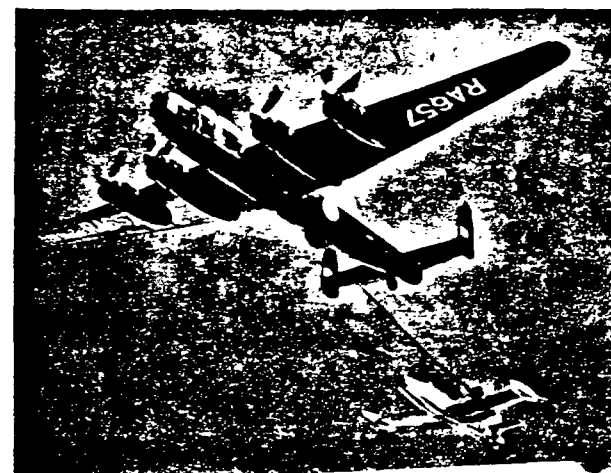
The first of these methods was devised by a Royal Air Force squadron leader after considering the possibilities of flight refueling while watching the early American endurance flights. Under his method, the aircraft to be refueled trailed a 300-foot line at the end of which was a three-pronged grapnel. The tanker plane trailed a shorter line with a weighted end. Approaching the receiver plane from behind, and in a position slightly above and to one side of it, the tanker flew to the other side of the receiver. This caused the two lines to cross and thus make contact. The plane to be refueled then hauled in the lines and the hose pipe from the tanker, made the proper connections, and the refueling began.

Line Shot Out

Through the years, this basic technique has undergone several refinements. On its epochal 94-hour globe-girdling junket in the late winter of 1949, the *Lucky Lady II* was refueled en route by a method calling for eight major steps.

As it neared the refueling rendezvous point, the *Lucky Lady* sent out the grapnel-tipped trailing line. The tanker assumed its position on the rear starboard quarter of the bomber. But instead of trailing its own contact line and crossing over the receiver plane's line, as under the original method, the tanker shot

Approaching a British bomber for a mid-air refueling is one of the two U. S. jet fighters which crossed the North Atlantic non-stop a year ago. The funnel at the end of the hose trailed by the tanker couples to the "probe" jutting from the jet's wing



a line forward of the arc of the receiver's hauling line. The grapnel made a sure contact of both lines. The *Lucky Lady* then hauled in the tanker's line and reeled in the hose length attached to it.

Once the coupling was made, the hose line was flushed with nitrogen gas as a fire preventive measure and the fuel transfer got under way. When the refueling was completed, the hose line was again flushed. The bomber then released the hose and paid out its hauling line to full length. As the tanker pulled away, a six-inch "weak link" snapped in the hauling line, and both planes were free to go their respective ways.

The second British-created flight refueling technique in use today is the so-called probe-drogue system. This technique was employed in refueling the two American jet fighters which made aviation history a year ago by flying non-stop across the North Atlantic. Far less complicated than the earlier hose-and-reel system, the transfer of fuel by probe-drogue nevertheless also calls for expert piloting and close coordination between the two aircraft involved.

In making contact with the tank-

er, the pilot of the receiver plane maneuvers a "probe," which extends from his craft's left wing, into the funnel, or "drogue," found at the end of a hose line which the tanker trails. When the probe is fitted into the drogue, the fuel transfer can begin.

Newest of the flight refueling systems is the "flying boom" method. Military planes in many categories now are constructed with built-in equipment for either passing or accepting fuel, as the case may be. On other aircraft, the necessary trappings must be installed after their construction.

Aerial Service Stations

Presently, two planes — the KC-97 Stratofreighter and the KB-29 Superfortress — are serving the Air Force as "aerial service stations" for mid-air fill ups.

The flying boom is made up of two telescoping sections of pipe, and is attached to the tanker's fuselage near the tail. It takes a skilled combination of man and machinery to release the pipe and maneuver it into position for connection with the plane to be refueled. Because he lowers the boom, it was inevitable

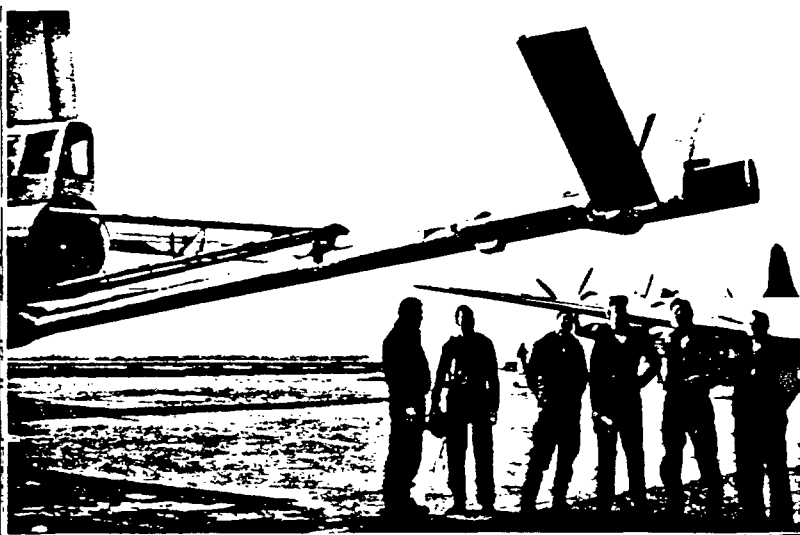
that the crew member in charge of this operation should come to be given the nickname of "Clancy."

At the appointed time and place, the two planes keep their rendezvous. The tanker in this case, say, is a KC-97, and the receiver a sweeping Stratojet bomber.

Expertly, "Clancy" lowers the boom, easing it downward and outward away from the tanker's underside. The movement is controlled by a conventional airplane-type control stick, but it's not as easy as it sounds. The operator actually flies the length of pipe. On the boom are two control surfaces known as ruddervators. When the airstream acts on them, it provides the forces needed to lower the boom, raise it, or swing it to one side or the other. The assignment is one only for a crew member who has more than a fair knowledge of aircraft piloting.

Meanwhile, as the boom goes out, the jet, thirsting for more fuel, is jockeying into position. Because the boom can swivel and telescope, the two pilots enjoy a slight freedom in aligning their planes.

Incredible as it may seem to the earthbound layman, the two planes, despite their high altitudes and ex-



Newest of the in-flight refueling methods is the "flying boom." Left, this device is shown in stowed position at the rear underside of the tanker plane ... Below, a closeup of the flying boom operator's station in the plane's tail



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in terms of feet for the refueling
operation.

Anyone inside the tanker plane
during flight refueling would hear
"Clancy" guiding the receiver plane
pilot over the inter-com radio thus-
ly: "Come forward five feet. For-
ward four, three, two . . ." Then, a
second later, "You're overrunning a
little. Back two feet."

The slipway doors atop the jet
aircraft have been opened, and there
waiting the flying boom nozzle is
the socket through which the fuel
will be driven under tremendous
pressure once final contact has been
made. That contact is made when
"Clancy" considers the receiver
plane in proper position. Almost ten-
derly, he noses the boom down
those final inches, perhaps sliding it
along the slipway atop the jet, until
it cradles in the refueling receptacle.
Up forward in the tanker, the pump
operator gets the "contact made"
signal. Working his pump panel, he
sends the life-giving fuel surging
through the boom and into the jet.
It's like one person giving a blood
transfusion to another.

To help the receiver plane main-
tain position during the refueling,

Oscar B. Lewis
has been elected
vice president of
Ethyl Antiknock,
Ltd., Canadian
sales subsidiary
of Ethyl Corpo-
ration. He suc-
ceeds William M.

Turnley, who has retired but re-
mains as a director and consultant.

An Ethyl employee for 24
years, Mr. Lewis has been ge-
neral manager of the Canadian
company for the last year.

Mr. Lewis joined Ethyl in
1927, and that same year the in-
troduction of "Ethyl" gasoline
in England took him to that
country. He returned to the
United States in 1929 and sub-
sequently was engaged in sales
and safety work. He was ap-
pointed safety manager in 1935
and assistant general sales man-
ager in 1947.

Mr. Lewis was born in Brook-
lyn, N. Y., and was educated at
Dartmouth College and Colum-
bia University.



the tanker is equipped with a set of
special "traffic lights" on its under-
side. A valuable help in overcast
skies and an absolute necessity in
night refueling, the ingenious sealed
beam lighting device is triggered au-
tomatically by microswitches con-
nected to the flying boom. So long
as the boom remains in "nominal
contact position," a green light

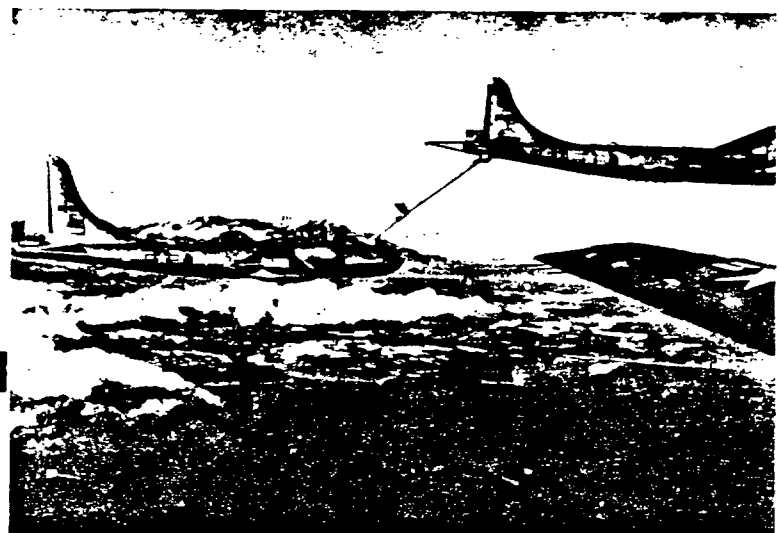
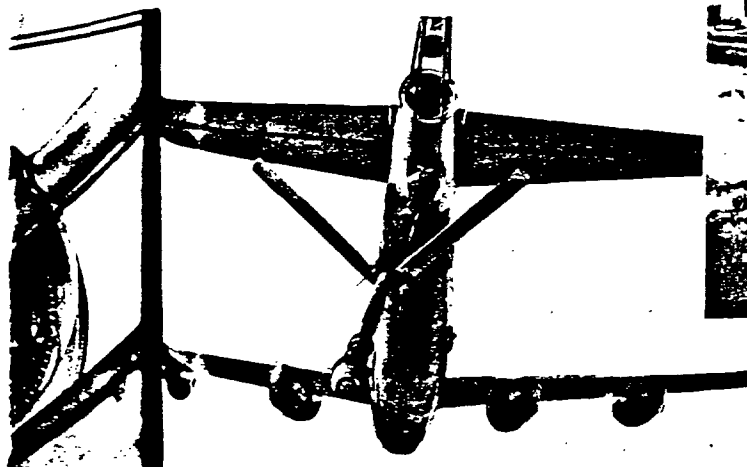
glows. But should the airplane re-
ceiving the fuel move outside this
position, the green light fades out
and one of four red lights flashes on.
These advise the receiver pilot to
reposition his craft either "up,"
"down," "forward," or "aft," as the
case may be.

One hundred and 50 seconds, or
maybe slightly longer, after the fuel
started flowing into the thirsty
plane, the refueling is completed. A
disconnection of the flying boom
from the receiver plane's receptacle
is made by pre-arranged signal, and
the operation is all over. That's all
there is to it, but it's one of the
mighty dramas of the sky.

To carry out the increased num-
ber of flight refuelings that seem in-
evitable in future operations, the
Air Force has created its own group
of military "service station men."
These personnel are grouped into
Air Refueling Squadrons, each
squadron having 20 tankers. It will
serve as no aid and comfort to the
Kremlin to know that whenever the
Air Refueling boys go aloft to carry
out a mid-air "filling" job, they are
placing our strategic bombers and
fighters within reach of every key
target in every part of the world.

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Below is the view of the flying boom
the receiver pilot gets just before con-
tact is made . . . Right, mid-air refuel-
ings like this are now routine, adding
immeasurably to the range of the Air
Force's strategic bombers and fighters



ATOMS, OILS, AND ENGINES

Radioactive materials are more than weapons of war. They are also "tools" for improving oils and automotive parts

FOR THE AVERAGE PERSON, the word "radioactive" immediately conjures up a mental picture of a flattened and rubble-strewn Hiroshima or Nagasaki, with mysterious lethal rays emanating from everywhere. First thoughts are of nothing but devastation and the casualties that radioactivity can cause.

But just as atomic scientists predicted soon after news of the atom bomb explosion had been flashed to the world, atomic energy could be a weapon of peace as well as of war. Today, it is being used with outstanding success in medicine, agriculture, biological and physical science, industry, and a variety of other pursuits.

Always alert to developments that will improve their products, the oil and automotive industries have been quick to take advantage of radioactive materials. The knowledge and facilities that were developed to create the atomic bomb are now helping to produce better lubricants and improved automotive engines. More specifically, radioactive tracers are helping to perfect motor oils and to develop more durable distributor

points, piston rings, gears, bearings and other automotive parts.

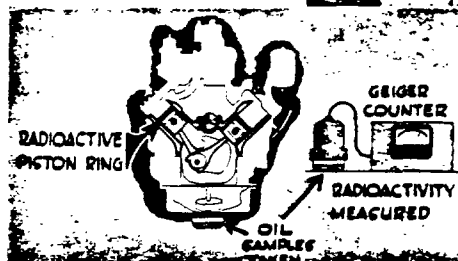
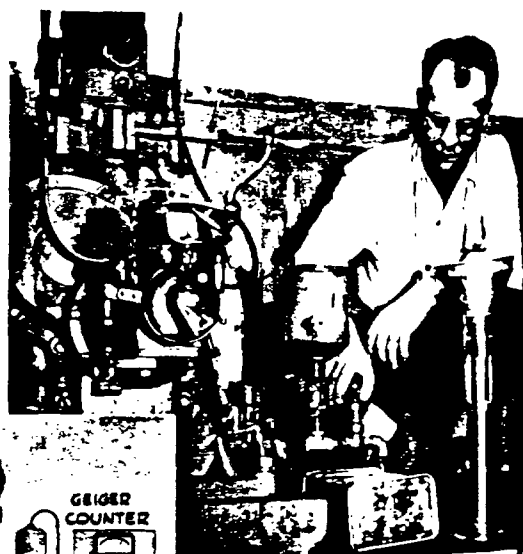
A leading industrial pioneer in using the power of the atom has been The Atlantic Refining Company. As far back as 1939, long before "atomic energy" and "radioactive" became part of our everyday vocabulary, engineers in the Application Research Division of Atlantic's Research and Development Department were probing the possibilities of using the principle of

radioactivity to speed up engine wear tests. Now, because of Atlantic's pioneering and the subsequent contributions of atomic scientists, such tests can be completed in a few hours, instead of the hundreds that were formerly required — and with infinitely more accuracy.

It is the information obtained in these accelerated and improved wear tests that is enabling the oil and automotive industries to speed improvements in their products.

Anyone familiar with engine wear testing methods knows that to simulate actual driving conditions it is

In laboratory experiments, minute metal particles, or wear debris, from radioactive piston rings are mixed with test engine motor oil. Samples of the oil, withdrawn at regular intervals, are tested for radioactivity with a Geiger counter. From the readings obtained, wear computations are made





speed up engine because of Atlantic and the subsequent atomic scientists. completed in a few the hundreds that quired — and with curacy. nation obtained in and improved wear ing the oil and au- ies to speed im- eir products. r with engine wear nows that to simu- g conditions it is



necessary to run laboratory engines or road test cars for hours on end. A test engine must be run up to 500 hours, for example, to duplicate a year's wear found in the average car. Not only is this time-consuming, it also involves tearing down engines at frequent intervals, so parts being tested can be removed and measured to determine the amount of wear that has taken place. Too, in reassembling the engines, there is always the possibility that slight variations in assembly will occur and subsequent tests therefore will not be exactly comparable.

In today's faster and more accurate method, the parts to be tested are made radioactive before they are installed in a test engine. The wear debris, or minute metal particles worn from the radioactive parts after a brief running time, readily supply the information it once took so long to find. Sensitive Geiger counters measure the degree of radioactivity of the wear debris, and from these readings engineers compute the extent of wear that has taken place.

Twofold Advantage

Such wear computations have a twofold advantage over those obtained by previously-used methods. First, they are available after short test engine runs. Secondly, they are accurate to one one-millionth of an inch. Ordinarily, engines must be subjected to at least 4,000 miles of typical cold weather city driving to get one one-thousandth of an inch of wear. That amount of wear can readily be measured by presently-available micrometers.

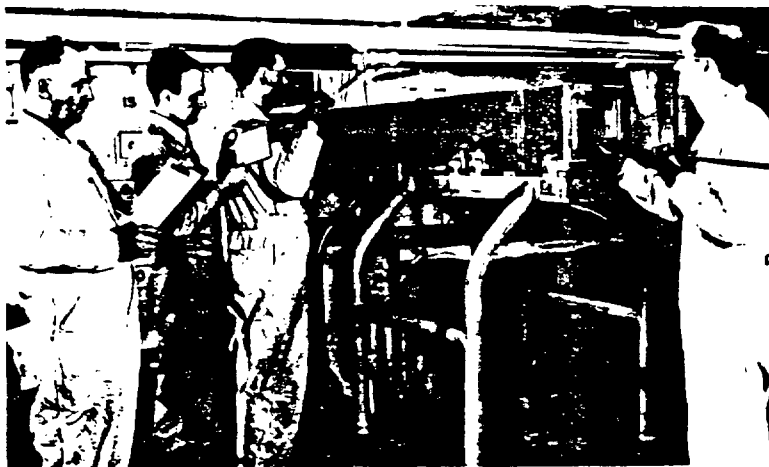
Under the procedure now employed in Atlantic Refining's research laboratories, piston rings are sent to the U. S. Atomic Energy Commission's plant at Oak Ridge, Tenn. There they are placed in the

famous atomic pile for 30 days. During this time, bombardment by high velocity, penetrating atomic particles, or neutrons, changes the elements in the ring metals from ordinary stable elements to unstable radioactive elements. Called radioisotopes of their original elements, these unstable elements give off penetrating rays.

Returned to the research laboratories, the rings are installed in single cylinder test engines. Because, in the case of piston rings, the wear debris becomes mixed with the engine oil, the amount of ring wear is measured

Unfortunately, it wasn't as easy to obtain and use radioactive materials twelve or so years ago, as it sounds today. When Atlantic Refining's research engineers first became interested in this solution to the lengthy test run problem, there was no Atomic Energy Commission, no Oak Ridge, no atomic pile. Where, then, were they going to get radioactive piston rings for use in what it was hoped would be faster and more accurate wear tests?

In seeking the answer to this and many other questions involved in such a revolutionary project, Atlan-



Among the safety devices used to handle radioactive materials is this lead tunnel through which materials are withdrawn from the atomic pile

by checking the radioactivity of the oil itself with a Geiger counter.

A similar procedure is followed by automotive industry engineers to test distributor breaker points, gears and bearings. They ship the parts to Oak Ridge for bombardment in the atomic pile. When the radioactive, or "hot," parts come back, they are installed in test engines and given an experimental run as though they were in a standard automobile. A few hours later, the wear that has taken place is measured.

Many outside the industries may wonder why such speeded-up test methods were not in use long ago.

tic's engineers enlisted the help of the Battelle Memorial Institute in Columbus, Ohio. The first question to be answered was: Is such a plan practical?

After using the nearby Ohio State University cyclotron to activate the element phosphorus, Battelle scientists, with the cooperation of the Perfect Circle Company, manufactured some piston rings, incorporating in the steel of the rings the radioactive phosphorus. The wear debris that came from these rings when they were tested in a laboratory engine was sufficiently radioactive to be measured.

Soon after these developments, the advent of World War II interrupted the experiments. But it had been definitely established that the principle of radioactivity could be used successfully to accelerate and improve wear testing methods. Before abandoning its research for direct wartime projects, Atlantic obtained a patent on its method.

When, after a wartime moratorium on such work, the experiments were resumed, many of the former difficulties had been overcome. The government's work with atomic energy, and the construction of such great research and production centers as Oak Ridge, made it possible to render complete automotive parts radioactive.

Today, radioactive materials are being used by an ever-increasing number of industries and institutions. In the five years that the Atomic Energy Commission has been supplying radioactive and stable isotopes, it has made approximately

26,000 shipments to users in the United States and foreign countries. Mindful of the staggering investment the nation has in atomic energy facilities, the AEC is making every effort to encourage their use even further. As a part of this program, the Institute of Nuclear Physics, at Oak Ridge, offers medical, agricultural, industrial, and educational personnel courses in the use and handling of radioactive isotopes.

Precautions Necessary

Although the peacetime use of radioactive materials is becoming more commonplace, care must be exercised to protect the men who handle these materials from harmful irradiation. From Oak Ridge, the "hot" parts are shipped to research laboratories in thick-walled lead boxes. When not actually in a test engine, they remain in these boxes. When parts are removed for installation, test engineers handling them wear protective clothing.

As a further safeguard, all engineers who spend any length of time in the same room with an engine containing a radioactive part are required to wear a "film badge." This small, sensitive device records the amount of radiation to which the wearer has been exposed. Most film badges, it might be pointed out, indicate that wearers are exposed to far less than the allowable amount of radiation.

As the world reads and hears almost daily of developments in the use of devastating atomic weapons, some encouragement can be taken from the fact that atomic energy—in this country, at least—is being used successfully in a variety of peace-time projects.

Through the utilization of radioactive tracers to bring about better motor oils and better automotive parts, the petroleum and automotive industries will continue to remain in the forefront of industrial users of this modern power.

BLOW THE MYTH DOWN

If wind was the same desired commodity as sunshine, and communities vied for the title of windiest city like California and Florida compete for Sol laurels, Chicago wouldn't have a look-in. By reputation, Chicago is our Windy City. But, say the official statistics, that reputation is wholly unjustified.

During recent years, the Weather Bureau finds, Chicago's winds have averaged a velocity of 10.8 miles an hour. At least seven other major cities can top that. The leader is New York City, with a 14.7 reading. Buffalo ranks a close second, with average winds of 14.5 velocity. Among the other cities which have breezed past Chicago in this regard are Bismarck, Boston, Cleveland, St. Louis, and Toledo. None of these places, however, can surpass the winds of Mt. Washington, N. H. On that White Mountain peak, the winds average 38.3 miles per hour, which is just a shade under what the Weather Bureau considers gale force.

Even in the matter of all-time high winds, Chicago can't hold a candle to a number of other places. The strongest winds ever officially recorded there blew in at 87 miles an hour, not very impressive compared to the 188 mph

buffeting Mt. Washington has taken. In addition, the Weather Bureau has clocked winds in excess of 100 miles per hour in seven cities.

Whatever the locale, most people are inclined to think the winds are blowing faster than they actually are. The next time anyone tends to exaggerate about the speed of the day's wind outside, remind him that velocity has to be 13 mph before the wind is strong enough to blow even a scrap of paper around. That is what the Weather Bureau would call a moderate wind, since it falls in the 13-18 mph range. Anything less than that is a calm, very light, light, or gentle wind, depending upon its exact velocity range. Beyond the moderate range, winds of from 19 to 24 mph are termed fresh; from 25-38, strong; from 39-54, gale; from 55-75, whole gale, and above 75, hurricane. You'll find such designations used in newspaper and radio weather forecasts.

So, if you're in Chicago for the API annual meeting this month, or whenever, just remember that so far as the Weather Bureau is concerned those winds (on the average, of course) are nothing more than gentle breezes.



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THE HEAT'S ON THE Woolly Bears



The caterpillars are predicting still another mild winter.
That raises the burning question: Can they keep up their
mad pace of accuracy, or is this the year they'll cool off?

By George Johnston

IF, ONE OF THESE fine autumn days, the driver in front of you suddenly swerves off the highway, dashes out of his car, picks up a tiny object off the road and plunks it gingerly into a paper bag, bear with him. It is not that he has gone mad. Very likely he is just an amateur weatherman.

The object of such a person's affections this time of the year is a fuzzy, fat little caterpillar, not much more than an inch long and black on its ends and reddish-brown in the middle. This particular caterpillar has a high-sounding scientific name, but you know it better as the "woolly bear." Observant motorists and hikers find the sight of this creature wriggling his way across a highway a common one these days.

Small and unobtrusive as he is, the woolly bear has in recent years kicked up the caterpillar equivalent of quite a fuss in entomological and meteorological circles, by uncannily predicting what kind of winter weather lay just ahead. Since caterpillars don't talk our language, the woolies give out with their cold-weather outlook by means of the

width of the big band on their fuzzy overcoat. Some people might call this "furcasting" the weather, but I choose to skip the pun.

As any woolly bear devotee can tell you, it's all very simple. You merely measure, or just observe, whether the reddish-brown band around the caterpillar's middle is wide, medium or narrow.

An Old Legend

Our Colonial ancestors knew all about the woolly bear legend. What's more, many of them believed it, just as a lot of modern-day folk are coming to put stock in it. Whenever our forebears observed that the middle band of the caterpillar was narrow, there would be renewed activity to make sure that winter clothes were in good repair and that cordwood was stacked high in the shed. But if the furry little fellows showed more reddish-brown than usual around their girth, that au-

gured a mild winter, with the prospect of many a pleasant December-March day for doing outside chores. A band neither what you might call too wide nor too narrow, of course, was a foretoken of a winter somewhere between nasty and nice.

And so it remains. A narrow band on the woolly bears bespeaks a long bitter winter, a medium band an average season, and a wide band a mild winter.

Today, throughout that section of the country not blessed with the year-round sunshine of California and Florida, there is a rebirth of interest in the woolly bears and the portents of their pelts. For, there is a small, but fast-growing, file of scientific evidence that the little double-jointed bits of colored fluff know what they're talking about. And that could be important in many ways.

Imagine, for instance, what a fool-proof method of predetermining a



Tracking down woolly bears is getting to be a favorite fall pastime of motorists in many parts of the country



There's nothing new about the woolly bear legend. Even our Colonial ancestors used to look them up for a winter preview

coming winter's weather would mean to refiners and fuel oil distributors. The petroleum industry just can't "hope" or "think" any given winter will be warmer or colder than normal and operate refineries accordingly. It must at all times, whenever and wherever humanly possible, have adequate supplies of heating oil ready for use by consumers. Two recent winters show how the weather can play hob with the industry's best-laid plans. In 1947-48, the winter was cold and bitter, and many dislocations of fuel oil supplies occurred. The following winter, however, was the warmest in modern annals, with the result that the industry ended up with surplus heating oil on hand.

Shame on Them

Some of my best friends are woolly bears, but I certainly never would suggest at this point that any industry have its statisticians go measure caterpillar bands in lieu of present methods for predetermining seasonal supply and demand. True, the woolies have compiled an astounding record of accuracy in recent years. But they also have a few black marks they'd rather take into winter hibernation with them and leave there. I hate to be a squealer, but let's hark back 63

years — back to the year 1888. I wasn't around at the time. Had I been, I'm not sure I would have thought to check up on the woolly bears. But somebody did, and found the caterpillars were sporting just about the widest bands it is ever stylish for a caterpillar to wear. Remember, now, a wide band means a mild winter. So what happened? Well, regardless of what the over-all weather was that winter, there was that Blizzard of '88!

For the benefit of those who may never have met the woolly bear formally, let me introduce him as one of over 2,000 species in his particular family. In the fall, when you see him (assuming it is a "him") steaming across a highway at a speed several miles an hour less than molasses flowing uphill in January, he's on his way to a hiding place. There, he'll sleep through the winter, and frankly he won't care whether it's a severe winter (narrow band), mild winter (medium-narrow band), or very mild winter (wide band). When he makes his reappearance in the spring, he'll do so as what entomologists intimately call the Isabella Tiger moth.

I personally don't care for moths, but people tell me the Isabella Tiger is a right pretty thing. In fact, the beauty of its "deep damask wings" once caused Keats to break out into poetry. But, leaving Keats and the Tiger moth and getting back to the subject at hand. . .

What lies behind the new respectability of woolly-bear watching? Oddly enough, it started as a whimsey — an amused, tongue-in-cheek enterprise carried out in full scientific exactitude by a very human Ph. D. At the American Museum of

Natural History in New York, the curator of insects and spiders is Dr. C. H. Curran, a broad-shouldered man with graying hair, a neat military mustache, and a pleasant, meditative manner of speaking. Four years ago, Dr. Curran noticed that all the woolly bears he happened to run across that season wore extremely narrow bands. The winter was a severe one, and the coincidence reminded him of the ancient legend.

The following year, 1948, he organized a woolly bear hunt into promising territory — the state park at Bear Mountain, just up the Hudson a piece from Manhattan. It was a benevolent, sun-flecked afternoon, with a crisp and winey tang to the mountain air. Two automobiles set forth, along separate routes, to secure the widest coverage. Each party was fully equipped with all the necessities, the same consisting of one paper bag in which to put the caterpillar specimens. Arrived at Bear Mountain, the groups sat down to compare notes and to tabulate measurements of the 15 prime specimens "bagged" on the trip up.

How to Measure

Measurement turned out to be something of a problem. The uncooperative caterpillars keep stretching and contracting. So the idea of gauging the middle band by inches was discarded. Instead of putting calipers to the woolies, the naturalists measured the width of each middle band by counting the number of brown-haired segments in it.

Some bears, it developed, had four brown segments, some five, and some six — but it averaged out to more than five segments each. Dr. Curran issued the news. The 1948-49 winter would be mild.

And how was that winter? Hardware stores sharpened very few skates. There was no shortage of

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The 1948-49

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automobile radiator antifreeze. Tulip and iris bulbs, supposedly dormant in nurserymen's back rooms, began putting shoots out. When spring rolled around, the Weather Bureau confirmed what the woolly bears had known all along. It was, indeed, a mild winter.

Dr. Curran was quick to admit his complete bewilderment. "I'm really amazed that things have turned out the way they have — because I don't believe it," he declared. "What if future woolly bear surveys show the caterpillars are right 90 per cent of the time? It would rock the foundations of science."

The next fall — it's 1949 now — an October expedition again took to the hills. A new crop of woolly bears was harvested, and middle band segments counted. Then came the pronouncement that the bustling little fellows were predicting a second mild winter. That proved to be the case exactly!

Red-Hot Interest

Scientific interest was at what one woolly bear admirer novelly described as fever pitch. Reports of the Curran expeditions had been published and people were writing in to add their own findings to the accumulated data. People with a big stake in cold weather (like, say, earmuff makers and mitten manufacturers) were beginning to keep an eye, if not an ear, to the ground to learn what the collegiately-coated little caterpillars would have to foretoken about their next season's sales prospects.

Needless to mention, the 1950 findings were eagerly awaited. Our naturalist friends took extra pains. This time they collected an even 60 specimens for observation — for if the low-slung bears were to take over from the meteorologist and the groundhog as weather prognosti-

cators, they must be given a fair test. What was their prediction? Overwhelmingly, they agreed: it would be a mild winter, but not quite as mild as the preceding one. Dr. Curran shook his head. "It doesn't seem likely," he mused. "Still, three mild winters in a row are not impossible."

Like Dr. Curran said, it was not impossible, and so just such a winter came to pass.

Well, where do we go from here?

You can pish-posh the whole affair and continue relying on the Old Farmer's Almanac, which prints up weather predictions some time ahead in uncompromising detail. Or you can wonder, as others have, if maybe the woolly bears haven't really got something up the sleeve of their fur coats.

It may turn out, for instance, that not only can the woolly bears forecast our winter weather in general terms, but in more specific fashion. There is a certain gentleman in the Catskill Mountains who thinks this entirely possible. Back in the last century, it seems, his great-grandfather used to be able to tell just what kind of weather was going to prevail in any given part of the winter season. This he did by examining the number of hair segments in the dark-colored fuzz at either end of a woolly bear. The greater the number of segments, the harsher that corresponding part of winter. One Catskill Mountain woolly bear last year had three black segments at its front end, five and a half reddish-brown segments in the middle, and one and a half black segments in the band around its tail end. "Thus, by Great Grandpa's method," the mod-

ern-day woolly bear devotee translated, "the first part of our winter should be the hardest, the latter part very mild, and the over-all winter mild. I did some predicting on that basis and hit it 100 per cent."

What's Ahead

The other day, as I was writing this piece, a misdirected woolly bear just happened to hitch a ride on the typewriter carriage. Having nothing better to do at the time, I thoroughly inspected this creature's black and reddish-brown bands. I was never a hand at mathematics, but I'm sure I counted five black segments at the front, five reddish-brown at the middle, and two black at the end. If the Catskill mountaineer's great-grandfather had the right dope, I can confidently predict a mild over-all 1951-52 winter ahead, but with some pretty tough sledding during December and January. After that, you can put the sled back in storage.

Some day, this whole business of woolly bear weather-predicting may mean a lot to a lot of people. One thing is certain, however. It will never mean much to the woolly bear himself. He'll be fast asleep in his cozy cocoon, no doubt dreaming of the coming spring when he gets his wings and flutters forth a true Flying Tiger.

Woolly bears have no use for the standard weather forecasting devices. They rely only on the width of their middle band



ETC 32472



It takes driving at its skillful best to win a championship in the trucking industry's annual national competition

WHETHER IT'S THREADING through big city traffic, rolling along the smooth surface of an open highway, or parrying the bumps and curves of an unpaved country road, driving one of today's big trucks demands plenty of ability. Everybody recognizes the vast army of truck drivers — who at one time or another haul everything that America wears, eats and uses — as a skillful group of rugged men. At all hours, through the best and the worst of weather, traffic and road conditions, theirs is the job of keeping the goods moving.

If their personal skill behind the wheel, and their group importance to the nation's well-being are sometimes overlooked by the public, there is one event each year which throws the spotlight on the truck driver and shows just how valuable an asset he is. This event is the National Truck Rodeo, sponsored by the American Trucking Associations. In the large city in which this "World Series of trucking" is contested each October, huge crowds watch in amazement as the cream of the nation's drivers skillfully manipulate big truck and truck-

trailer combinations through a series of intricate obstacles and tricky driving problems that simulate the most difficult situations they are called upon to face on the job. At the end of the exacting tests, four men — the four top truck drivers in America — are crowned national champions in as many vehicle classifications.

Just how well the Rodeo accomplishes its purpose and how popular it has become were dramatically demonstrated a few weeks ago when thousands of interested spectators jammed Chicago's International Amphitheater for the 1951 finals. The drivers really put on a show, awing onlookers by the ease with which they jockeyed several tons of truck around hairpin turns and through narrow spaces.

Started in 1937

Born an obscure competition in Louisville, Ky., 14 years ago, the Rodeo, except for a wartime layoff, has been held every year since its inception. Trucking officials boom it as the "greatest morale builder we've ever had." That is not a surprising statement in view of the prestige and popularity the competi-

tion now enjoys among both drivers and the general public.

It's a rare honor that comes to only a handful of the nation's millions of truck drivers even to qualify for a chance to compete in the national event.

The first rigid requirement is that any candidate for the competition must have just completed at least one full year of accident-free driving. Truck drivers are traditionally — and statistically — the safest drivers, even though they are exposed to every sort of driving condition imaginable and click off as many miles in a year as the average motorist drives in six or seven. These factors, of course, greatly increase the chances for truck accidents, making it an all the more noteworthy achievement for drivers to have a completely clean slate.

So great is the ATA's emphasis on safety that even defending champions, who need not meet other preliminary qualifications in order to compete in the National Rodeo, are required to preserve their safe driving records.

As important and difficult as it is to achieve, an accident-free record is the easier of the two general requirements for participation in the Rodeo. The other, survival of a

series of stiff elimination competitions, comes much harder.

Preliminary contests on sectional, regional, and then state levels start long before the national event is to be held. With the prestige of national championships as the big inducement, competition is exceptionally keen. In all of the contests, it's not just a question of who is the best from a group of drivers; it's who is the best from a group of expert drivers.

Besides an expenses-paid trip to the Rodeo city, drivers win trophies, cash and other prizes, and nation-wide publicity if they come out on top. The winner in each truck class is awarded a large trophy to retain so long as he defends his title successfully, plus a smaller one which is his to keep permanently. He also wins a cash prize of \$50 monthly for a year, while the runner-up gets \$30, and the third place winner \$20 monthly for 12 months.

Victory in his state trials doesn't automatically entitle a driver to a crack at national laurels. State winners must first survive a grueling semi-final competition. From this elimination contest emerge the finalists, each of whom compete with paper and pencil and from behind the wheel for top honors.

More Than Driving

Written examinations are given to make sure that whichever driver is later crowned a champion qualifies for this honor in every sense of the word. It's not enough, ATA official rules say, for him to be an expert at vehicle manipulation alone. He must be familiar with preventive maintenance, safety rules, first aid practices, fire fighting methods, and must be well up on the trucking industry itself. Accordingly, he is asked such questions as: "What space is required to be maintained between interstate vehicles while operating

on the highway?"; "How often should a tourniquet be loosened?"; and "What is a private carrier?".

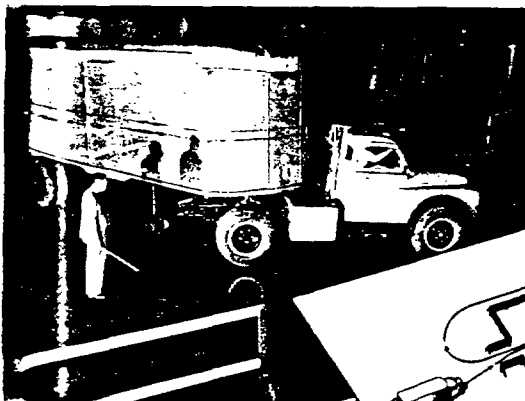
Then, too, before their driving skill is ever tested, drivers are subjected to a thoroughgoing personal appearance test. How they look in uniform, and their general demeanor, are evaluated to make sure their appearance and conduct reflect credit on the trucking industry.

Of a maximum of 400 hard-to-earn points, the written and appearance examinations count 100. The remaining 300 points are sought on the floor of the arena in the exacting driving tests.

For the first three years of the Rodeo's life, these tests were for drivers of tractor and semi-trailer vehicles. Starting in 1940, competition was split into three classes, and for the last couple of years has been open to drivers of four different types of trucks.

The first class is for the conven-

Backing up to an alley loading dock (left), maneuvering through an off-set alley (bottom left), and parking parallel to a curb in a limited space (below), are but three of the driving problems included in the Rodeo obstacle course (diagram)



tional straight trucks with closed van bodies. The others are for dual units. The two tractor and semi-trailer classes are distinguished by the number of rear axles on the trailer body in each. The big trailers in the single-axle class must be between 27½ and 29 feet long and those in the tandem-axle class between 31½ and 33 feet. The largest vehicles are those in the truck full-trailer class.

Time Limits

Before climbing behind the wheel of his vehicle, the driver has a chance to win or lose some of the 300 points allotted to the "practical work" part of the Roadeo. Each driver is required to give his vehicle a preventive maintenance checkup, and, as part of this, must spot a mechanical defect that has purposely been made in the truck.

After completing his vehicle inspection and receiving an explanation of the test course, the driver is ready to match his ability against the strategically-placed obstacles and problems of the driving skill tests. There is an "ideal time" for each class, and drivers are point-penalized if they exceed or undercut this time. At the most, however, drivers in the straight truck class must complete the course in eight minutes or less, while those in the tractor, semi-trailer and truck full-trailer classes are allowed a maximum ten minutes. Failure to finish within these time limits means automatic disqualification.

Obstacles and requirements of the driving tests are of a similar nature every year, but are varied sufficiently to prevent their becoming routine.

One of the tricky favorites is called the "serpentine." In this event, drivers are required to snake their way both backward and for-

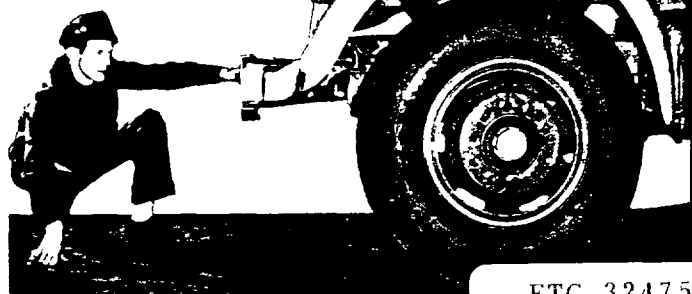
ward through a line of three or more barrels, weaving first to the right and then to the left. Another requirement demands careful driving through a narrow and offset alley or street, wherein the vehicle no sooner noses through the first opening than it must swerve sharply to the right or left in time to gain entrance to the next "street."

A third event calls for driving absolutely straight along a given line with the right wheels following a narrow path between a series of closely-placed guide markers. Parking problems require drivers to maneuver into a limited space parallel to a curb, between two parked vehicles, and to back into a confining alley and stop within inches of a simulated loading dock. The final event involves driving down a lane in which the confines are gradually narrowed and then stopping within inches of a designated finish line.

If any of these sound easy, it should be remembered what the truck driver's problems are. He is in a high cab, handling a heavy vehicle. The projecting body of the truck makes it more difficult than in an automobile to judge the proximity to other vehicles or objects.

Yet with all these handicaps, competing drivers in the Roadeo are penalized if their vehicles so much as touch or scrape a single marker or obstacle. They are judged closely on the safety and accuracy that they use in driving and the general smoothness with which they operate their trucks.

A thorough preventive maintenance inspection of his vehicle by each driver is as important in Roadeo competition as in everyday driving



OUR COVER: Autumn foliage in Stowe, Vt. Kodachrome by Camera Clix. **OUR PICTURES:** Pages 3 (top) and 4 (bottom), courtesy Cities Service Company; pages 3 (bottom) and 6, courtesy N. J. Turnpike Authority; page 5, Camera Associates; page 7, courtesy The Richman Brothers Company; page 8 (top), Frederic Lewis, (bottom), A. Devaney; page 9 (top left), Culver Service, (top right), Ewing Gallo-way, (bottom), Monkmeyer; pages 10 (top), 12 and 13, courtesy Boeing Airplane Company; page 10 (bottom), Acme; page 11 (top), Air Force photo, (bottom), official Department of Defense photo; pages 14 and 15, courtesy Atomic Energy Commission; pages 17, 18 and 19, illustrations by Richee Richman; page 20, courtesy Mack Motor Truck Corporation; pages 21 and 22, courtesy American Trucking Associations.

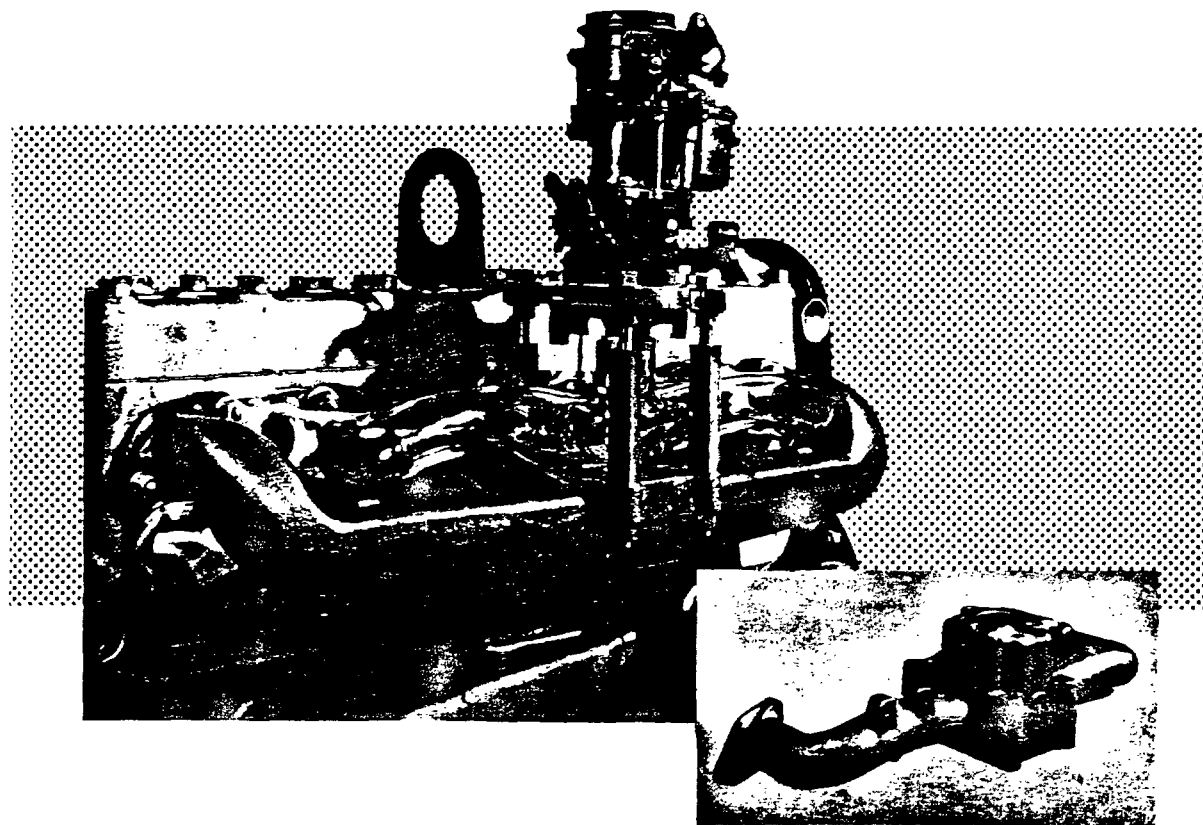
This year, the National Roadeo, like those of the past, was held in conjunction with the annual convention of the American Trucking Associations. It probably was the last time, however, that the two events will run concurrently. The Roadeo has made a name for itself and probably can achieve even more popularity and prominence if it doesn't have to share the spotlight with the annual convention, the ATA has decided.

But no matter where or when it is held, the Roadeo will continue to do more than select four national champion drivers. It will renew the public's interest in something on which everyone is dependent, yet which we often take for granted — the skill of the American truck driver.

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VISIBILITY UNLIMITED

A problem which has long been studied by both the automotive and petroleum industries is that of fuel distribution in engines. Ideally, the engine's induction system should provide each cylinder with a uniform mixture of fuel and air, as well as a uniform distribution of antiknock quality from cylinder to cylinder. Generally speaking, engine fuel distribution has been satisfactory. However, under certain critical operating conditions, ideal fuel distribution is still to be achieved.

Research on the "why's" of fuel maldistribution is being conducted at the Ethyl Laboratories with the object of providing more uniform distribution by modifications in engine design or fuel composition. Recently, a rather unusual "tool" — the all-glass manifold shown in the main photo above — has been employed in these studies. Inset, for comparison purposes, is pictured the glass manifold's conventional cast-iron counterpart.

Among the reasons for non-uniform fuel-air mixture distribution is the fact that the interval between the time the liquid fuel leaves the carburetor jets and the mixture of fuel and air enters the cylinders is too short to provide a homogeneous mixture (even when the fuel is a gas, such as propane). Also, since gasoline is composed of hundreds of different hydrocarbons having a considerable range of volatility, only a portion of it is fully vaporized at the carburetor and in the intake manifold. The remainder of the fuel is thus carried through the induction system as a liquid which may be maldistributed to the cylinders. Experience has shown that the variation in mixture quality between

different cylinders is sometimes equivalent to many octane numbers.

During the last 25 years, a gain of approximately 50 percent in the useful power of automobile engines has been made possible, in part, by large increases in the cross-sectional area of all components of the fuel induction system. However, this, together with other design changes, has tended to accentuate problems resulting from non-uniform distribution of fuel within the engine.

With the experimental glass manifold, Ethyl engineers are now able to observe the flow pattern of the liquid fuel in the manifold as engine speed and throttle opening are varied.

The most useful information is obtained with this equipment when the engine test room is darkened, and the manifold illuminated by means of a stroboscopic lamp. The flashing of the lamp is synchronized with the engine camshaft. Since the camshaft also actuates the intake valves, the light flashes may be timed so that the movement of the fuel appears "stopped" at any desired point. It is also possible to operate the stroboscopic equipment in such a way as to produce an illusion of fuel slow motion.

This specially-designed equipment has shown that the route followed by the unvaporized portion of the fuel changes drastically with variations in engine speed and load, taking unpredictable courses — sometimes even momentarily reversing in direction. These and other observations may in time help provide the final answer to the fuel distribution problem.



We don't hide *your* light under a bushel

We don't believe in keeping the facts about your best gasoline a secret.

For twenty-seven years Ethyl advertising has been telling car owners what your best gasoline will do for them. Starting in 1924, Ethyl advertising and promotion helped establish the premium market — a market which has brought millions of dollars of added income annually to the petroleum industry.

But winning a market is not the whole story. Over the years new car owners come into the

picture and old ones fade away. The market must be held, as well as won — and that's why Ethyl advertising goes on year after year.

This year is no exception.

Ethyl's "powerful difference" campaign is appearing in national magazines reaching more than 56,000,000 readers monthly. And during the peak driving season, television and special drive-in movie films demonstrate why it's smart to use premium gasoline. Day in and day out Ethyl advertising is making car owners conscious of top-quality gasoline.

Ethyl service is backed by 28 years of antiknock experience.



ETC 32477

ETHYL NEWS



A.P.I.

*Annual
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DECEMBER ★ 1951

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ETC 32478

ETHYL
NEWS

DECEMBER ★ 1951



Published by ETHYL CORPORATION, 100 Park Avenue, New York 17, N. Y.

Manufacturer of "Ethyl" antiknock compounds, 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;
Herbert A. Savage, secretary

ETC 32479

AN IDEA AND A MAN

By Keith Fanshier



W. ALTON JONES

The public interest and petroleum industry interest are — or certainly ought to be — one and the same.

So also with service to the public and service to the industry.

And so, too, with those things known as sound public policy and sound industry policy.

It would seem unnecessary to argue these points. But there is an outstanding American citizen and oil man in a position of special attention right now, whose career so well confirms these views that he ought to be called in evidence.

W. Alton Jones, president of Cities Service Co., last month relinquished, in accordance with its by-laws, the important post of chairman of the board of directors of the American Petroleum Institute.

In his two years' tenure, this man has gracefully and productively ex-

tended and climaxed — to date — his contributions to the welfare of his country and his industry. He has done this by wise counsel, keen insight, skilled administration — and hard work. All this has been channeled into a pattern of intense interest in life and his fellowman, in a man who enjoys achievement and is able to effect it.

He has produced a record in these two years that has been a distillation, or an extension, of some of the things that have gone before in his active record. He has had the ideal opportunity, and has used it, to show that it is not only possible, but logical, to merge these two kinds of service into a man's single philosophy and objective. His own personal accomplishments attest this perfectly. More, he has been able to do much toward impressing the same stamp on industry policy.

When W. Alton Jones assumed the

API chairmanship two years ago, it was a difficult assignment. The guiding, stimulating mind and hand of this man, expressed in the new administration of President Frank Porter, in promoting the causes of the Institute and the industry, have also promoted the causes of the public and nation.

His talents have been engaged in a rare combination of steadying and revivifying influence, from which both API and the whole oil and gas industry have profited. And, the man being what he is, that influence has been directed unerringly in the way of what has been best, as well, for the nation.

Oil men have been served well by this man. So has the public. And so, also, has been a great tradition-idea. It is the American idea, and the way he has served it proves again that this idea is not hollow words, but that it really works.



Above, passengers included A. E. Watts, Sinclair Oil vice president, and W. E. Brown, Sinclair Refining.



J. G. Jordan and F. S. Clulow, vps., and President H. S. M. Burns, of Shell.



Checking in for the special API section of the 20th Century Limited out of New York are Roy Goltz, of Ethyl; W. Chalmers Burns, president of Martol Petroleum; L. H. Atkinson, president of Atkinson Petroleum; and Clarence Davison, president of Penola Oil.

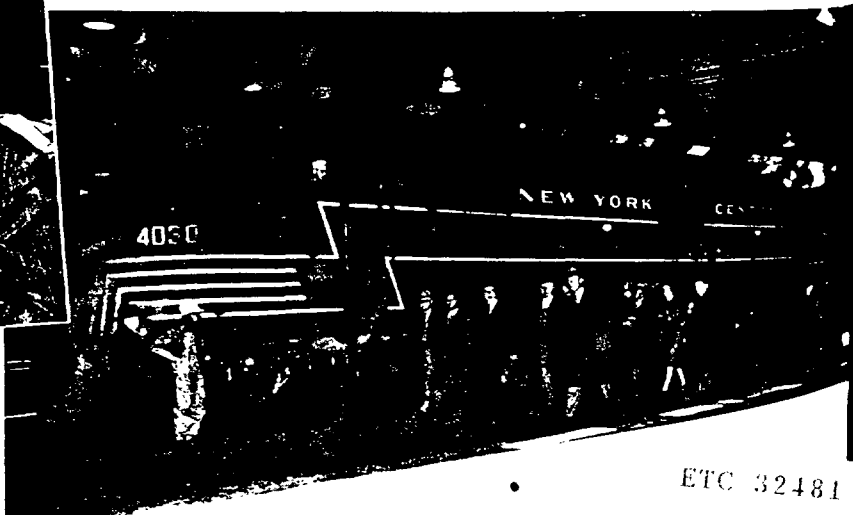
THIS YEAR'S annual meeting of the API (Nov. 5-8), back in Chicago again after a visit to Los Angeles in 1950, will long be remembered as a record-smasher.

First of all, the official attendance of 5,615 was a record, and it is estimated that several hundred additional were present who did not sign registration cards. Record No. 2 was set by the number of group and general sessions — 18 in all. Reflecting the times, two of the several newcomers among the group sessions had to do with the outlook on steel for oil industry use, and with the protection of petroleum facilities.

It was perhaps also a record of a sort that although the annual meeting was scheduled for the Stevens Hotel, traditional Chicago meeting headquarters, it was not held in any place of that name. Only a few days before the convention's start, the hotel's name was changed from the Stevens to the Conrad Hilton — a fact well known to APIers now after countless gags and comments about the situation.

More on the serious side, the 1951 gathering will go down in the annals as one of the most informative, eventful, and fruitful of all the 31 annual meetings conducted thus far.

Bottom left, enjoying dinner together en route to the annual meeting are two company presidents — E. W. Endter, of California Oil, and Harry R. Lewis, of Commerce Oil . . . Below, a group on the LaSalle Street station platform after arrival in Chicago.



ETC 32481



Snapped at a New York airport before take-off were W. Harold (of Bill Foster Associates) and Mrs. Busold, Gilbert (president, Pittston Oil) and Mrs. Sykes, James (president, Waller Petroleum) and Mrs. Drainie, and daughter Diana.



BACK TO CHICAGO



Aboard the Chicago-bound plane, an airline hostess welcomes Stanley P. Gildersleeve, of Penola Oil. In the seat ahead are John J. Franzman, of Crown Central Petroleum, and Russell M. Stein, of Simpson, Spence and Young.



An after-dinner chat aboard the 20th Century is enjoyed by Henry Schwartz, president of Paragon Oil, and William Naden, Esso Standard vice president.



Convention-goers on the special API train included W. Howard Bratches, of Shell Oil.



Above, H. E. Brandli, president of Cities Service Oil Co. (Pa.), and F. H. Meeder, president of Richfield of New York.



For many groups, such as that above, cards offered a means of passing away the time during the train trip to the annual meeting city.



Checking the menu in the dining car are Roger Wilkinson and W. M. Holaday, both Socony-Vacuum.

BACK TO CHICAGO



Above, long lines formed at the room clerk windows in the Conrad Hilton lobby on Sunday afternoon as the influx of oil men began.



Below, B. F. Stradley, Phillips vice president; J. N. Brown, of PAD; and H. G. Dickenson, of Kerotest.



Above, David Cotter, of Roosevelt Oil, looks on as Clarence Sublett, of Franklin Supply, points out his luggage to a bell hop.

Left, Edwin R. Smith, of Carter Oil, pauses to read one of the signs that announced the recent change in the name of the headquarters hotel.



Left, registering are Percy A. Rowland, secretary of Kewanee Oil; Carl Barker, of Shell; and Arthur W. Klinger, of Pennzoil . . . Below, left, in this registration group are R. D. McGranahan and Allan B. Sloss, of Gulf Oil; and James B. Hughes, of Hydril . . . Below, registration crowds reached their peak on Monday. Registrations that day alone totaled nearly 5,000.





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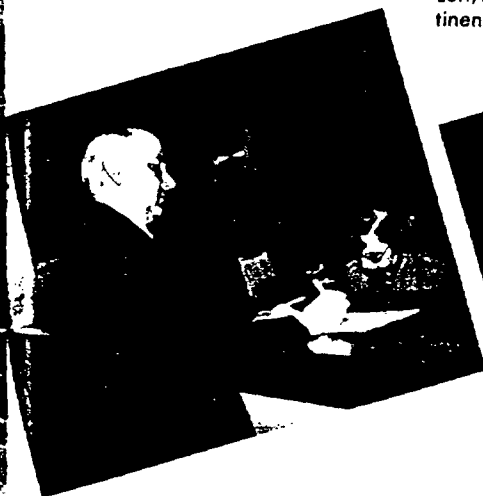


Adding names to the registration board maintained by Platt Publications are George C. Hodgson, of *National Petroleum News*; and William F. Bland and Russ Henriquez, both of *Petroleum Processing*.



Three Southeastern Pipe Line men, R. P. Hamilton, Vice President B. W. Winters, and Secretary-Treasurer J. E. Slider, with D. E. Sullivan, of Pure Oil.

Left, Emerson Smith, of Continental Oil, sends a "safe arrival" wire.



Below, C. W. Butler and V. J. Sittel, of Service Pipe Line, look up the number of a Chicago firm in a telephone directory.



Right, G. F. Graham and Roy A. Dunbar, both of Pacific Pumps, watch for familiar faces from a lobby settee.



Below right, L. E. Kinnannon, vice president of Rock Island Refining, and W. G. Noble, of Magnolia Petroleum.



Left, M. D. Gilbert, of Rockwell Manufacturing, stops to clear the steam from his glasses after coming in from the cold outdoors.

**BACK
TO CHICAGO**

BACK TO CHICAGO



Left, Robert F. Pielsticker, new president of Stanolind Oil Purchasing, an early arrival, looks over some convention literature.

Below, Joseph E. Day, of Lucey Products, makes a telephone call from a hotel booth.



Below, Earnest B. Granville and Ernest E. Merkt, Jr., two Gulf Oil men from Fort Worth, pause to discuss a program announcement.



P. C. Lauinger, president of *The Oil and Gas Journal*; Walter J. Curley, vice president of General American Transportation; and Howard E. Felt, vice president of Warren Petroleum, enjoy a registration room visit.



Three Ashland Oil men, William B. Borst, Roland A. Whealy, and Frank L. Fisher, as the candid camera caught them during a conversation.



Virgil F. Bowyer, of Peoples Natural Gas and the PAD (left), renews acquaintances with P. C. McKenzie and P. M. Calvert, president and secretary, respectively, of P. C. McKenzie Co.



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Above, H. H. Kelly, of Richfield Oil, makes a beeline for the shelter of the hotel in the midst of Wednesday morning's snow squalls, while C. R. Wheeler, left, of the Pennsylvania Grade Crude Oil Association, is content to rely on newspaper descriptions of the record-smashing storm.

FOR THE SECOND year in succession, APIers were weather victims. Returning to Chicago after encountering rain and unseasonal cold in Los Angeles last fall, the oil men ran smack into the worst early-November storm in recorded Windy

City history. Sub-freezing temperatures, an eight-inch snow, driving rains, and biting winds combined to keep many convention-goers indoors most of the time. The first time APIers really saw the sun was when it broke through on Thursday.



Below, left, cold ears was the complaint of J. L. Tune and Conrad Stolzenbach, of Petrolite, when they returned from a Sunday afternoon football game . . . Below, right, Harry Jeffries, of Sinclair Oil, and John J. Deering, a partner in Arthur Young & Co., battle a Michigan Boulevard wind.



Above, Presidents L. F. Ward, of Ward Oil, and J. P. Dunnigan, of Producers Refining, smiled at the snowflakes.



Top photo, the speakers' table at the opening general session. From left to right are Bruce K. Brown, Lt. Gen. Ernest O. Thompson, Frank M. Porter (speaking), W. Alton Jones, and Lacey Walker, API secretary . . . Above, Mr. Brown as he read the speech of Interior Secretary Chapman. Following delivery of the speech, Mr. Brown addressed brief remarks of his own to the huge assemblage.

THE WEDNESDAY MORNING general session in the grand ballroom, first of two held during the convention, was strictly an oil man's event from start to finish.

Frank M. Porter delivered the traditional President's Address as the first major speaker, and was followed by Lt. Gen. Ernest O. Thompson and Bruce K. Brown, the latter reading the speech of Secretary of the Interior Oscar L. Chapman, who was prevented from attending the annual meeting because of illness. Mr. Brown is president of Pan-Am Southern on leave to the Petroleum Administration for Defense as deputy administrator.

General Thompson's appearance was as recipient of the API's Gold Medal for Distinguished Achievement. The citation, instituted at the annual meeting of 1946 and now considered one of the country's fore-

most industrial awards, was presented to the 59-year-old Texan for his many years of "affirmative leadership" in petroleum conservation and waste prevention. General Thompson — soldier, lawyer, petroleum expert, and public official — received the Medal award from W. Alton Jones, the outgoing API board chairman.

During the session, Chairman Jones read the names of six men who, during the annual meeting, were elected to membership on the Institute's board of directors for the first time. They are: O. F. Moore, of The Ohio Oil Company; B. C. Graves, of Union Tank Car Company; Mason Jones, of S. M. Jones Company; Ray E. Miller, of E. I. du Pont de Nemours and Company; Fred Murray, of Oil Well Supply Company; and George O'Leary, of Houston Oil Field Material Co.



General Thompson is pictured here as he delivered his speech of acceptance of the API Gold Medal. His acceptance of the honor, he said, was made with "all humility" and "in the name of oil and gas conservation and for the good work of conservation officials everywhere."

**REPORT
TO THE AP**



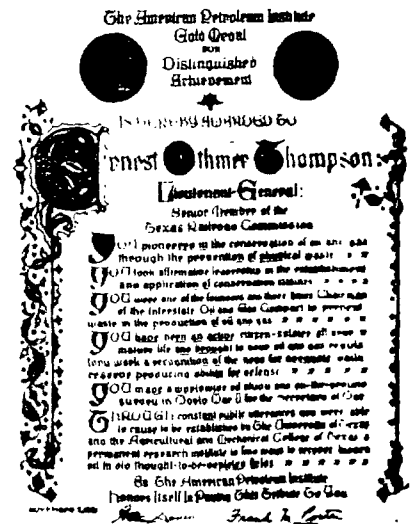
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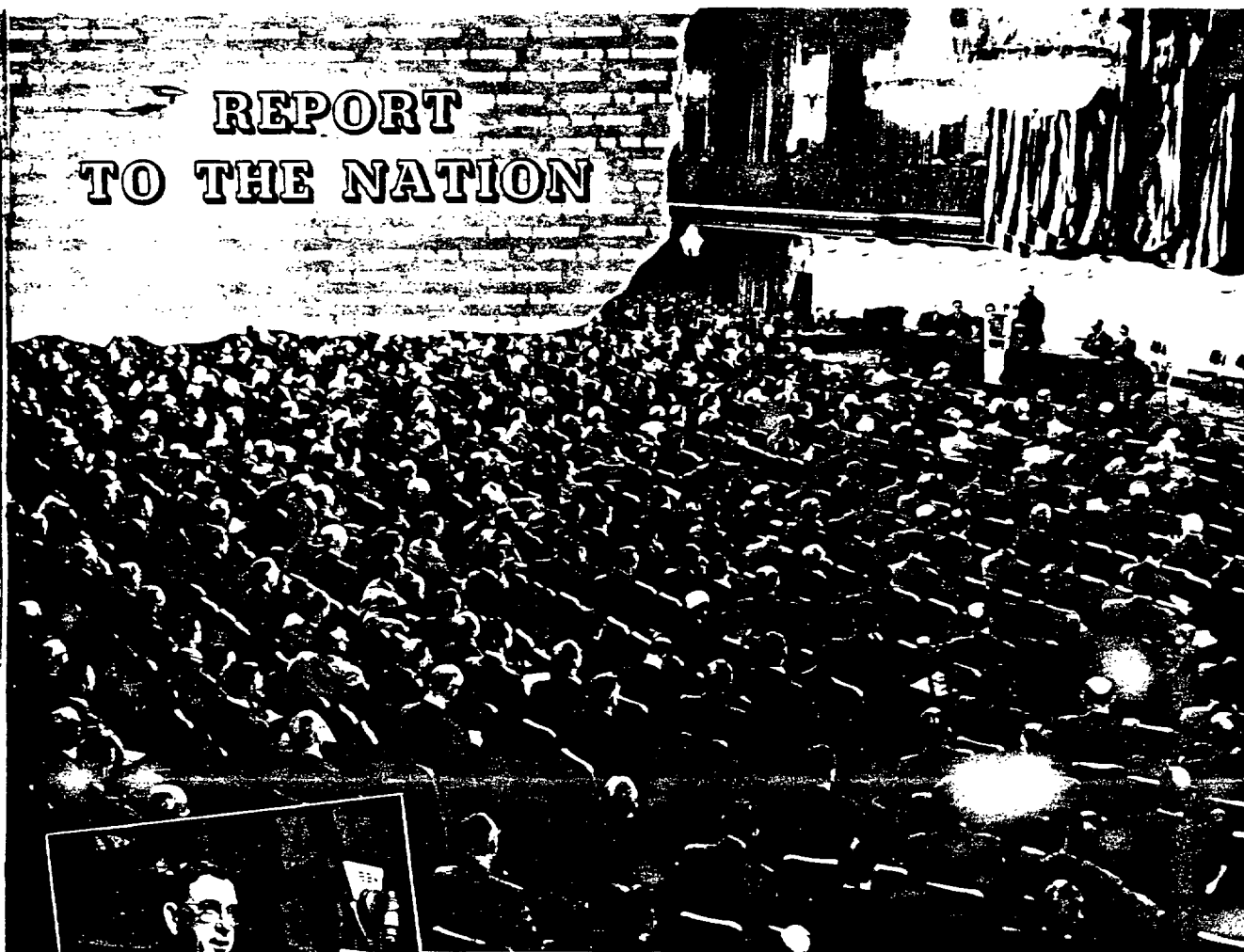
Grouped around the recipient after presentation of the honor award are API Director Amon Carter; Mrs. Burdette Brantz, Mr. Carter's sister-in-law; W. Alton Jones, General Thompson; Mrs. Amon Carter, and Frank M. Porter . . . Right, General Thompson is commanding general of the Texas National Guard.



The Gold Medal scroll salutes Gen. Thompson as, among other things, senior member of the Texas Railroad Commission and former chairman of the Interstate Oil and Gas Compact.



REPORT TO THE NATION



Part of the huge throng which attended the Thursday morning general session is pictured above . . . Left, lead-off speaker Eugene Holman.



THE FINAL general session is always the last major event of each annual meeting. To ring down the curtain on this year's memorable convention, the API called upon three of the nation's outstanding

figures — Eugene Holman, president of Standard Oil Company (N. J.), Gov. Allan Shivers of Texas, and General of the Army Omar N. Bradley.

Despite the seriousness of the



Shown as they addressed the session are Gov. Shivers (left) and Gen. Bradley (below).



L. S. Wescoat, president of Pure Oil, spoke briefly in his first appearance as new API board chairman.





REPORT TO THE NATION

Above, in pre-session conversation are John R. Evans, of Stanolind, and L. L. Rector, president of Rector Well Equipment.

Left, caught by the camera as he prepared to enter the general session was Alfred Jacobsen, president of Amerada Petroleum.



Left, Adm. Louis E. Denfeld and J. N. Pew, Jr., Sun Oil board chairman, attended the Thursday morning session. Admiral Denfeld, former Chief of Naval Operations, addressed an API general session in Chicago two years ago.



Above, George R. Hopkins, of the Defense Production Administration, and Frederic H. Lahee, of Sun Oil.

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times, all three speakers offered words of encouragement for the future.

Said Mr. Holman: "... We are living in an extraordinary period of social and scientific development. It is a privilege, I believe, to be alive in a period of such great happenings."

Said Gov. Shivers: Oil's record of accomplishment is "your answer to the exponents of nationalization. It will continue to be a satisfactory answer as long as it rings true."

Said Gen. Bradley: "I believe that the free world can assume some measure of confidence in our atomic leadership..."

The after-session threesome at right is made up of John W. Brice, board chairman of Carter Oil; P. C. Spencer, president of Sinclair Oil; and Charles Hill, president of Rocky Mountain Oil and Gas Association.



Left, William R. Boyd, Jr., former president of API, poses with his son, William R. Boyd III, of PAD, and R. L. Wheelock, of Wheelock and Collins.



REPORT TO THE NATION



Above, A. W. Peake, president of Standard Oil (Indiana); U. S. Senator Robert W. Kerr, of Oklahoma; and General Omar N. Bradley . . . Left, W. J. McLeod and Fred L. Craise, both of Standard of California.



Left, below, Governor Allan Shivers of Texas, one of the featured speakers at the Thursday general session, pauses in the grand ballroom to converse with Sid W. Richardson, an API director.



Below, Frank Buttram, president of Buttram Petroleum, and Eugene Holman, president of Standard Oil (N. J.).



Above, Lawrence Wolff, of Union Oil, and Arthur C. Stewart, Union Oil vice president.



J. E. Warren, an independent operator, and PAD Deputy Administrator Bruce K. Brown found time for a get-together during the annual meeting. A week after convention's end, it was announced that Mr. Warren would succeed Mr. Brown in the PAD post next June.

THE BOARD



Below, engaged in conversation just before the start of a Board meeting are E. A. Landreth, of his own company, and Clarence H. Wright, president of Sunray Oil.

Flanked by Lacey Walker, API secretary, and Frank M. Porter, API president, W. Alton Jones presides for the last time as chairman of the Institute's Board of Directors. Mr. Jones, having served two consecutive one-year terms, was ineligible to succeed himself in the office.

AMONG THE MANY items of business conducted by the Board of Directors during its busy annual meeting schedule was the yearly election of officers.

L. S. Wescoat was named Board chairman to succeed W. Alton Jones, and P. C. Spencer, president of Sinclair Oil, replaced T. E. Swigart, president of Shell Pipe Line, as vice president for Transportation. All other officers were re-elected, as follows: Frank M. Porter, president; J. C. Donnell II, vice president for Production; W. L. Stewart, Jr., vice president for Refining; Harry J. Kennedy, vice president for Marketing; B. Brewster Jennings, treasurer; and Lacey Walker, secretary and assistant treasurer.

T. S. Petersen, president of Standard of California, places a telephone call from the Board meeting room.



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THE BOARD

The candid camera snapped this study of L. F. McCollum, president of Continental Oil, as he awaited an elevator.



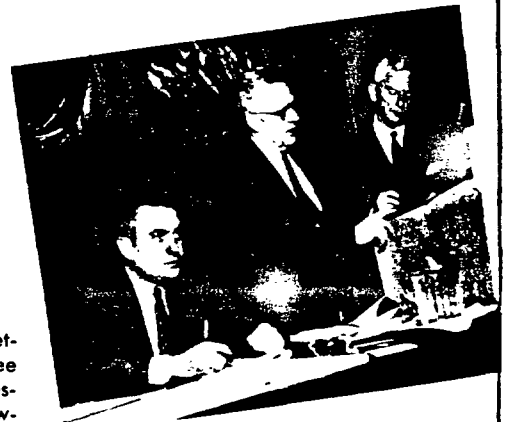
J. P. Langfitt, Pure Oil vice president, and Reid Brazell, president of Leonard Refineries.



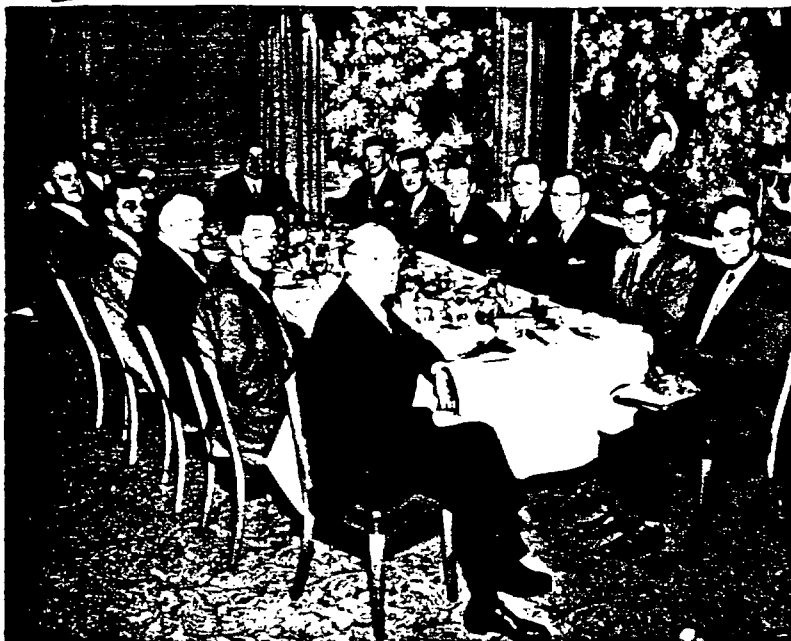
Left, API Director Charles S. Jones, president of Richfield Oil, and David E. Day, Richfield vice president.



Below left, present at the meeting of the Research Committee of the API board were L. S. Westcoat, Clyde T. Foster, W. L. Stewart, Jr., J. W. Foley, R. G. Follis, H. L. Phillips, Lloyd E. Elkins, Dr. Robert E. Wilson, Howard Vesper, Hugh W. Field, John Suman, J. C. Donnell II, Sidney Swensrud, Reid Brazell, and E. O. Mattocks.



Above, Robert H. Stewart and David Stroop, of API, and Joseph Russell, Gulf Oil vice president, who presided as the Board of Councillors (below) nominated API director candidates.



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From a carved ice figure, which has become somewhat of a trade-mark of all API receptions, M. H. Robineau, president of Frontier Refining, serves himself an appetizer.



One of the hosts at the reception, B. G. McCloud, a Standard of Indiana director, chats with Henderson Supplee, Jr., Atlantic Refining executive vice president.



Right, Hines H. Baker, president of Humble Oil & Refining, and T. E. Sunderland, of Standard of Indiana.

FOLLOWING CUSTOM, members of the Institute's board of directors gathered socially on Monday evening before plunging into their full docket of business meetings. Host at this year's reception was Standard Oil Company (Indiana).

A New Yorker and an Oklahoman in conversation — Burl S. Watson, executive vice president of Cities Service, and K. S. Adams, Phillips Petroleum board head.



Above, Paul Blazer, Ashland Oil chairman; M. G. Paulus, Standard of Indiana v.p., and R. L. Minckler, General Petroleum president . . . Below, D. D. Bovaird, Bovaird Supply head; A. W. McKinney, National Supply vice president, and G. A. Tompson, Bethlehem Supply head.



THE BOARD

STEEL FOR OIL

THE "Outlook on Steel for the Oil Industry" was the subject of a new group session held Tuesday morning. Sponsored by the API's Interim Advisory Committee on Alloy Steels, it featured talks by government officials and a panel discussion by authoritative oil men.

Among the things the audience heard were: (1) a prediction that military demands will soon reach a peak and the alloy-steel situation will be near normal by mid-1953; (2) an announcement that a "solution to the alloy shortage appears to be in boron"; and (3) a plea for stepped-up oil industry participation in the scrap metal drive.

Right, M. J. Rose, of Defense Production Administration, described the overall steel picture.

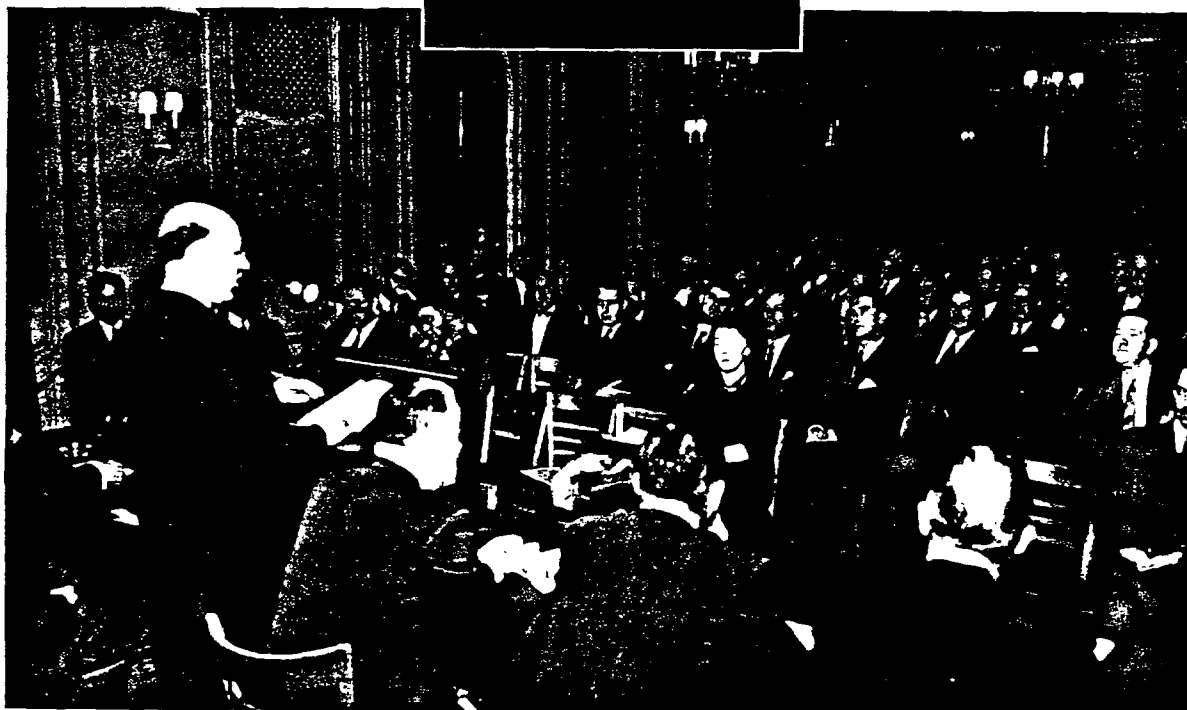


Above, E. V. Bennett, NPA consultant, spoke on the alloy-steel situation.



Left, B. B. Wescott, of Gulf Research and Development, chairman of the API Interim Advisory Committee on Alloy Steels, presided at the session.

Below, part of the audience which attended the producers-refiners interdivisional symposium on the present and future picture of steel availability.



STEEL FOR OIL

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Above, C. A. Dunlop, of Humble; J. J. B. Rutherford, of Babcock and Wilcox; M. S. Northup, of Standard Oil Development; C. H. Samans, of Standard of Indiana, and N. J. Rees, of Socony-Vacuum, took part in a panel discussion on conservation of critical alloys.



Left, W. T. Hoyt, of the Steel Industry Scrap Mobilization Committee, urged oil men to redouble their scrap-collecting efforts.



Above, Joseph G. Wilson, of Shell Oil, a member of the audience, asks a question from the floor. Chairman Wescott is at left.



R. M. Morrison, left, and H. R. Hansen, below, both of PAD, conducted an open discussion on steel procurement.



Above, three Permollite men, William R. Lawton, Pierre R. Welch, vice president; and John A. Kilday, discuss the program speakers and their subjects.



Right, George Entwistle, of Sinclair Refining; B. J. Heinrich, of Phillips; and S. S. Kurtz, Jr., of Sun, go over some papers.

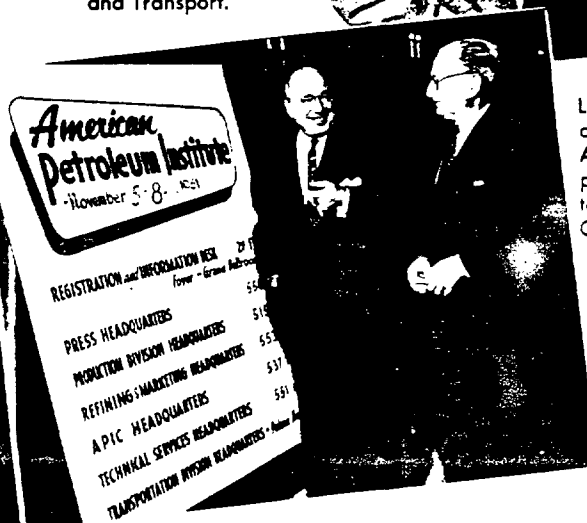


HERE AND THERE

Right, M. E. Foster, of Phillips Petroleum; and A. A. Corona, vice president of Pan-American Petroleum and Transport.



Left, A. F. Maxson, of Carter Oil; and Arthur J. Daniel, president of Battenfeld Grease & Oil, chat near a directory sign.



The outer lobby, near the Michigan Boulevard entrance to the Conrad Hilton, was a popular meeting and visiting place.

Below, Ralph Booker, of National Co-operative Refinery Association; and W. G. Tierney, executive vice president of Derby Oil.



Below left, E. N. Kimes, of Pan-Am Southern; Joseph Costello, Ethyl vice president; H. A. Heiss, of Pan-Am; R. T. Colquette, vice president of Pan-Am; and Alan Tully, of Ethyl . . . Below right, three Utah Oil Refining vice presidents: Frank R. Clark, Ashby J. Badger, and A. N. Johnson.



ETC 32497



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John O. Lamphier, of Armed Services
Petroleum Purchasing Agency; C. R.
Smith, president of Oils, Inc.; and Lt.
Col. R. S. Thomson, chief of USAF
Headquarters fuels division.



HERE AND THERE

Kansans all are G. J.
Peterschmidt, vice presi-
dent, and Clarence Rice
both of El Dorado Re-
fining, and Eddie Jones
of Derby Oil.



Left, Stuart Forbes,
of Ethyl, empha-
sizes a point to
Karl Shimeall,
Crown Central vice
president, and H.
B. Stone, of Atlan-
tic Refining.



Conversing here are E. G. Gay-
lord, California Research vice
president, and Frank Clark, of
Ohio Oil.



Left, in a quiet cor-
ner, B. W. Blan-
pied, of Gulf Re-
fining, relaxes,
while G. B. Lamb,
of Gulf Oil, puffs
cigar smoke.

Right, lighting a cig-
arette, is John E.
Boudler, Roosevelt
Oil president.



Bottom left, two company
vice presidents exchange
greetings. They are T. J.
Sullivan, of Gulf Oil, and
J. A. LaFortune, of Warren
Petroleum.



M. C. Hagar, of Na-
tional Cooperative
Refining Association,
and M. D. King, of
Ohio Oil.

HERE AND THERE



News of a threatened rail strike interested J. L. Dwyer, of the API staff.



Left, a smiling two-some are Dewitt T. Ring, Waverly Oil Works vice president, and J. J. Schmidt, of The East Ohio Gas Company.



Above, the H. G. Simpsons, of Simpson Oil, formed a father-and-son team.



Left, photographed as they mounted the steps leading to the registration room were W. R. Argyle, vice president, and R. G. Arner and Thomas B. Kimball, all of Sinclair Refining Co.



Above, T. A. Brown, president of Empire State Petroleum Assn., and Sam S. Seltzer, Royal Petroleum president.

Right, O. D. Robinson, Republic Oil board chairman, and Norman Meyers, of Washington, D. C.



Below, J. T. Wood, Jr., Texaco vice president, and L. L. Aubert, president of Bankline Oil.



Above, W. G. Skelly, president of Skelly Oil.

Below, George Williams, of Chek-Chart Corp. (center), explains a device to Robert Spiro and Lee Spencer, both of Union Oil.



ETC 32490

MARKETING



TWO GROUP SESSIONS and an informative meeting of the Committee on Development of a Service Program for Marketers highlighted the annual meeting activities of the Division of Marketing.

Harry J. Kennedy, vice president of Continental Oil Co., presided at the group sessions as API vice president for Marketing. Chairman of the committee meeting was B. L. Majewski, president of the Great American Oil Co. and former API vice president for Marketing.

Speakers at the Monday afternoon group session were John Harper, president of Harper Oil and newly-

re-elected chairman of the National Oil Jobbers Council; C. L. Burrill, director of the program division of the Petroleum Administration for Defense; and Robert W. McDowell, president of the Mid-Continent Petroleum Corp. Mr. Harper and Mr. McDowell discussed jobber problems, while Mr. Burrill provided an extensive forecast of petroleum supply and demand for 1952.

The Tuesday morning group session was an open business meeting, devoted to the hearing of several committee reports and the election of members to the Marketing Division's general committee.

Featured speakers at the Monday afternoon Marketing group session were (starting with top photo) John Harper, C. L. Burrill, and Robert W. McDowell . . . Below is seen part of the assemblage that attended the session . . . Inset, below, Harry J. Kennedy, who presided at the two Marketing group sessions.

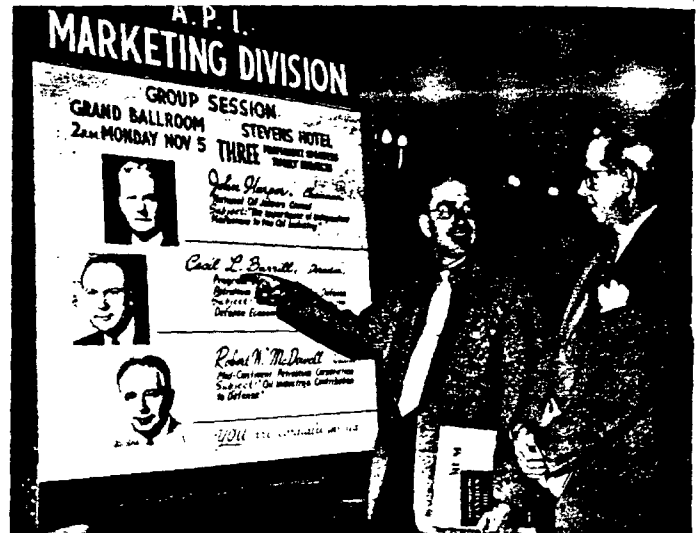


MARKETING



With bulging briefcases are B. L. Majewski and B. S. Adamowski, Great American Oil president and executive vice president.

Left, A. A. Stambaugh, Standard of Ohio chairman. Beside him are M. F. Hanning, also Sohio, and A. L. Bailey, Canfield Oil head.



Above, two Skelly Oil men, A. E. MacGee and E. C. McGurgen, consult a poster announcing a Marketing group session . . . Below, E. J. McClanahan, Standard of California vice president, addresses the Committee on Development of a Service Program for Marketers. Seated is A. L. Nickerson, Socony-Vacuum vice president.



By a Marketing session film projector are L. T. White, of Petroleum Advisers, and C. C. Camp, of Standard of California.

Left, Everett F. Wells, executive vice president of Ashland Oil and Refining, reading the report of the Marketing Division's nominating committee at the Tuesday morning group session.





Posed before the "Your Progress and Oil Progress Go Hand in Hand" banner that hung in the hotel grand ballroom are J. A. Lentz, of Continental Oil; Harry B. Hiltz, secretary of the Empire State Petroleum Association; and J. L. Wait, of Continental Oil.

MARKETING



Above, Leslie R. Neal and E. K. Bennett, president and past president of Texas Oil Jobbers Assn.; S. L. Hjermstad, Hjermstad Oil owner; and G. W. Hofmayer, TOJA secretary.



Right, sharing a laugh during a between-sessions conversation are Donald R. Waugh, of the Oil Industry Information Committee; T. E. Fitzgerald, vice president of Mid-Continent Petroleum; and L. E. Ulrope, vice president of Esso Standard Oil.



Above, this smiling threesome is C. A. Schrader, vice president of Michigan-Ohio Pipe Line, and R. J. Oosdyke and L. A. Woodward, vice president and president, respectively, of Mid-West Refineries.



Engaged in the stairway conversation above are A. H. Reed and J. E. Schwade, president and vice president of Ohio River Oil, and W. E. Glover, president of Market Independent.



Reading matter occupies the attention of Dwight T. Colley, vice president of Atlantic Refining, and Herbert Willetts, a Socony-Vacuum director, as they await the start of a session.

MARKETING



Headed up the stairs are Willis F. Roth, Standard of Kentucky vice president, and Herbert Clay, Kentucky Petroleum Marketers Assn.



Above, W. Tom Jones, a past president of the National Oil Jobbers Council; L. E. Moody, vice president of the Alabama Petroleum Jobbers Assn.; and E. F. Bock, owner of Bock Oil ... Left, Brown L. Meece, Sinclair Refining vice president, and N. T. Stover, of Ohio Oil.



By an Ethyl-inspired service station dealer ad display are Oliver S. Ambrose, of Tide Water Associated, and Clarel B. Mapes, of Mid-Continent Oil and Gas Assn.



Paul C. Boyd, of Cities Service Oil, and R. J. Hull and B. E. Rawlings, both of Petroleum Advisers, exchange some pleasantries between convention sessions.

ON GUARD

The Protection of Petroleum Facilities group session was presided over by W. R. Boyd III.



In his speech, Ned H. Dearborn praised the oil industry for its outstanding effort in the field of industrial safety.



A TIMELY newcomer to the list of group sessions at this year's API annual meeting was the one on Protection of Petroleum Facilities. Held on Monday evening, the session was presided over by W. R. Boyd III, who is director of the Petroleum Administration for Defense's facility security division.

Three nationally-known speakers addressed the large crowd that attended. Ned H. Dearborn, president of the National Safety Council, spoke on the subject of "Manpower — Why Must We Waste It?" Vice Admiral Merlin O'Neill, commandant of the U. S. Coast Guard, had as his topic "Port Security," and Rear Admiral B. B. Biggs, of the Munitions Board, spoke on the "Effect of Plant Security Upon Military Supply."

Another feature of the session was the presentation of API Certificates of Appreciation to three retired oil men — Joseph C. Bernd, Roy S. Bon-sib, and C. Elmer Townsend.

The need for vigilant security in America's vital port areas was cited by Vice Admiral Merlin O'Neill, Coast Guard chief.



Below, second admiral to address the group session was Rear Admiral B. B. Biggs, of the Munitions Board.



Dining companions at a joint luncheon of the central committees on Fire Protection and Accident Prevention were R. T. Henderson, of Standard of Ohio; Franklin G. Wilson, API director of safety, and W. O. Wilson, of Standard of Indiana.



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AT RANDOM



In deep conversation are Claude Barrow, of the *Daily Oklahoman*, and Maynard I. Landa, of Petroleum Advisers.



The window-shoppers at left are David Cocks, Standard of Kentucky vice president, and Gulf's R. C. Arnold.



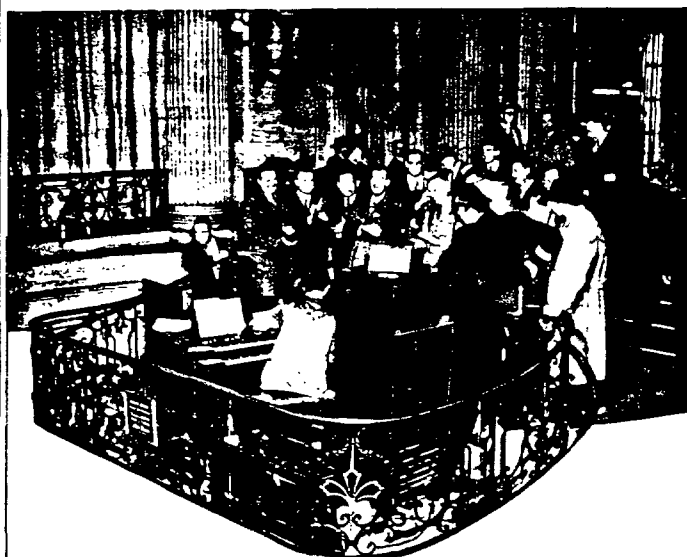
Right, caught in a pensive pose was Ralph O. Dietler, Stanolind Oil Purchasing board head.



Left, Taylor Refining vice president Neil Buckley buys a pack of cigarettes.



Right, on their way from a session are three vice presidents — John A. Bartlett, of American Mineral Spirits; Clayton Maxwell, of Frontier Oil; and F. F. Sweeton, of Royal Petroleum.



Left, the mezzanine organ concerts were a favorite with APIers.

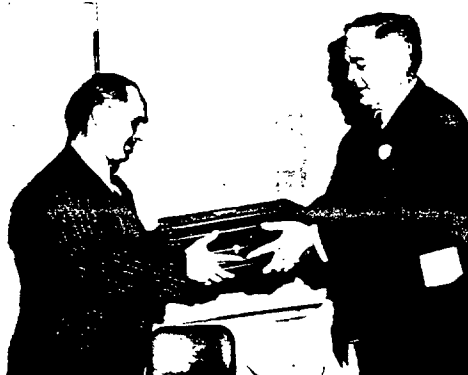
Below, a familiar sight during the annual meeting was the company room signs on the various hotel floors.



Right, Charles Z. Hardwick, Ohio Oil vice president (seated, center) was named new national Oil Industry Information Committee chairman. Seated beside him are Stanton K. Smith, president of Smith Oil, and W. N. Finnegan, of Humble Oil, new OIIC vice chairmen. Standing are John S. Cooke, committee secretary; and Philip Humphrey, of Texaco, and Ralph Carey, of Shell, both also new vice chairmen.



AT RANDOM

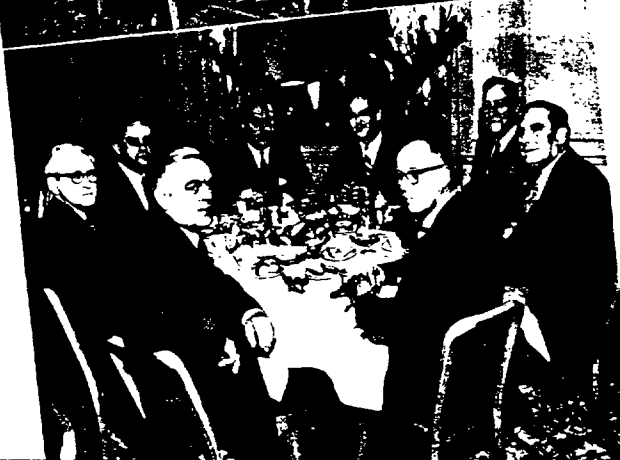
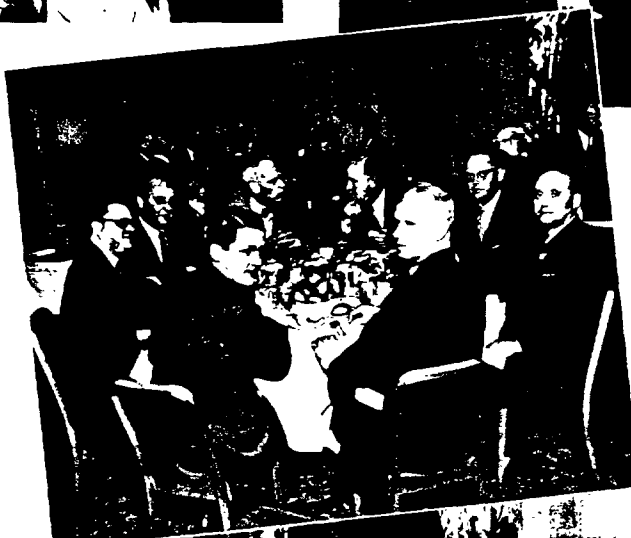


Above, Mr. Hardwick presents a gift to outgoing OIIC chairman John Dupree.



Participants in a Monday OIIC session were Gen. James Doolittle, Shell Oil vice president, and H. L. Curtis and Selwyn Eddy, both also of Shell.

At these OIIC dining tables are (top photo) C. Haines Finnell, Union Oil; Len Castle, NPN; M. S. Hauser, Ohio Oil; Jack Smock, of Foote, Cone & Belding; C. E. Simons, Texas Mid-Continent Oil and Gas Assn.; Stanton Smith, Smith Oil; Harry E. Milton, Milton Oil; and John Harper, Harper Oil . . . Bottom photo shows C. Z. Hardwick, Ohio Oil; Conger Reynolds, Standard of Indiana; H. B. Miller, API; Douglas Campbell, Pure Oil; John Dupree, representing Socony-Vacuum; A. W. Peake, Standard of Indiana; Reese Taylor, Union Oil; and F. O. Prior, Standard of Indiana.



REFINING

Featured speaker at the Refining group session on Wednesday afternoon was R. G. Follis.

BOARD CHAIRMAN R. G. Follis, of Standard Oil Company of California, was the featured speaker at the only group session conducted by the Division of Refining.

Speaking on "Middle East Oil and Product Availability," Mr. Follis, while stressing the importance of Middle East oil to the security of the anti-Communist world, said he saw no possibility that such petroleum would reach American markets in volume. "I am certain," he declared, "that our domestic producers need have no fear that 'cheap' Middle East oil will flood their markets in the United States." The natural market for this crude, he explained, is the Eastern Hemi-

sphere, particularly the great industrial areas of Western Europe.

Referring to the situation in Iran, where the petroleum industry recently was nationalized, Mr. Follis discounted Russia's ability to acquire any sizeable amount of the output of that oil-rich Middle East state. He pointed out that Russia has tankers sufficient to move but a token amount of Iranian oil, and that at least two "big inch" pipelines would be needed to ship the oil overland into the Soviet.

William L. Stewart, Jr., executive vice president of Union Oil Company of California, presided at the session as API vice president for Refining.

Held in the hotel's north ballroom, the Refining session drew an interested audience, part of which is shown below . . . Inset, C. M. Ridgway, of Pure Oil, who gave the Division's nominating committee report.

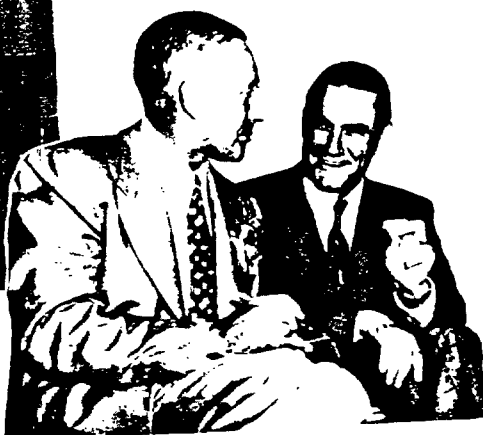


W. L. Stewart, Jr., as he presided at the Refining session.





Above, a get-together between A. L. Huether, of Pacific Supply Cooperative, and Clarence O. Anderson, of Rock Island Refining . . . Right, both of Mohawk Petroleum are L. W. Friedman and Clay Thompson.



REFINING



In this Tulsa quartet are J. H. McLaughlin, J. S. Bellah, and H. V. Flemming, all of Refinery Engineering Co., and W. M. Gebo, of Ingersoll-Rand.

Right, among the several PAD officials who attended the annual meeting was T. L. Apjohn, on leave from Socony-Vacuum.



Above, W. J. Carthaus, Deep Rock Oil vice president; J. C. Day, WPRA secretary-treasurer, and R. C. Alden, of Phillips Petroleum.



Above, C. A. Day, Jr., of Richfield Oil, and S. S. Johnson, of Stone & Webster Engineering Corp.

Among those present at the Refining session were John T. McCoy, of Tide Water Associated, and E. B. McConnell, vice president of Standard Oil Co. (Ohio).



FINANCIAL AND ACCOUNTING

TOPICS OF IMPORTANCE to all members of the oil industry, but of particular interest to those who handle its finances, were discussed at the two Financial and Accounting group sessions held on Tuesday morning and afternoon. In its second year as an API annual meeting feature, the Financial and Accounting event offered key speakers who covered a wide range of subjects.

Among other things, for instance, the audience heard a prediction that the petroleum industry's additional capital investment for expansion to meet the free world's ever-growing demand for oil products may total over \$23 billion in the next ten years. This figure, the speaker pointed out, was based on forecasts that world demand will increase 36% in the next decade.

Elaborating on this point, other speakers discussed the financing of the petroleum industry expansion program and painted the entire economic and financial outlook picture for the expansion period. On more technical matters, taxes, cost controls and other subjects were covered.

Left, Alfred E. Wolf, vice president of Standard Oil (Ohio), presided at the morning session . . . Below, part of the audience listening to one of the speakers at that session.



Left, two of the morning meeting speakers: Thomas W. Phelps, of Socony-Vacuum (extreme left), who discussed financial implications of increased oil demands; and W. H. Saunders, Jr., of Metropolitan Life Insurance, who discussed the cost of the industry's expansion program.

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FINANCIAL AND ACCOUNTING

Left, Financial and Accounting speakers N. M. Fillastre, of Esso; R. V. Miller, of Shell; and V. L. Elliott, of Atlantic; and J. R. Mulvey, of Humble, the presiding officer.



Above, William J. Sherry, president of Sherry Petroleum, is flanked by Lyon F. Terry and Joseph E. Pogue, vice president and petroleum consultant, respectively, of The Chase National Bank of New York.

Below, four interested session-goers were Raynor Sturges, of Pure Oil; Rawleigh Warner, Jr., of Continental Oil; Serge B. Jurenev, vice president of Continental; and John L. Auch, vice president of Great Lakes Pipe Line.



Below, D. W. Michener, of The Chase National Bank, spoke on "The Economic and Financial Outlook for the Expansion Period."



Below, in a post-session discussion are A. R. Bell, Jr., of Deep Rock; C. A. Pfahler, H. H. Boyer, F. A. LeCates and D. P. Jones, of Sun; and C. R. Perkins, secretary-treasurer of Mid-Valley Pipe Line.



ETC 32510

A.P.I.C. FORUM



George V. Holton, recipient of a Certificate of Appreciation, awarded at the group session.



Samuel B. Pettengill delivered a speech entitled "Don't Let America Go by Default."



James Richards, of the Iowa Petroleum Industries Committee, narrated the film.

A CHALLENGING speech by Samuel B. Pettengill, former Congressman from Indiana and now a member of Pure Oil's legal staff, and presentation of an API Certificate of Appreciation to George V. Holton, Socony-Vacuum Oil Com-

pany board chairman, highlighted the Tuesday afternoon group session sponsored by the American Petroleum Industries Committee. Oscar John Dorwin, of The Texas Company, presided as A.P.I.C. chairman. The award to Mr. Holton, made

in absentia, was in recognition of his many years of outstanding service to the petroleum industry in the field of government relations.

Concluding feature of the session was a film, "It's Your Business," telling how laws are enacted.



Among the features of the group session witnessed by the large crowd above was presentation of Mr. Holton's Certificate of Appreciation (left). Oscar John Dorwin, session chairman, made the award to A. T. Foster, Socony-Vacuum's general counsel, in Mr. Holton's absence.



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At the A.P.I.C. session, James J. Cosgrove, Continental Oil board chairman, is welcomed by Baird H. Markham, A.P.I.C. director.



Interested onlookers were R. F. Windfohr, president of Texas Mid-Continent Oil and Gas Association, and C. E. Yager, president of Texas Pacific Coal and Oil.



The daily Memory Car contest sponsored by American Petroleum Industries Committee was a feature of the annual meeting. Top right, A. P. Farr and Henry Woods, both of Hughes Tool, inspect a showcase model . . . First winner in the contest was L. M. Glasco, president of Proven Oil, shown (upper right) with his prize . . . Right, an A.P.I.C. assistant explains the Memory Car display to Hugh Stewart, Interior Department oil and gas director, and Dr. Jose Martorano, of the Venezuelan Embassy . . . Below, W. B. Aronow, president of Unity Petroleum, fills out his contest entry blank.



A.P.I.C.
FORUM

BETWEEN THE ACTS



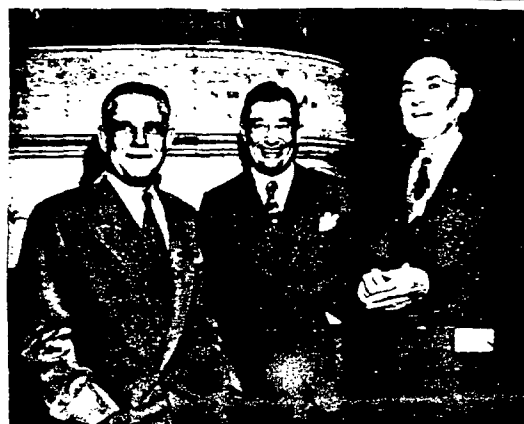
Richard C. Sauer, Sohio vice president, takes time out from a busy convention schedule to catch up on his newspaper reading.



Top right, B. E. Crandell, secretary-treasurer of State Oil; and E. W. Anderson, of Cities Service, as they were snapped by a vocational training display.



Right, three oil company vice presidents in an informal get-together: C. O. Garbrecht and Leo L. Leabo, of Bay Petroleum; and Frank W. McCurry, of The Derby Oil Co.



Right, S. M. Wagner, Ethyl vice president; J. F. Adams, vice president of Bowser; and M. P. Murdock, of Ethyl, enjoy a moment of pleasant conversation.



Left, Bryan S. Reid, of Socony-Vacuum, new president of the 25-Year Club . . . Below, a view of some of those attending that club's annual dinner.

ETC 32513



WHEN FRIENDS MEET



All of the pictures on this page were taken at the Continental-Emsco-Youngstown reception . . . Above, J. Gerald Godsoe, vice president of British American Oil, reaches for a buffet table snack.



Left, J. Neal Mancill and Ben C. Ball, vice presidents of the Republic National Bank of Dallas.



Some idea of the number of people that thronged the attractively decorated ballroom for the huge party can be gained from this balcony view of the main floor.

TO PROVIDE social breaks in a busy convention schedule, a number of luncheons, receptions and dinners were held. Among these were the Continental Supply-Youngstown Sheet and Tube-Emsco Derrick & Equipment reception, the Magnet Cove Barium Corporation (Magcobar) luncheon, and the Gulf Oil and Universal Oil Products receptions.

Largest of such affairs, from an attendance standpoint, was the Continental-Youngstown-Emsco party, held on Tuesday evening in the grand ballroom of the Conrad Hilton. Earlier the same day, the Magcobar buffet had attracted a large number of APIers to the Exhibition Hall.

The Blackstone Hotel was the scene of the UOP and Gulf receptions on Wednesday evening.

Below left, Ira Walker, president of Pan American Pipe Line; and Clarence V. Beaton, vice president of Industrial Raw Materials Corp., make up this busy party twosome . . . Below, R. M. Gray and Albert W. Gentry, of Long Beach Oil Development; and Brad Mills, vice president of American Assn. of Oilwell Drilling Contractors.



WHEN FRIENDS MEET



On this page are scenes from the Gulf Oil party . . . Above, Wiley Butler, president of Coastal Oil; E. W. Berlin, of Standard-Vacuum; and Claude Woessner, of the host company.



Ralph O. Rhoades, Gulf vice president; and J. M. Halliwell, also of Gulf, as the camera recorded their presence at the reception.



C. J. Livingstone, of Gulf, and Brig. Gen. Alfred H. Johnson, of the Munitions Board, in a social hour get-together.



Thomas E. Sandusky and H. Charles Seelhorst look over a Gulf sign at their company's party.

Below, R. W. Pitcher, of Pan American Production; D. L. Wolfe, executive vice president of Stanolind Oil Purchasing; George C. Morris, vice president of Pure Transportation; Wallace M. Luthy, of Ashland; and Robert Kepke, British American Oil vice president, at one of the buffet tables.





WHEN FRIENDS MEET

Below, J. W. McCausland, of Universal Oil Products; and Ray W. Thompson and D. C. Corson, of Griscom-Russell, enjoying a moment of relaxation at the U.O.P. reception.



It was a pleasant time for guests of Universal Oil Products as APIers by the hundreds crowded the Blackstone ballroom for Wednesday evening's festivities.

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The Magcobar buffet luncheon attracted hundreds of APIers. Above, two guests at one of the attractively-arranged serving tables.

Below, George O'Leary, president of Houston Oil Field Material; John B. O'Connor, vice president of Dresser Industries; Willard M. Johnson, president of Magcobar; and W. C. Ray, also of Magcobar, at the entrance to the Magcobar buffet luncheon.



PRODUCTION



DURING ITS TWO group sessions on successive afternoons, Tuesday and Wednesday, the Division of Production heard discussions of a variety of technical matters as well as talks on the general subjects of "The Near East Today" and "The Importance of Technology in Developing Oil Production."

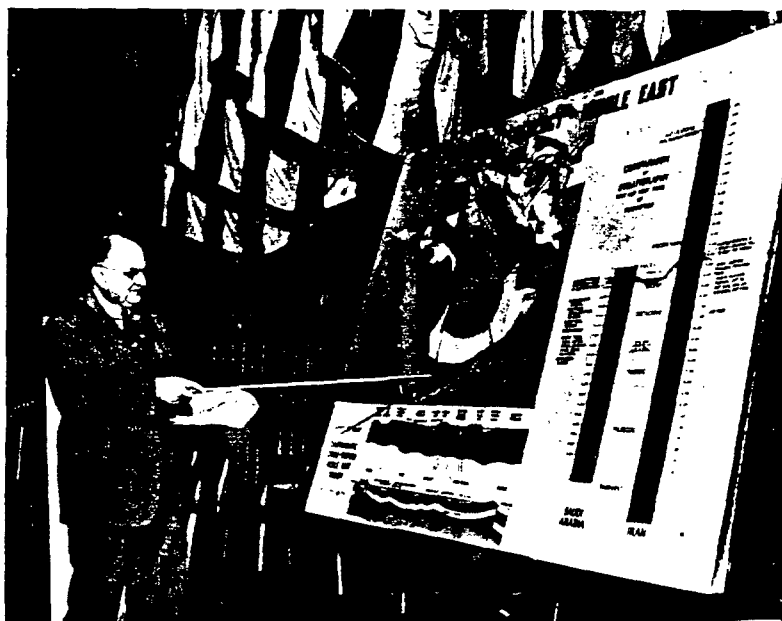
The latter speeches were delivered at the Wednesday meeting by J. Terry Duce, vice president of the Arabian - American Oil Company, and C. E. Reistle, Jr., a director of Humble Oil & Refining Company.

Particularly significant at the Tuesday session was disclosure that a new thread compound for deep well tubular goods has been developed. The announcement was made

by M. G. Mayberry, of the Mellon Institute of Industrial Research, which has been conducting the thread compound search for the past two years under auspices of the API Committee on Standardization of Oil Country Tubular Goods. Mr. Mayberry said that the compound is satisfactory for the tubular goods subjected to the high pressures and temperatures of the deep wells now being drilled by the oil industry.

Other speakers heard by the Production group were H. H. Kaveler, of Phillips Petroleum Company, and Paul D. Torrey, of Oil Recovery Chemicals. A training film about handling and running casing was given its premiere at the Tuesday session.

Participants in the Wednesday afternoon Production group session pictured on this page were (top left) F. H. Willibrand, of Sohio Petroleum Co., who read the Division's nominating committee report . . . (left) C. E. Reistle, Jr., a featured speaker . . . (bottom left) J. C. Donnell II, API vice president for Production, who awarded Certificates of Appreciation . . . and (below) J. Terry Duce, as he illustrated his talk by means of a map.



A co-chairman of the Tuesday afternoon group session was W. L. McCloy, Jr., of Sohio Petroleum.



The other Tuesday meeting co-chairman was Glenn M. Stearns, of British-American Oil Producing.



Above, M. G. Mayberry announced development of a new thread compound for use in deep well drilling.



George E. Cannon and R. O. Garrett presided at the Wednesday group session as co-chairmen. Mr. Cannon is with Humble Oil & Refining, and Mr. Garrett is associated with Arkansas Fuel Oil Co.



Left, Paul Torrey reviewed some of the more important water injection projects.

In his speech, H. H. Kaveler (right) revealed that unit operations to accomplish maximum recovery of oil and gas from a production pool are adding to U. S. reserves.



PRODUCTION

AGRICULTURE



New chairman of the API Committee on Agriculture is M. C. Enright, of Gulf Oil.

SHOULD ENEMY BOMBS cripple any of America's great industrial centers, they would at the same time deal a paralyzing blow to vital farm production, Don Lerch, of the *Washington Farm Reporter*, told the Agricultural group session on Monday morning. For, without sufficient oil to operate modern farm machines, he pointed out, "we would surely go hungry."

Second speaker at the session was Prof. Randall C. Swanson, of the University of Wisconsin's college of agriculture. His topic was "Indus-

tries Help in Making Farming a Safer Job." After citing several statistics, particularly those dealing with injuries and deaths resulting from farm tractor mishaps, Prof. Swanson said it is "quite evident that any change in our accident record must be through an educational approach, and not through legislation." In that connection, he commended the API for sponsoring a new technicolor motion picture entitled "Farm Tractor Safety," which was publicly previewed for the first time at the group session.

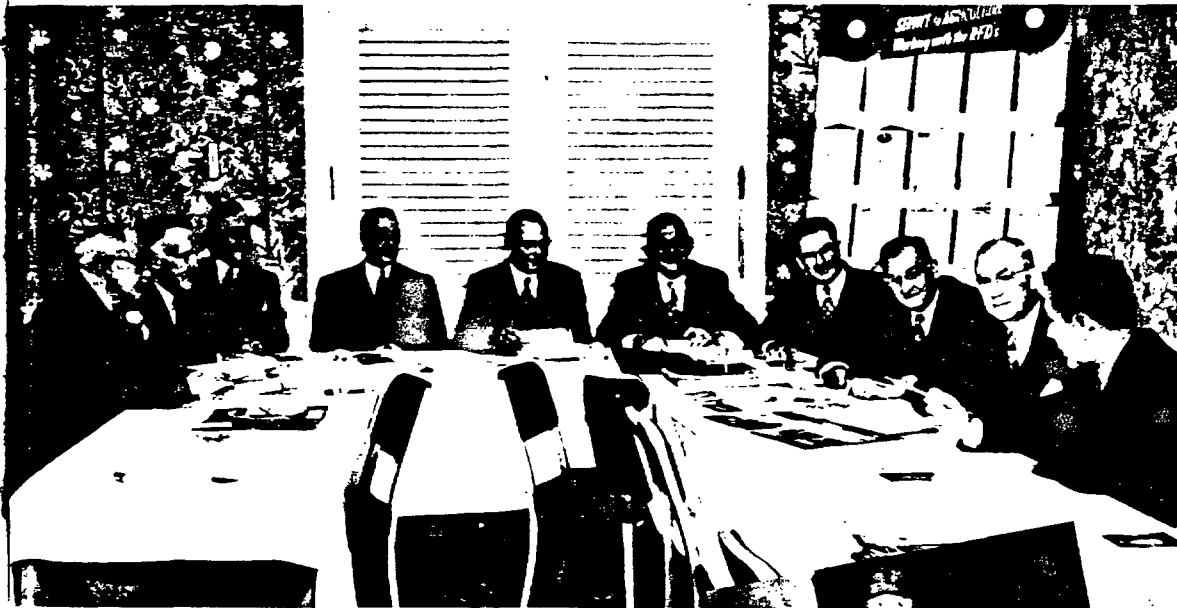
At the left, from top to bottom, are E. A. Snyder, of Socony-Vacuum, outgoing committee chairman; Prof. Randall C. Swanson, and Don Lerch. The latter two addressed the Agriculture group session.

Below, in a discussion by an Agriculture display are Frank M. Porter, API president, and Lacey Walker, API secretary.



At the meeting of the Advisory Committee on Agriculture were Col. T. H. Barton, Lion Oil board chairman; W. L. Stewart, Jr., Union Oil executive vice president; A. W. Peake, Standard of Indiana president; J. N. Pew, Jr., Sun Oil board chairman; Sidney A. Swensrud, Gulf Oil president and committee chairman; E. A. Snyder, of Socony-Vacuum; M. C. Enright, of Gulf Oil; W. W. Vandevier, a director of Ashland Oil; L. S. Wescoat, president of Pure Oil; and Lowell Kern, of the API.

AGRICULTURE



At the Agriculture group session were J. J. Adams, Sohio; H. G. Meador and C. M. Gile, Gulf Oil vice presidents, and A. T. Swanson, Standard of Indiana.

Left, a new vice chairman of the API Agriculture Committee is R. P. Frey, of Imperial Oil.



Left, snapped in the group session audience were M. H. Utley, of Standard of Kentucky, and T. M. Martin, Lion Oil president.



A familiar sight at many API sessions was the stenotypist, who recorded the proceedings. At right is Ruth T. Wilke, taking down the remarks of speakers at the Agriculture session.



FUNDAMENTAL RESEARCH

FIRST of its kind in annual meeting history was the Monday morning group session on Fundamental Research. Sponsored by the Advisory Committee on Fundamental Research on Occurrence and Recovery of Petroleum, the session was devoted to progress reports on a number of API research projects. Presented by petroleum research company and oil industry scientists, and college and university professors, the reports covered subjects ranging from the role of bacteria and radioactivity in the origin of oil to fluid movement through petroleum reservoirs.

Discussions in the meeting, it was announced, were not for publication, and no preprints, reprints, or records of them were made. The technical material is to be included in future progress reports and ultimately will be made public.

Below, Lloyd E. Elkins, of Stanolind Oil and Gas, who presided at the Research session, listens to opening remarks by Dr. Robert E. Wilson, board chairman of Standard of Indiana and chairman of the API board Research Committee.



Above, part of the audience of oil industry research men who attended the Monday morning session in the north ballroom . . . Left, D. H. Clewell, of Magnolia Petroleum, chairman of Research Project 43 Advisory Committee, and Claude E. ZoBell, of Scripps Institution, who is describing his work on that project.



Above, W. L. Whitehead, of M.I.T., who as director of Research Project 43C, spoke on his work in probing the origins of oil.



Left, A. Roger Denison, Amerada vice president and chairman of Research Project 51 Advisory Committee.

FUNDAMENTAL RESEARCH



Left, F. P. Shepard, of Scripps Institution, director of Project 51, explains the objectives of the sedimentology research he has been conducting in the Gulf of Mexico.

Right, C. V. Millikan, of Amerada Petroleum, chairman of the Advisory Committee for Research Project 37, was in charge of the portion of the session devoted to that project.



Right, B. H. Sage, of California Institute of Technology, co-director of Project 37, discussed the behavior of fluids in petroleum reservoirs.



R. E. Loeck, of California Research Corp., chairman of the Advisory Committee for API Research Project 47.



J. A. Putnam, of the University of California, speaking on his work on fluid movement through petroleum reservoirs.



Right, Alfred Chatenever, of the University of Oklahoma, explaining recent findings made under Project 47.

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CAMERA CANDIDS

The trio at right consists of W. E. Blumberg, of Peden Iron and Steel; George T. Morse, Jr., Peden president; and F. T. Fendley, of Humble Oil.



Photographed as he walked down the stairs from the registration room was R. S. Stewart, of Sohio.



Left, James H. Wilson, president of his own company; E. J. Nicklos, board chairman of Nicklos Oil and Gas; and R. F. Baker, vice president of The Texas Co.



"Neighbors" from Ohio and Michigan are L. B. McCammon, of Ohio Oil, and I. L. Goldman, Aurora Gasoline Co. vice president.

Making use of the convention hotel house phones are Russell M. Stein, of Simpson, Spence and Young, and E. S. Ronan, Jr., of Standard-Vacuum Oil Co.



Left, the candid camera snapped F. J. Sanders, of Standard of Ohio, as he was making a telephone call.



CAMERA CANDIDS

The third floor corridor provided a quiet meeting place for these three Sinclair Refining Co. men — Herman I. Ringgenberg, T. V. Tift, and George M. Hill.



Right, relaxing between annual meeting sessions are J. H. Donley, of Aetna Oil, and Lloyd Lesh, vice president of Kanotex Refining.



Left, API directors Charles Suhr, Pennzoil board chairman, and O. D. Donnell, former president of Ohio Oil, flank Fayette B. Dow, of the API.



Below, Milo Taxman, Advance Refining secretary-treasurer, and Maynard Taxman, Advance president.



Below are Graham Polk, vice president of Time Oil; Wiley Butler, president of Coastal Oil; Rex Blazer, president of Ashland Oil; Jack J. Reed, president of Westoil Terminals; Rud J. Babor, vice president of Frontier Oil Refining; and C. Edward Miller, Time Oil board chairman.



Three Pennsylvania representatives at the annual meeting were Howard V. Smith, of Kendall Refining; Emil E. Ebner, of Quaker State Oil Refining; and Francis J. Healy, of Kendall Refining.



CAMERA CANDIDS



Fred B. Behrens as the candid camera caught him. Mr. Behrens is with Wilshire Oil.



Upper right, Ted W. Legatski, of Phillips Petroleum, views a photo of the recent "2 Equals 3" demonstration on the Jersey Turnpike . . . Right, Julian Frey, of Ethyl, and Howard Cuyler, of Standard of California, catch up on the news.



Below, a meeting of the Aviation Technical Services Committee. W. D. Parker, of Phillips Petroleum, is committee chairman.



Taking a moment's rest during the busy API schedule are A. W. Baucum, of The Texas Co., and W. B. Johnson, Jr., of Erie Meter Systems.





LUBRICATION

Active participants in the Lubrication group session were (upper left) Col. Willard F. Rockwell and B. G. Symon; (center left) Arthur Motley; and (below) Henry E. Abt.

THREE of the nation's foremost leaders in their fields addressed the Lubrication group session on Tuesday afternoon, and all delivered talks that drove home strong messages.

Lead-off speaker Col. Willard F. Rockwell, board chairman of Rockwell Manufacturing Co., said no favorable economic trend could be expected so long as the United States is governed by men who "disregard every moral principle to perpetuate themselves in office and to extend their present mismanagement over American business."

Other speakers were Arthur H. Motley, president of Parade Publication, Inc., on the subject "Use It or Lose It," and Henry E. Abt, president of the Brand Names Foundation, speaking on "The Hidden Values." B. G. Symon, of Shell Oil, was group session chairman.

It was standing room only at the Lubrication session, held in the south ballroom. Part of the overflow audience is shown here.

Propped up in seats against the wall are Elmer C. Campbell, of Consumers Cooperative Association; L. R. Marchant, of International Cooperative Petroleum Association; and F. E. Headen, of Asiatic Petroleum.

TRANSPORTATION

P. C. Spencer, Sinclair president, was elected API vice president for Transportation.



MEETING at the Palmer House, as is its custom when the API convention is held in Chicago, the Division of Transportation held three group sessions and a number of committee meetings. The hotel's Red Lacquer Room was the scene of two group sessions on Tuesday and the final one on Wednesday afternoon.

Both of the Tuesday sessions were given over to a pipeline symposium.

At the Wednesday session, three government transportation officials

from Washington spoke, the report of the division's nominating committee was presented, and Certificates of Appreciation were awarded to seven men who have made outstanding contributions in the field of petroleum transportation.



Right, J. H. Peper (center), Buckeye Pipe Line president, who presided at Transportation group sessions, flanked by M. G. Spangler, of Iowa State College; P. D. Phillips, of Humble Pipe Line; R. A. Gump, of Pipe Line Contractors Association; and J. R. Shipley, of Sohio, Tuesday morning speakers . . . Below, a part of the Tuesday morning audience.



Andrew G. Anderson (left), of Socony-Vacuum, gave the Division's nominating committee report . . . Left, below, F. H. Warren, of Ohio Oil, a Tuesday afternoon speaker.



Shown before the Wednesday group session are R. G. Dunlop, Sun Oil president; T. E. Swigart, Shell Pipe Line president and retiring API vice president for Transportation; and George A. Wilson, of PAD, a session speaker. Standing are James E. Moss, of the API, and James E. Dyer, vice president of Sinclair Refining.



Above, James K. Knudson, Administrator of the Defense Transport Administration; and Delos W. Rentzel, Under Secretary of Commerce for Transportation, spoke at the Wednesday group session . . . Left above, T. S. Johnston, president of Interprovincial Pipe Line, and (left), V. J. Sittel, of Service Pipe Line, Tuesday afternoon speakers.

TRANSPORTATION

Right, a discussion in progress during a meeting of the Central Committee on Railroad Transportation.



Left, Arthur S. Halpenny, of Railway & Power Engineering Corp., registers his presence at a Transportation session.

Right, picking up preprints of papers before a session are John Anderson, H. F. Heidorn, and H. W. Wilker, of Standard of Indiana; and J. C. Stirling, of Service Pipe Line Co.



Right, two New York oil transport executives, Harry A. Gilbert, president of Oil Transfer, and F. Willard Bergen, vice president of Marine Transport Lines, consulting a telephone directory.



Left, Ralph B. McLaughlin, president of Texas Pipe Line, new president of the Pipeliners Club, and J. H. Peper, Buckeye Pipe Line head, outgoing club president . . . Below, a view of the Pipeliners banquet in the ball-room of the Blackstone Hotel.



TRANSPORTATION



Enjoying a moment of relaxation are two traffic men, C. R. McDonald, of the Katy Railroad, and F. S. Fisher, of Magnolia Petroleum.

Above, this informal Transportation group includes T. S. Blanton, of W.K.M. Co.; T. C. Towl, president of Southern Pipe Line; and C. H. Gompf, A. B. Johnson, and C. F. Firmin, of The Ohio Oil Co.



Harry L. Cornell, of Esso Shipping, notes a Transportation session speakers' poster.

Members of the Transportation Club gathered at the Bismarck Hotel on Monday evening for their annual banquet. Those below are enjoying pre-dinner conversation.



Two Shell Oil pipeline engineers, Norris Plank and E. H. Rush, picking up the latest convention registration lists.



Left, at the Transportation Club dinner were A. D. Carleton, of Standard of California; P. G. Anderson, of Lion Oil; Edward D. Sheffe, of Esso Standard; Paul H. Kuhns, of Continental; C. A. L. Walker, retired vice president of Great Lakes Pipe Line; and Ray Hooper, of Cities Service Oil. Mr. Sheffe was elected club president, succeeding Mr. Anderson.

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Seven Certificate of Appreciation awards, one posthumous, were made by the Transportation Division. Recipients present to receive their scrolls personally were Leo Huff, of Pure Oil; Ralph B. McLaughlin, of Texas Pipe Line; Frank W. Miller, of Esso Shipping; and Edward Sheffe, of Esso Standard.



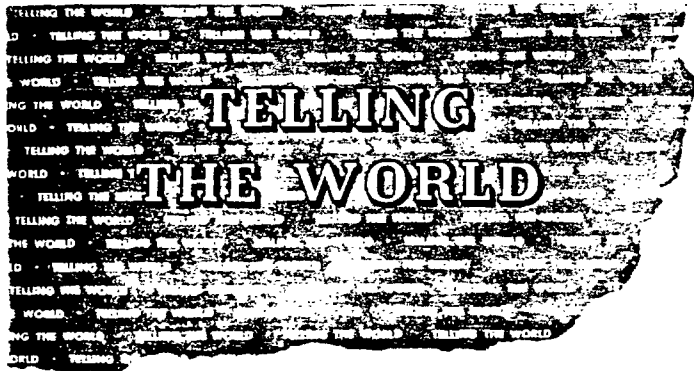
**THOSE
WHO SERV**

Three safety experts, two of whom were present, were given Appreciation Certificates by the safety committee of the API Board. Right, W. O. Wilson, of Standard of Indiana, makes the presentation to Roy Bon-sib, formerly of Standard of Jersey, and Joseph C. Bernd, formerly of Sinclair Refining . . . Left, Verl Elliott (right), of Atlantic Refining, receives a Certificate from J. R. Mulvey, of Humble Oil, at a Financial and Accounting session.



Certificate winners in Production were (front row) Eugene Hosford, for D. O. Barrett, formerly of Gulf Oil; C. R. Weiss, of Link Belt Co.; A. W. Thompson, of Thompson-Carr; A. C. Rubel, of Union Oil; Glenver McConnell, formerly of Shell Oil; and R. L. Wheelock, of Wheelock and Collins. In the back row are J. C. Donnell II, who presented the awards; R. B. Kelly, of Pure Oil; Eric Schroeder, for T. C. Ervin, of Lucey Boiler; Turner Smith, of General Petroleum; D. R. Dale, of S. M. Jones Co.; B. B. Wescott, of Gulf Research; C. A. Dunlop, of Humble Oil; and C. D. Watson, of Carter Oil.





Top, the API press room hardly ever closed its doors as reporters from publications in Canada and Mexico, as well as the U. S., pounded out copy to beat edition deadlines . . . Above, the clerical staff handled something like 87,000 sheets of paper in mimeographing information releases for the press.



Top, a flash announcement from J. Richard Shaner, of the API staff, tells the press, which told the world, that attendance was at a new high . . . Above, George Weber, of *The Oil and Gas Journal*, takes a coffee break.



Right, API President Frank Porter at his press conference. At his side is Fred VanCovern, of API . . . Inset, Tom Crowley, of *Petroleum Engineer*, and George H. Eichler, *Petroleum Equipment* publisher.



HOMeward BOUND

C. C. Gittings, of Sun Oil, "cleans house" in his hotel room on the final day . . . Below, E. L. Beattie, of Allied Oil, checks the airlines reservation desk for flight data.

MORE than one APIer spent anxious moments during the 1951 annual meeting wondering, what with the miserable weather and a threatened strike on several rail lines, just when he would be able to head for home. All ended well, however, when the Government intervened to postpone the train walk-out, and the sun broke through on Thursday morning for the first time during convention week.

And so, as some 6,000 oil men (unofficial count) began the journey back to their home towns all over the United States, as well as in several foreign nations, another API annual meeting became history. The 1951 version was, naturally, the proverbial far cry from the first Institute get-together in 1920. That year, when the API was just getting started, only 420 registered.

Next year, when it stages its 32nd convention, the API will be back in Chicago again. The date: Nov. 10 to 13, 1952.

Below, packing his suitcase for departure is H. B. Catlow, vice president of Republic Supply.



As indicated by their year-after-year return to the Conrad Hilton (Stevens) hotel, APIers like their convention headquarters. Dixon O'Brien, hotel reservations manager, shown above chatting with an APIer, has the tremendous job of housing as many convention-goers as possible in the Conrad Hilton.

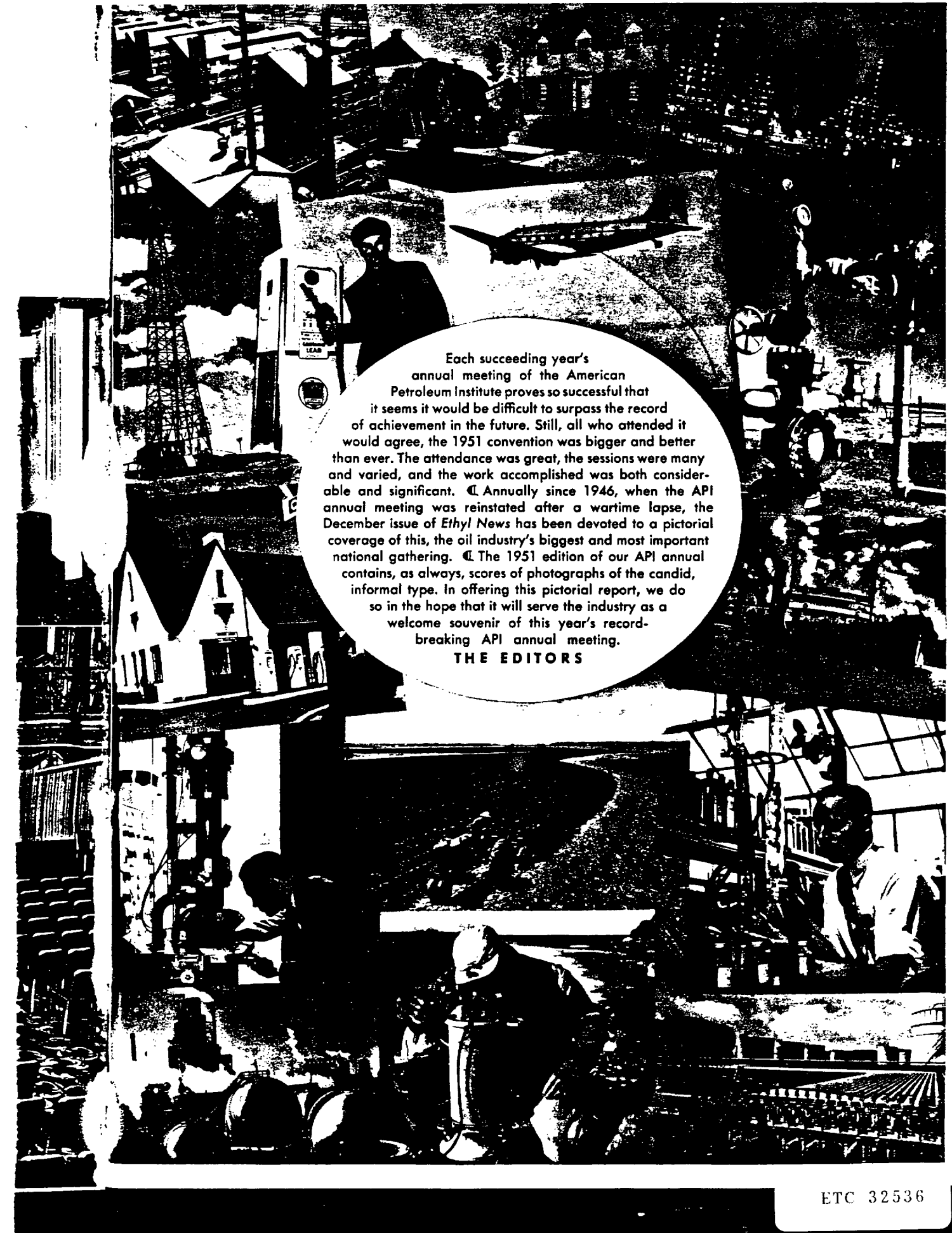


HOMeward BOUND



Above and right are typical last day annual meeting scenes. Directly above, Paul G. Benedum, Hiawatha Oil and Gas president, checks timetables . . . Upper right, G. W. Evans, of Continental Oil, turns in his key to the floor clerk . . . Right, M. H. Shanahan, also Continental Oil, rings for an elevator . . . Below, the emptiness of the Conrad Hilton's vast grand ballroom, broken only by the presence of two lingering oil men, symbolizes the end of the memorable 31st annual meeting.





Each succeeding year's annual meeting of the American Petroleum Institute proves so successful that it seems it would be difficult to surpass the record of achievement in the future. Still, all who attended it would agree, the 1951 convention was bigger and better than ever. The attendance was great, the sessions were many and varied, and the work accomplished was both considerable and significant. ¶ Annually since 1946, when the API annual meeting was reinstated after a wartime lapse, the December issue of *Ethyl News* has been devoted to a pictorial coverage of this, the oil industry's biggest and most important national gathering. ¶ The 1951 edition of our API annual contains, as always, scores of photographs of the candid, informal type. In offering this pictorial report, we do so in the hope that it will serve the industry as a welcome souvenir of this year's record-breaking API annual meeting.

THE EDITORS



ETC 32537