

PLAINTIFF'S
EXHIBIT
ETC-121

ETHYL NEWS

1961

ETC 29182

ETHYL NEWS INDEX-1961

AGRICULTURE AND AVIATION

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ETHYL CORPORATION

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New Manual is Guide for Laboratory Use of Antiknock Compounds	January-February
New Training Presentation is "Too Hot!"	September-October
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Princi, Dr. Frank, Named Director of Medical Department	March-April
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ETHYL NEWS

JANUARY-FEBRUARY 1961

Women on Wheels

A NEW
ETHYL SURVEY
FOR THE
OIL INDUSTRY



ETC 29185

ETHYL NEWS

JANUARY-FEBRUARY 1961

Published by

Ethyl Corporation

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

manufacturer of "Ethyl" antiknock compounds and other additives used by oil companies to improve the quality of petroleum products.

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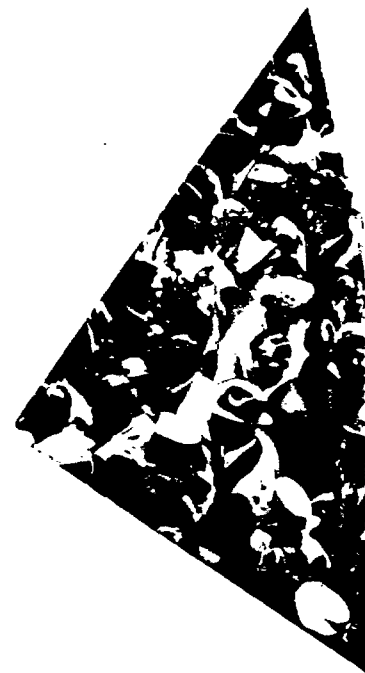
ETHYL NEWS



THE COVER pictures just one of the fast-growing number of "Women on Wheels." For a report on Ethyl's survey of women's driving habits and their increasing importance in service station marketing, see pages 8-10.

PHOTO CREDITS: Cover, Shostal; page 2 (top), Camera Associates; pages 2 (bottom), 12 and 13, Wide World; pages 3, 4, 8 and 9 (top), A. Devaney; pages 5 and 6, Mid-South Area Office; page 7 (top), Oregon State College, (bottom), Washington State University; pages 9 (bottom) and 10 (top), Cities Service Co.; page 14, N. Y. Public Library and Russell H. Lenz, *The Christian Science Monitor*.

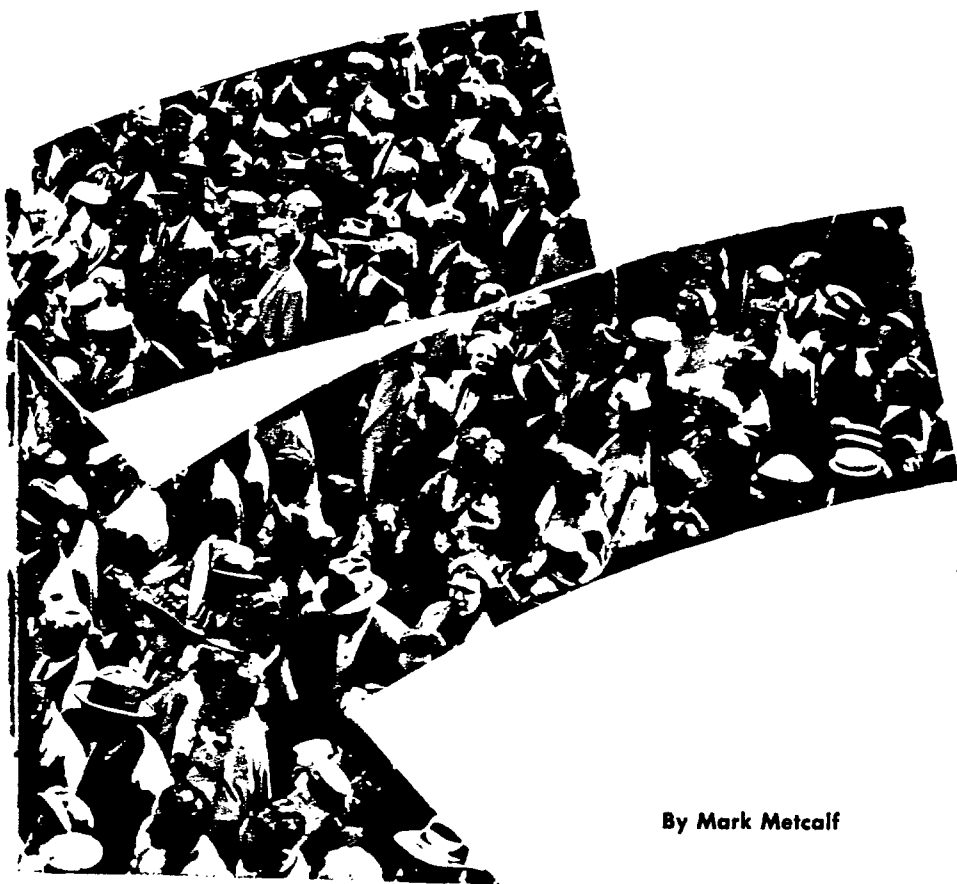
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Country on the Move

Census figures—even preliminary
ones—show that America still
is a young, progressive growing
nation with a bright future

ETC 29186



By Mark Metcalf

PICTURE A COUNTRY growing in population and progressiveness—

A youthful, restless nation still pushing toward new horizons—

A land whose advance in the past decade has been unmatched in history—

That's the image of today's America now emerging from the facts and figures of the 1960 Census.

It's a picture whose details still must be filled in. As one population expert notes, "Our people are too mobile and our way of life too dynamic to permit the United States to sit still for a formal portrait." Even with the aid of an army of statisticians and two electronic brains at the Census Bureau, it will be late in 1961 before all the results of last year's national checkup are known.

Still, from preliminary data it's possible to see where the country stands in terms of number of people, economic growth and general well-being. And, by assessing the record of the past 10 years,

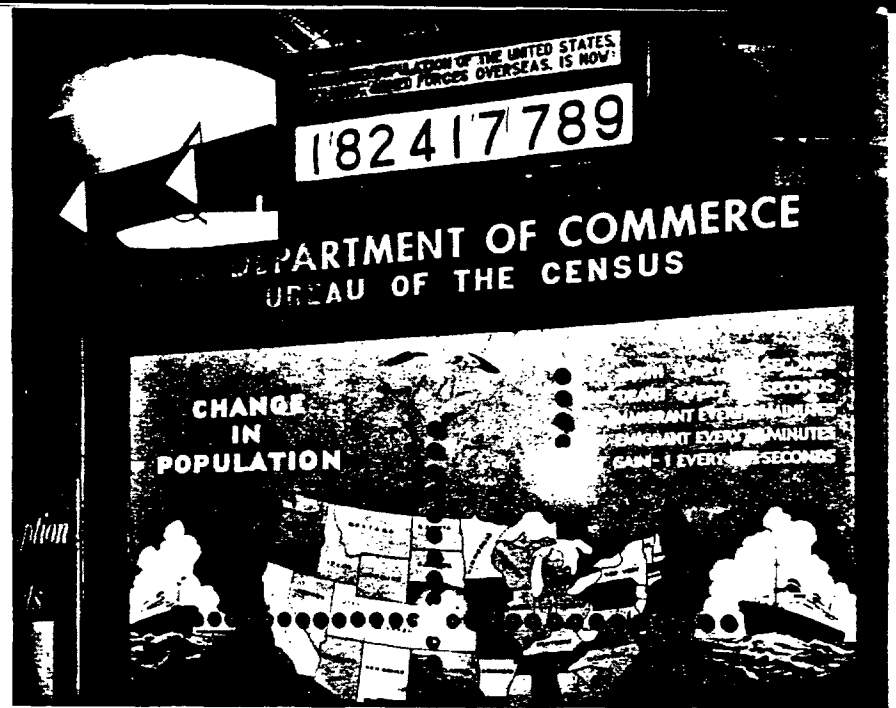
it's possible to get a glimpse of what may be expected in the decade ahead.

Here are some of the dramatic changes that have taken place:

- **28 million more people** in the country now than a decade ago.
- **Tremendous population shifts** have taken place—away from farms and into the cities, from the heart of metropolitan areas to the suburbs, from the East to the West and South.
- **Nine million more households** today, bringing the total to over 52 million. The population boom of the 1950's and a trend toward earlier marriage has meant a record number of married couples and new families. That, in turn, means a vast new market for goods and services.
- **A youthful population** is mirrored by the latest census. About 58 million Americans today—nearly a third of all our people—are children of 14 or under. Another 13.5 million are teen-agers.

COUNTRY ON THE MOVE

An electronic computer in the lobby of the Department of Commerce building in Washington keeps tabs on the country's surging population. Total jumped by almost one hundred while photographer was taking this picture.



At the other end of the scale, there are nearly 16 million people over age 65. Compared with 1950, the United States now has 40 percent more children, 30 percent more oldsters.

- **More Americans of working age** (15 to 65) than in 1950—but only 10 percent more. Yet the nation's productive capacity has risen so much that these workers can support the much heavier load of youngsters and old folks with fewer hours of work at generally higher wages.
- **Higher educational standards** are evident. About 52 million people now have high school diplomas,

up from 38 million a decade ago. College graduates number 8.7 million, compared with six million in 1950.

- **Increases in family income** have been scored. The average family's pre-tax personal income ten years ago was \$4,440. The average today is about \$6,500. One family in every five now makes more than \$8,000 a year.

These changes of the last decade, however, are nothing compared to those that have occurred since the first official head-counting of Americans in 1790. That was done under a Constitutional directive that

The population explosion in booming southern California is reflected in the sprawling real estate developments that stretch, acre after acre, across the countryside.



a census be taken every decade to determine how the several states should be represented in the national legislature.

When that first tally was made, the United States covered areas now embraced by 18 eastern states and the District of Columbia. The total population was listed as 3,929,000—about half the present size of New York City.

At the time of that first count, Virginia took the honors as the most populous state, with almost three-quarters of a million inhabitants. Pennsylvania ranked second, with 434,000, and North Carolina was third with a little under 400,000. California didn't exist—except in terms of some scattered Spanish and Indian settlements near the Pacific.

Today, the total population of our 50 states is well over 182 million. New York is the most

populous state, with 16,782,000 residents—a spot it has held ever since it overtook Virginia in the Census of 1820. But California, which didn't even join the Union until 1850, now is pushing New York hard for first place. The 1960 count listed 15,717,000 Californians . . . a gain of 43 percent over the past ten years.

Old Facts and Startling Contrasts

Figure-minded people with enough time to study 1960 Census findings can ferret out all sorts of odd facts. There are startling contrasts, too. For example, while there are one million fewer people living on farms and in rural areas than 10 years ago, some big cities actually lost population. New York, Chicago, Philadelphia, Washington, Detroit and San Francisco actually are smaller, in number of residents, than in 1950. The explanation, of course, is that people are moving out of the central areas of cities, and flocking to new housing developments in the suburbs and on the fringes.

Another noteworthy statistic: The person who clings to the old family homestead is a vanishing American. An average of one person in every five now moves yearly, either to a new home, a new area or a new environment. Fewer than one in 10 persons in today's population has lived all his life in the same house. For adults 20 years old and over, only one person in 85 has not picked up his belong-



Census figures point to a youthful population, nine million new households in the last decade and increasingly high per-family income.



Along with everything else, educational standards have risen. There are almost three million more college graduates than 10 years ago and 14 million more people have high school diplomas.

COUNTRY ON THE MOVE

Who's Ahead of Whom?

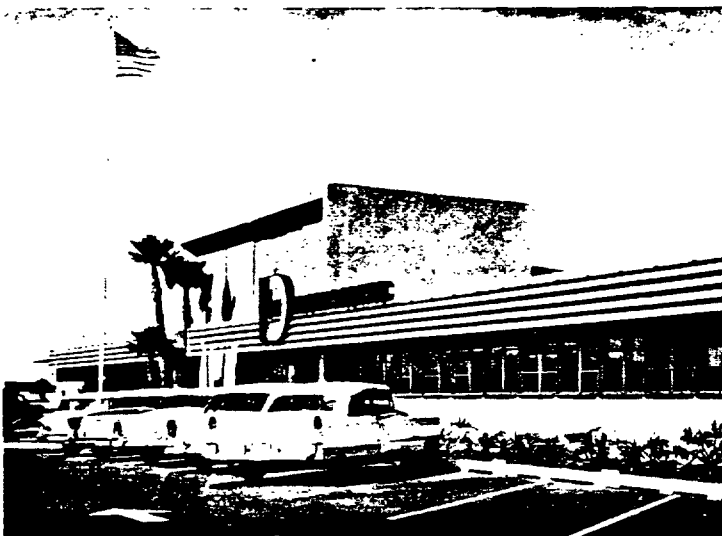
The amazing story of U. S. progress unfolded by the 1960 Census raises anew the question of how this country's economic strength compares with that of the Soviet Union.

One answer was given by Bryce N. Harlow, one-time deputy assistant to ex-President Eisenhower. He put it this way:

"In order to enjoy the glories of the present Soviet system, we would have to abandon three-fifths of our steel capacity, two-thirds of our petroleum capacity, 95 percent of our electric-motor output, destroy two of every three of our hydroelectric plants, and get along on a tenth of our present volume of natural gas.

"We would have to rip up 14 of every 15 miles of our paved highways and two out of every three miles of our main-line railway tracks. We'd sink eight out of every nine ocean-going ships, scrap 19 out every 20 cars and trucks, and shrink our civilian air fleet to a shadow of its present size.

"We would have to cut our living standard by three-fourths, destroy 40 million TV sets, nine out of every 10 telephones, and seven out of every 10 houses; and we would have to put about 60 million people back on farms."



Mobility isn't confined to people. It shows up in the decentralization of business and the establishment of new manufacturing plants in rural areas.

ings and moved elsewhere at some time in his life.

Mobility isn't confined merely to people, the census data indicate. It shows up in the areas of economic activity—the decentralization of business, the establishment of new manufacturing plants in rural areas, the spreading out of industry to the South and the West.

This movement and growth of industry has provided more than seven million new jobs. In the past decade, wages on the average have risen from \$59 a week to \$91 a week—a gain of 55 percent.

Even more intriguing than the picture now unfolding of a restless, changing, yet self-reliant nation is the glimpse we can get of America in 1970, when the next census is taken.

Era of Abundance

There is not too much guesswork in taking a long-range look, the statisticians say. The trends are firmly established. There may be business booms and recessions in the next decade, and some happenings that man cannot now anticipate. But all studies indicate that the era just ahead will be one of spectacular growth and abundance.

Looking 10 years into the future, this is what the experts see:

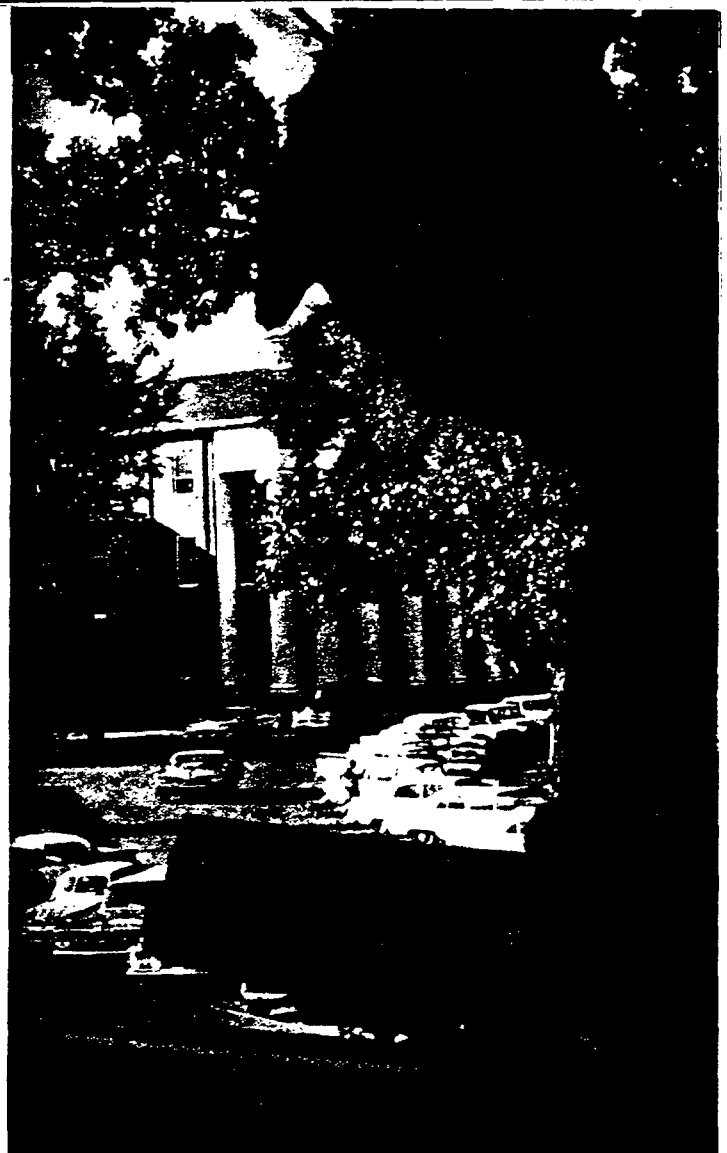
The United States will be a still larger, more diverse, more prosperous country. By 1970, there will be 33 million more people—215 million in all. The number of families and households will rise to nearly 62 million.

This will create vast new markets for food, clothing, shelter, autos, home appliances—everything made or sold. It calls for more roads, more gasoline and oil, more tires, more jobs for making, selling and servicing cars.

About 14 million more workers will be added to civilian employment. Automation will increase in factories and offices. More jobs will be done by machine. But the machines themselves will create new jobs, provide more leisure, more time for recreation. Personal income will rise to almost \$10,000 per family in the decade ahead.

All in all, the expansion that is bound to come will bring great changes in the way Americans live. There will be problems along with the growth and expansion, but they are problems that will be tackled and solved by the enthusiasm and the skills of a youthful population—in a country on the move. #

What about Science and Engineering



Two-week institutes help teen-agers decide if they should choose these careers

BY MID-JULY THIS YEAR, some 1,800 high school students throughout the country will have a pretty good idea whether or not they want to pursue scientific and engineering careers. They will be familiar with the variety and scope of college courses needed to prepare them for such futures. They will have an insight into college life and technical vocation opportunities in major industries.

For these teen-agers, much of the guess work and possible false starts will be eliminated from career planning and training. They will have a head start for success in college and future employment.

The guidance for these youths will be provided by the sixth annual Junior Engineers' and Scien-

tists' Summer Institutes (JESSI), to be held at colleges in 9 states across the country early this summer. JESSI is sponsored by Scientists of Tomorrow, a non-profit organization. It is endorsed by educators and supported, in part, by American business firms and service organizations.

The JESSI program was launched on a more or less local basis at Oregon State College, in Corvallis, Ore., in 1956. It has grown each year.

Sessions are located to put the institutes within reach, both geographically and financially, of students in all parts of the country. They are designed to provide participants with first-hand experience with engineering and scientific schools.

WHAT ABOUT SCIENCE AND ENGINEERING?

After attending classes and discussing curriculum requirements with professors, JESSI students are better prepared to decide if they are intellectually and psychologically equal to the study rigors required to prepare for scientific and engineering careers.



JESSI is open to boys and girls entering the 11th and 12th grade the next September, provided they have successfully completed at least three courses (by the end of 10th grade), or four courses (by the end of 11th grade) in high school mathematics and/or science.

The two-week college campus sessions are scheduled for late June and early July. Registration fees average between \$100 and \$120. This pays for room, board, tuition, field trips, laboratory fees, notebooks and other institute expenses.

In attending survey courses taught by college professors, students follow a regular classroom schedule. Typical curricula include chemistry, mathematics, physics, metallurgy, bacteriology, zoology, geology, botany, civil, chemical, mechanical and electrical engineering and other subjects. Evening lectures by representatives of petroleum, pharma-

ceutical, chemical, forest product, aero-space, atomic energy and other industries and by medical doctors provide the embryonic scientists and engineers with an insight into the technical manpower and training requirements of these fields.

Courses of study are intensive throughout the two-week period, but time also is provided for recreation, library study, conferences and tours.

The JESSI program is designed to provide, insofar as possible, a clear crystal ball in which high school students can see the answers to such questions as:

- Do I want to become a scientist or engineer?
- Am I intellectually and psychologically equal to the study rigors required to successfully pursue a scientific or technical career?
- Knowing what the requirements will be, what can I do during remaining high school years to

assure myself of being adequately prepared for the college of my choice?

Even though JESSI's sponsoring organization is Scientists of Tomorrow, a definite interest in science or engineering is not required of participants. Nor is there pressure to select a scientific or technical career. Classroom discussions, lectures, laboratory sessions and educational and vocational information are impartial. Science and engineering are presented as neither "better" nor "worse" than other careers; they are simply described as accurately as possible. Students are urged to make their own decisions.

Students from families that can afford to, are expected to pay full registration fees. Others often obtain financial help locally from service clubs, Chambers of Commerce and other public spirited organizations. Sometimes, where no local aid is available, there are student assistance funds for outstanding needy youngsters. The resources that go to make up these funds come in part from American business firms who are sold on the JESSI program and its work with youngsters.

These firms, all American industry and the country as a whole are bound to benefit. A well educated corps of young scientists and engineers will help fill a vital need in a growing America where the role of science, engineering and technology is increasingly important. #



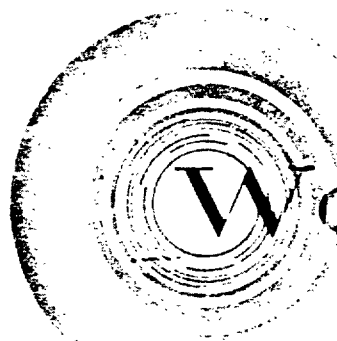
Laboratory work with interested, helpful instructors (above) and field discussions with congenial fellow-students (below) are part of the two-week program.



Campuses across the Country

In 1961, JESSI will be held at the following institutions:

Alfred University, Alfred, New York
 Clarkson College of Technology, Potsdam, New York
 Clemson College, Clemson, South Carolina
 Colorado State University, Fort Collins, Colorado
 DePauw University, Greencastle, Indiana
 Mississippi State University, State College, Mississippi (near Starkville)
 New Mexico State University, University Park, New Mexico (near Las Cruces)
 Oregon State College, Corvallis, Oregon
 University of Redlands, Redlands, California
 Washington State University, Pullman, Washington
 Willamette University, Salem, Oregon



Women

Their increase

in the finding

AMONG THE SUBJECTS LISTED in a business school's catalog of courses, so the story goes, was one in "Accounting—for Women."

No sooner had the catalog been distributed than back came a heated letter to the school registrar. "There is NO accounting for women," the embittered writer protested.

Oil companies disagree. They are interested in accounting for women—at least for their driving and gasoline buying habits.

In planning advertising, sales promotion and marketing campaigns and in building and operating service stations, petroleum marketers want to know how many women drive cars, how much they drive and how often. They want to know how many service station purchases are made by women and how much distaff influence there is over these purchases. They want to know what women drivers like or don't like about oil company advertising, products, services and service stations.

Larger Factor in Gasoline Market

Why the increased interest in women drivers and their petroleum product purchasing patterns?

It's because women are an increasingly important factor in the gasoline market. True, a little more than half of them still go along with their hus-

band when he says what brand and grade of gasoline to buy and where to buy it. But the expanding boundaries of woman's world are overlapping more and more into car operation and servicing—once considered man's domain.

As a matter of fact, more than half of all the female heads of United States households in which there is a car now drive. Nearly half of these women drive as much as 150 to 400 miles a month.

When it comes to car servicing, one woman in seven decides what brand of gasoline to buy and what service station to patronize. She may also determine what grade of gasoline to purchase and control maintenance and repairs.

Although they don't make the decisions by themselves, almost half of all the women drivers have some voice in deciding what gasoline to buy and where.

Regardless of who decides what they'll buy and where to buy it, half of all the female heads of households who drive, visit a service station once a week or oftener. When they do, three out of every five answer "Yes" when the attendant asks if he should "Fill 'er up." About the same number pay cash rather than charge their purchases.

What makes a woman decide on one particular service station?



on Wheels

importance to petroleum marketers is emphasized
of a survey sponsored by Ethyl Corporation

Around home, at least, she is influenced by such things as location, services offered, brand of products sold, and convenience of payment.

These petroleum product purchasing patterns and lots of other helpful information about women drivers are revealed by a survey sponsored by Ethyl Corporation as a service to oil companies. Entitled "Women on Wheels," the survey is a comprehensive study of how much women influence the buying of service station products and services. It answers such questions as:

- How many women drive automobiles?
- What types of women do the most driving?



Service is an important factor in influencing women drivers to choose a particular station, the survey shows.

- How often and where do they buy gasoline?
- To what extent do they decide about the family car's maintenance?
- Do women who make such decisions differ from those who don't?

The survey classes the one woman in seven who, by herself, makes decisions about car servicing and maintenance as a "decision maker." She drives more than other women, it reports, and looks for more services at a station. But once she finds a station she likes, she is more apt to be loyal to it and to a particular brand of gasoline. Generally speaking, this woman is less likely to be married, more likely to work outside the home and is older than other women drivers.

Another 30 percent of the women drivers, the survey discloses, make some decisions about family car servicing. They don't, however, decide on both what service station to patronize and what brand of gasoline to buy.

Particularly significant to petroleum marketers are the survey facts that women motorists, for the most part, are younger, more highly educated and come from families with higher incomes than women who do not drive. Such qualities enhance their value as service station customers and indicate that there will be even more women drivers in the future.

WOMEN ON WHEELS



Almost half of all women drivers make some of the decisions about car servicing and maintenance.

The fact that "service" ranks high as a reason for choosing a particular station argues for careful attention to women customers. It suggests that the way they want to be treated in the station may well be worthy of further study.

Since almost 80 percent of women heads of households who drive have a car available on week-days, there would seem to be a potential for getting them to do more driving and hence more service station buying. This, of course, ties in with oil industry efforts to "expand the demand" for petroleum products.

The Ethyl survey indicates that the business school was right; there is such a thing as "accounting for women"—at least for their driving and gasoline buying habits. As the number of "women on wheels" increases, an awareness of these habits is expected to exert greater influence on petroleum marketers' advertising and sales promotion plans and service station operations.#

SELLING ETHYL CHEMICALS

in the United States

RESPONSIBILITY for sales of Ethyl Corporation's aluminum alkyls has been assigned to John R. Hill, formerly of the Commercial Development division of the Company's Research and Development department. Mr. Hill, who will continue to make his headquarters in Baton Rouge, La., has been transferred to Ethyl's Chemical Sales group, managed by Harry Kuhe.

Ethyl Corporation is a major producer of a full line of aluminum alkyls and alkyl aluminum halides. These organometallic compounds are used as catalysts in the manufacture of plastics and synthetic rubber. They also are being investigated for use as chemical intermediates and as self-igniting fuels with scientific and military potentials.

Mr. Hill's training and experience provide him with a good background for his sales work with the aluminum alkyls. A native of Pensacola, Fla., he holds a BS and MS in chemical engineering from Ohio State University. Before joining Ethyl in 1950, he was a technical service engineer at the Shell Oil Company refinery in Norco, La. As a member of manufacturing technical service section of Ethyl's Research and Development department, he has worked at the Company's plants at Baton Rouge and Houston. He has also served as area representative in the department's Commercial Development division.



John R. Hill

... and in Canada



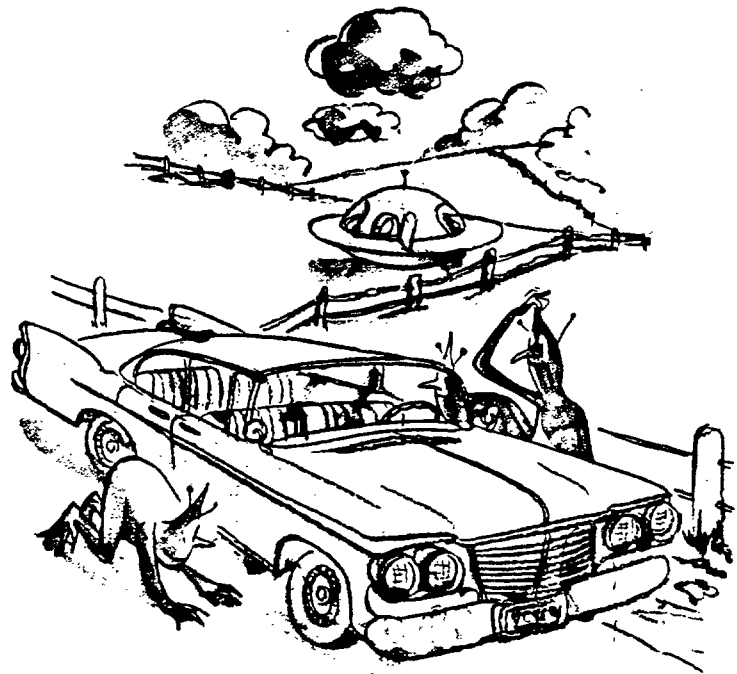
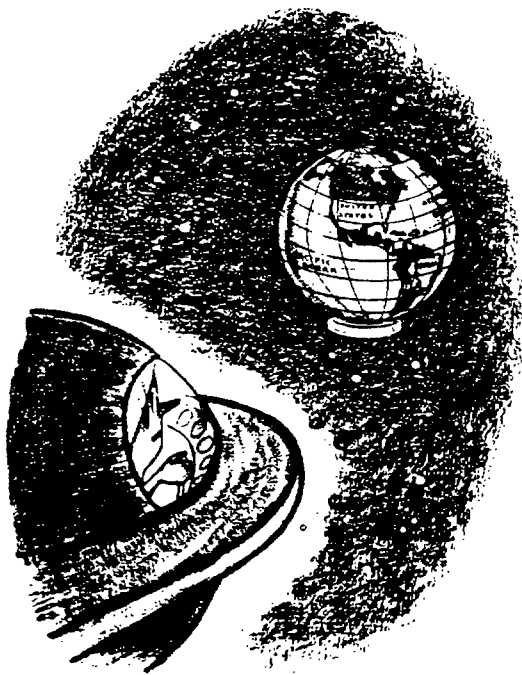
Robert H. Shannon

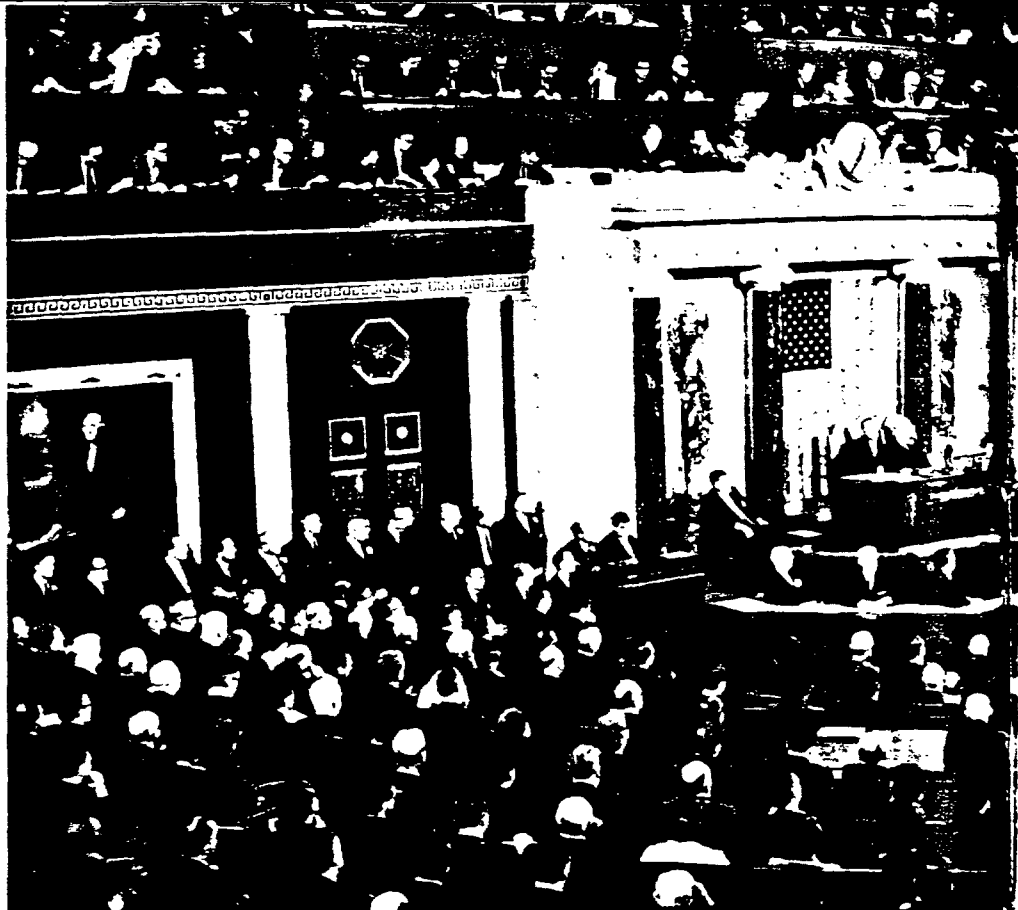
ROBERT H. SHANNON, who has held sales and administrative positions in the Canadian chemical and rubber industries during the last 10 years, has been appointed to the newly-created position of manager of chemical products by Ethyl Corporation of Canada Limited. Mr. Shannon is now responsible for the sale of Ethyl chemical products and petroleum additives other than antiknock compounds. These include "Ethyl" Multi-Purpose Additive, antioxidants and aluminum alkyls. Ethyl of Canada markets these and other chemical products and services them through a coordinated program of technical assistance and research know-how.

Ethyl of Canada's home office, where Mr. Shannon makes his headquarters, is in Toronto. The company operates, near Sarnia, Ont., the country's only plant for the manufacture of antiknock compounds.

Inside Outer Space

By Joe Farris





“Apportioned According

Population changes mean that 25 states must be redistricted to provide for revised Congressional representation

By Thom Yates

IN 25 STATE CAPITALS—from Boston to Honolulu and from Tallahassee to St. Paul—lawmakers are wrestling with a common problem these days. At hand is the job of carving up the respective states, politically speaking, to provide for the additional, or fewer, United States representatives they are entitled to on the basis of the recent national census.

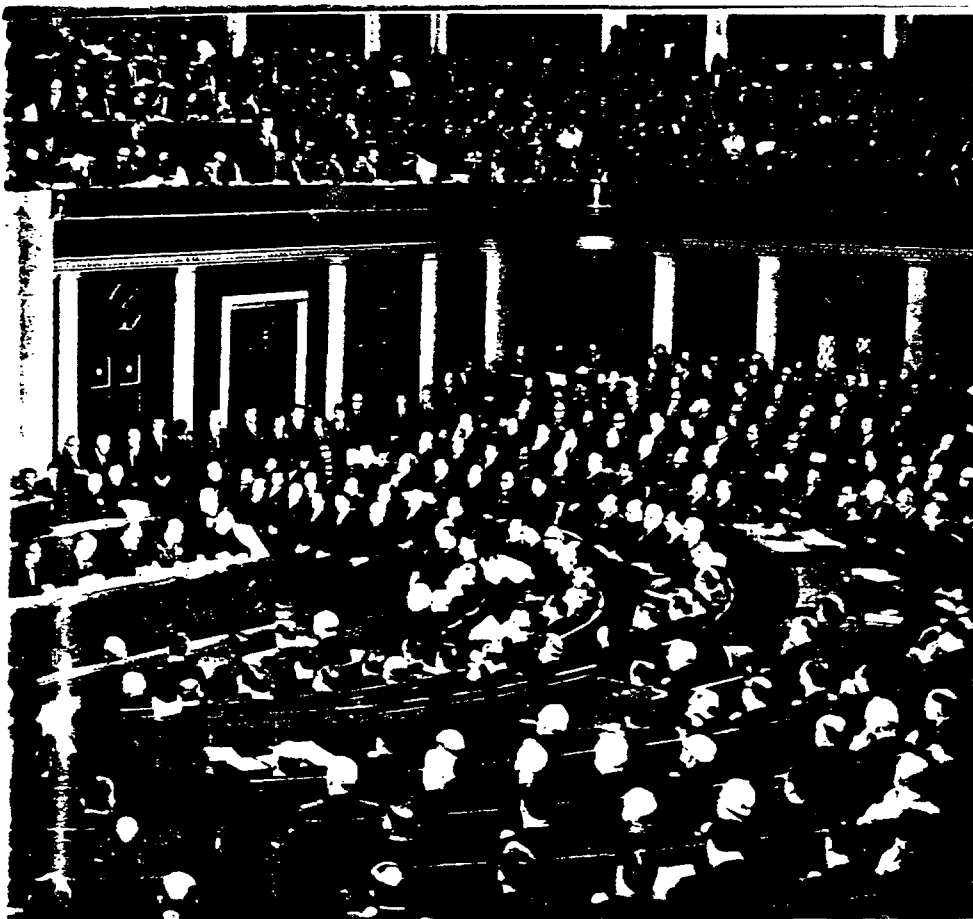
The redistricting is necessary because the House, several decades ago, fixed its membership at 435. Thus, any new representatives to which a state is entitled must be fitted into that framework.

The job must be done in time for next year's Congressional elections—or else!

In the case of states which gain representatives, the “or else” is that any additional Congressmen would have to be elected at-large on a statewide basis. In those states which lose representatives, and fail to redistrict in time, existing Congressional districts would be disregarded and all representatives elected at-large.

Connecticut is an example of a state with an at-large Congressman, elected by all voters. It has been since 1930, when it became entitled to a sixth seat, but failed to create a district to be represented.

The redistricting gyrations which some states go through following each decennial census are popularly known as “gerrymandering.” By dictionary definition, gerrymander means “to divide a state,



o Respective Numbers”

county, etc., into election districts or other civil divisions in an unnatural and unfair way, especially to give a political party an advantage over its opponent.”

It was statesman Elbridge Gerry who unwittingly gave his name to such political chicanery. In 1812, while Gerry was governor of Massachusetts, a law was passed creating new state senatorial districts in such a manner that most of the opposition party's voting strength was confined to a few districts. The shape of one of the districts looked to many people like a salamander, so they coined the word “gerrymander”—now part of the language.

It has been said that a pre-school child, turned loose with a pencil and map of the United States, couldn't possibly scribble more irregular shapes for some Congressional districts than now exist. And, it might be added, than will certainly exist when the current redistricting is completed.

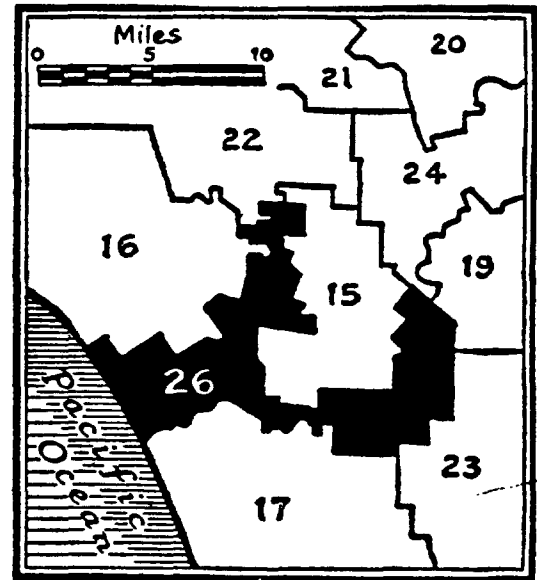
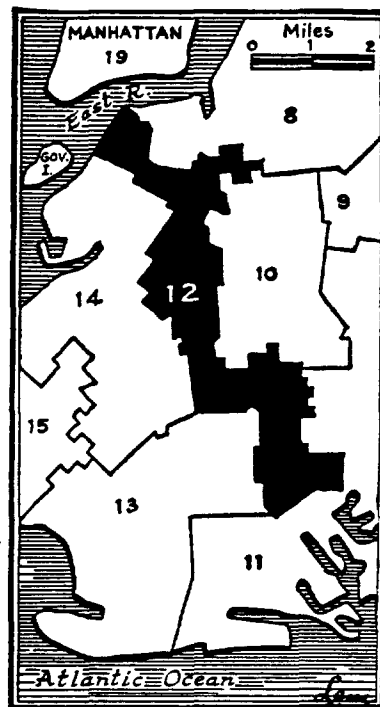
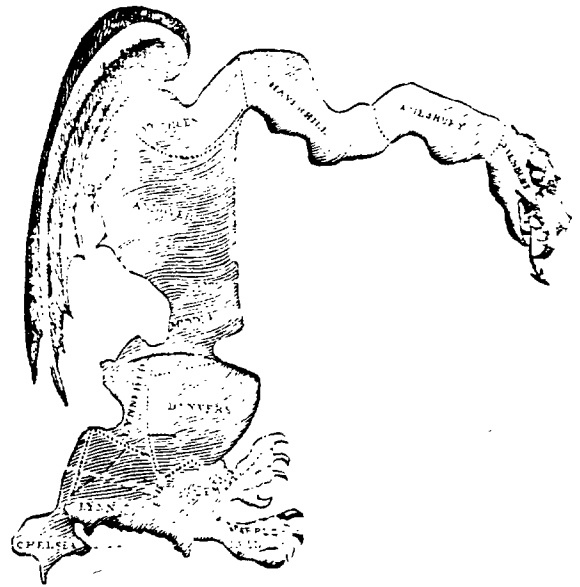
The accepted standards for a well-defined Congressional district are that the area be compact, all parts of it contiguous, and that its population not vary more than 15 percent above or below the state average. So says Dr. Ernest C. Reock, Jr., director of the Bureau of Government Research at Rutgers University.

Few such ideal districts exist, however—particularly in regard to compactness and population. In the current Congress, there is, on the average, one representative for each 407,000 citizens. Representation ranges from the 176,000 population of Michigan's 12th District, covering eight up-state counties, to the 1,007,000 people of California's 28th District, which has San Diego as its principal city. Using the population yardstick, 264 of the present Congressional districts, or more than 60 percent, are either over- or under-represented.

In redistricting a state, the legislature has free

**"APPORTIONED ACCORDING TO
RESPECTIVE NUMBERS"**

Back in 1812, the grotesque shape of a Massachusetts district inspired this now-famous political cartoon and the coining of the term "gerrymander." Below, two present-day Congressional districts—New York's 12th and California's 26th—that violate rules for well-conceived districts.



rein. It is a moot question whether the job is easier for lawmakers in Harrisburg, who must abolish the three House seats that Pennsylvania has lost, or for those in Sacramento, who must provide for the eight new seats that California has gained. Either way, whether a state gains or loses representatives it is only natural for the political party in control of the legislature to reshape districts to its own advantage.

Massachusetts, where Democrats control the legis-

lature, is a handy, although by no means isolated, example. Two Congressional districts must be eliminated before next year's election. The legislature is expected to do away with the 5th and 10th Districts both of which are represented by Republicans. Interestingly, the 5th District takes in part of Essex County, where gerrymandering had its birth a century and a half ago.

While legislatures are required to redistrict for representation in the U.S. House of Representatives

if the decennial census indicates a gain or loss in the number of seats, many fail to update themselves in the same way. This in spite of provisions in state constitutions that they do so at stated intervals. In many states, it has been four, five and even six decades since the legislature was last reshaped. Thus the sweeping economic, social and population changes of the intervening years have been ignored.

There are many reasons why state legislatures hesitate to reapportion themselves. Gordon E. Baker, of the University of California, has listed some of them in a study prepared for the National Municipal League.

Gains and Losses

Nine states will have increased representation in Congress after the 1962 elections and 16 will have less. California, with eight additional seats, and Florida, with four, are the big gainers. Arizona, Hawaii, Maryland, Michigan, New Jersey, Ohio and Texas each gain one House seat. The biggest losers are Pennsylvania, whose Congressional delegation will decline three seats, and Arkansas, Massachusetts and New York, each of which lose two seats.

Here are the present and new lineups of Congressional representation for those states that either gain or lose seats in the House of Representatives on the basis of the 1960 national census:

	Number of Representatives		Change
	At Present	After 1962 Elections	
Alabama	9	8	-1
Arizona	2	3	+1
Arkansas	6	4	-2
California	30	38	+8
Florida	8	12	+4
Hawaii	1	2	+1
Illinois	25	24	-1
Iowa	8	7	-1
Kansas	6	5	-1
Kentucky	8	7	-1
Maine	3	2	-1
Maryland	7	8	+1
Massachusetts	14	12	-2
Michigan	18	19	+1
Minnesota	9	8	-1
Mississippi	6	5	-1
Missouri	11	10	-1
Nebraska	4	3	-1
New Jersey	14	15	+1
New York	43	41	-2
North Carolina	12	11	-1
Ohio	23	24	+1
Pennsylvania	30	27	-3
Texas	22	23	+1
West Virginia	6	5	-1

Says Professor Baker: "Legislators quite naturally approve the status quo which elected them to office; many dread the prospect of new and untried constituencies. Those from areas of declining population resist the idea of losing seats to growing areas. In certain cases, even representatives from the expanding areas resist the allocation of more seats because they do not want to share power. In addition to personal considerations, there are any number of partisan, sectional and rural-urban jealousies not easily reconciled."

Or, as one legislator put it more pointedly, "It's not easy to legislate yourself or a fellow-lawmaker out of a job."

Within recent weeks, the New Jersey legislature reapportioned its lower house for the first time since 1941, after ignoring a provision in the state constitution that required it to take similar action in 1950. This time it took a taxpayer's law suit filed by a newspaper to stir the legislature into action. Similar court action is pending in Tennessee, where legislative districts have not been changed in almost 60 years.

Court Action Expected

In the past, the courts traditionally have hesitated to act on the ground that reapportionment was a political, not a judicial, matter. But a decision by the U. S. Supreme Court last fall may reverse that thinking. Courts may be expected more frequently to direct the legislatures to do what state constitutions prescribe but which the lawmakers have ignored in the past.

American voters, who are showing greater interest in government at all levels, are finding that state legislatures have more power than they realized. They are learning that the men and women they send to the state capital have much to say about how they shall be represented in Washington and perhaps by which party. They also are becoming aware that legislatures may be decades behind the times in composition and structure.

As a result, it seems certain that more voters than ever will be looking to their state legislators to forego political considerations in creating any new political subdivisions, either state or national, and concentrate instead on compactness, contiguousness and population equality. #



THE LINEUP

T EEN-AGERS, long noted for the awkward, unusual and even grotesque positions they often manage to assume, may not have the contortionist championship nailed down. Draftsmen, it seems, are crowding them for top honors—especially automobile draftsmen.

Since drawings for many automobile parts must be prepared in actual size—even 15-footers for car frames—draftsmen often have to get right on top of their work—literally. To insure accuracy, they move right in on it, and spend hours on stomachs, elbows and knees.

Those pictured here had thrown themselves so completely into—and onto—their work, they never saw the photographer—until it was too late.

DOUBLE-JOINTED

By Jack B. Kemmerer

DOUBLE-HEADER



ETC 29202

THE THINKER





CHAMBER OF CONTORTIONISTS



NOSE FOR NEATNESS



TWO FEET HIGH



THE HEADLESS DRAFTSMAN

ETHYL IN THE NEWS

Need for New Knock-Testing Methods Discussed

THE NEED FOR LABORATORY knock-testing methods that fully portray fuel and engine progress was discussed by Earl Bartholomew of Ethyl Corporation at the 1961 SAE International Congress and Exposition of Automotive Engineering in Detroit earlier this winter.

Mr. Bartholomew is director of the technical staff at Ethyl's research laboratories in Detroit. He called the development of laboratory testing methods that more accurately reflect actual performance of gasoline one of the challenges facing oil and automotive research people in the 1960's. The lack of such methods sometimes penalizes refiners in their efforts to satisfy the octane requirements of the car population efficiently and economically.

Present Research and Motor methods of knock-testing, used for day-to-day refinery control of gasoline antiknock quality, were established about 30 years ago. Since then, fuel and engine improvements have altered patterns of engine operation and fuel performance. Thus, present knock-testing methods do not satisfactorily simulate operating conditions of modern engines, Mr. Bartholomew pointed out.

Preliminary research work on new knock-testing methods and equipment indicates that an adapta-



Addressing SAE meeting, Ethyl's Earl Bartholomew pointed out need for knock-testing methods that more accurately reflect gasoline quality.

tion of the standard ASTM-CFR knock-testing engine, incorporating a "high-speed" crankcase, a new cylinder and an improved knock indicator, may be promising, he told the automotive engineers.

Named Foreign Representative in Export Sales



Robert J. Riggs

ROBERT J. RIGGS, foreign sales representative in Ethyl Corporation's Export Sales, is now responsible for sales of Ethyl products to the oil and related industries in Europe and the Far East, with the exception of Japan. Mr. Riggs makes his headquarters in New York.

Before his appointment to his new position a few months ago, Mr. Riggs was a refinery technologist in Ethyl's Southern region. Previously he had been a chemical engineer in refinery technology in the Research and Development department.

Prior to joining Ethyl, he was a member of the staff of DX-Sunray Oil Company at Duncan, Okla.

A native of Rising Sun, Ind., Mr. Riggs received his college education at the University of Cincinnati and the University of Tulsa.

Research Students Supported by Ethyl Fellowships

TWENTY graduate research students and one undergraduate, receiving financial support from Ethyl Corporation, have completed the first half of the 1960-1961 academic year. This is the 24th consecutive year students have received this type of support from Ethyl.

Under the current program, the graduate students are awarded fellowships, most of which provide \$1,900 for living expenses, plus an allowance for tuition and fees. In addition, the university department where they are studying gets \$600 for expenses in connection with their work. The scholarship recipient receives \$500 toward his expenses.

This year's students are studying in the fields of chemistry, chemical engineering, mechanical engineering, industrial engineering and science teaching. They are enrolled at the following universities: Cincinnati, Clemson, Columbia, Detroit, Florida State, Florida, Georgia Tech, Illinois, Iowa, Iowa State, Kansas, Louisiana State, Minnesota, Ohio State, Oklahoma State, Penn State, Purdue, Tulane, Tulsa, Wayne State and Wisconsin.

Commercial Development Division Organized into Five Sections

REFLECTING Ethyl Corporation's increasing interest in new products, the Commercial Development division of the Company's Research and Development department has recently been organized into five functional sections. The sections and their superintendents are: Commercial Development Planning, Earl DeWitt; Business Information, Burke Grandjean; Market Research, Clarence Harvey; Product Development, Charles Montgomery; and Market Development, Derrick Graham.

Clarence Neher is director of the Commercial Development division and Merle Gould is assistant director. The division's headquarters is in Baton Rouge, La.

Improvements Made in Compression Pressure Gauge

BETTER OPERATION at less cost is provided by a new check-valve assembly for the "Ethyl" compression pressure gauge produced by Ethyl Corporation's research laboratories in Detroit. This precision-type gauge is used for highly accurate measurement of compression pressures in piston engines during research and development work. Since maximum pressure must be retained by the gauge, the check-valve assembly is the heart of the instrument.

In the new assembly, nylon-balls seating against neoprene O-rings replace the two disk-type check valves previously used. This change minimizes malfunctioning, since dirt and other foreign material could cause improper seating of the disks.

Cost also has been reduced by elimination of the laborious polishing operation required to obtain smooth, flat, scratch-free disks. One face of each disk previously was hand polished on an Arkansas oil stone.

New Manual Is Guide for Laboratory Use of Antiknock Compounds

A NEWLY REVISED MANUAL, designed as a guide for laboratories using "Ethyl" antiknock compounds and associated gasoline additives, has been published by Ethyl Corporation. The manual contains pertinent data on the handling and application of commercial grades of antiknock fluids and ignition control compounds and the dilute counterparts of these compounds prepared especially for knock testing laboratory use. The instructions also are applicable to custom blends of these compounds which can be furnished on request for use in special programs.

The manual is published in loose-leaf book form and can be kept up to date by adding supplementary pages as they are issued from time to time.

Meet Ethyl's Marv Russell—Auton

A WEST COAST TRUCKING COMPANY, bothered by vapor lock and loss of power in their vehicles, went to the manufacturer of the gasoline they were using. Where did the fault lie, they wanted to know.

The oil company called Ethyl's Marv Russell in Los Angeles. Could he help?

Marv went right to the problem, examined the trucks, and found that the gas lines were too close to hot exhaust manifolds. He recommended changes that solved the problem and saved a customer for the oil company.

Another company was setting up a dealer training program in connection with a new gasoline. Could Marv Russell help with the demonstrations? He could indeed.

Helping to solve problems like these is not new to Marv. A veteran of 18 years with Ethyl, he has spent the last nine years working with oil company engineers and technical people. He helps them

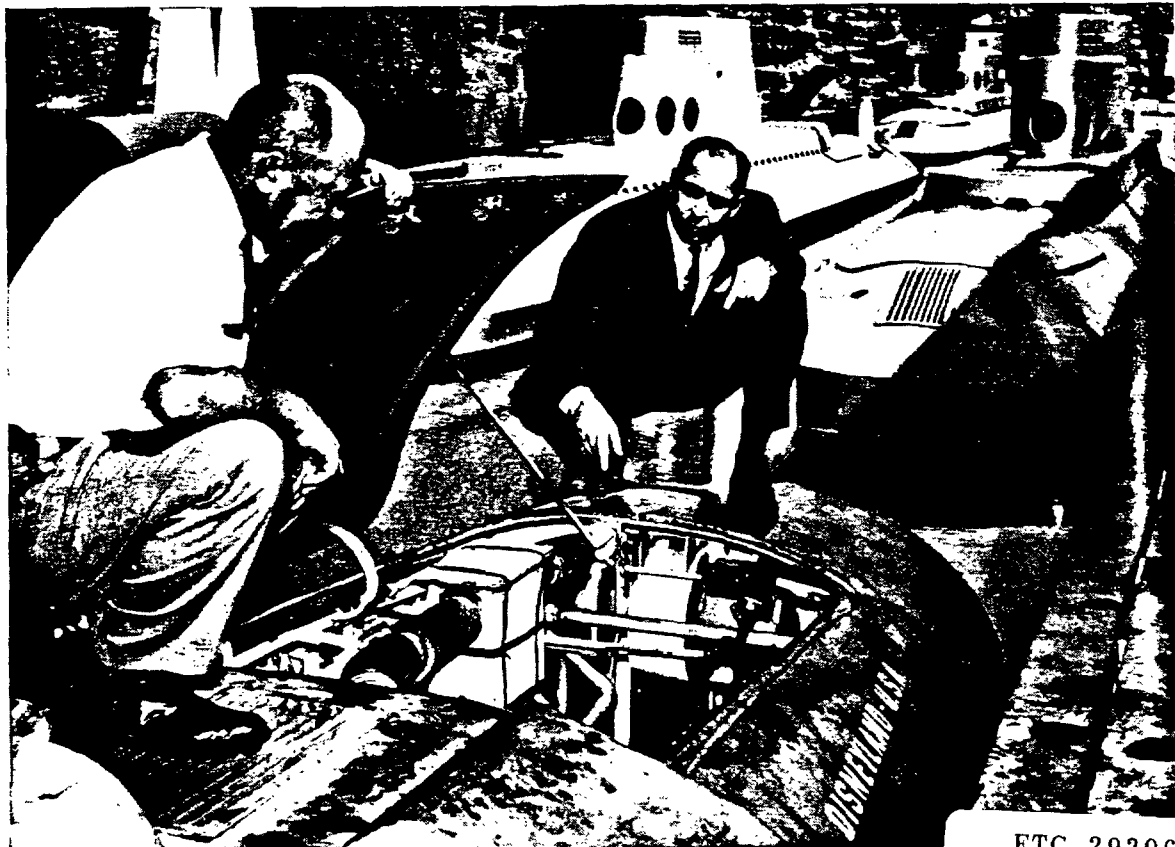
make sure that their customers are getting the greatest satisfaction and economy from the petroleum products they are using.

This takes plenty of know-how. Marv started acquiring his by getting a petroleum engineering degree. After a stint as a designer and builder of race cars, he went to work for an oil company. One of his assignments included work on a cooperative program to develop the present Research method for determining gasoline antiknock quality.

He started with Ethyl in gasoline testing, served in product service, and now he's an automotive engineer, rounding out a career deep in practical experience.

Marv is active in the Society of Automotive Engineers, having been chairman of SAE's Southern California section. He is typical of Ethyl specialists—men highly qualified to help solve oil company service problems when it counts most. #

TROUBLESHOOTER. In helping oil people build customer satisfaction, Marv Russell is apt to find himself anywhere—even at Disneyland. His broad experience equips him to handle unusual consulting jobs in the fuel-engine field.

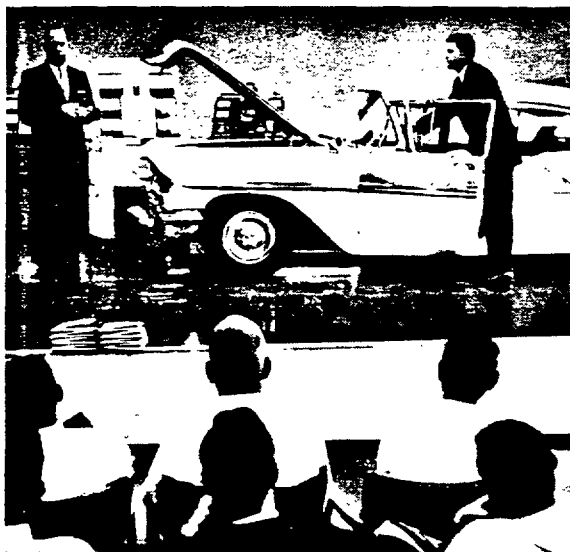


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Automotive Engineer In the Western Region



TRAINER. Marv gives a demonstration to oil company salesmen on the relative effectiveness of different fuels under actual conditions. Like his counterparts across the country, Marv has found his specialized know-how and Ethyl's range of training tools valuable supplements to the customer's own training programs.



SPECIALIST. In the light of his experience, Marv is often called upon to interpret technical data for the benefit of customer operating people. Here he is discussing the spark advance characteristics of new United States automobiles with an oil company refining executive and Ethyl Corporation's Ed Erskine.



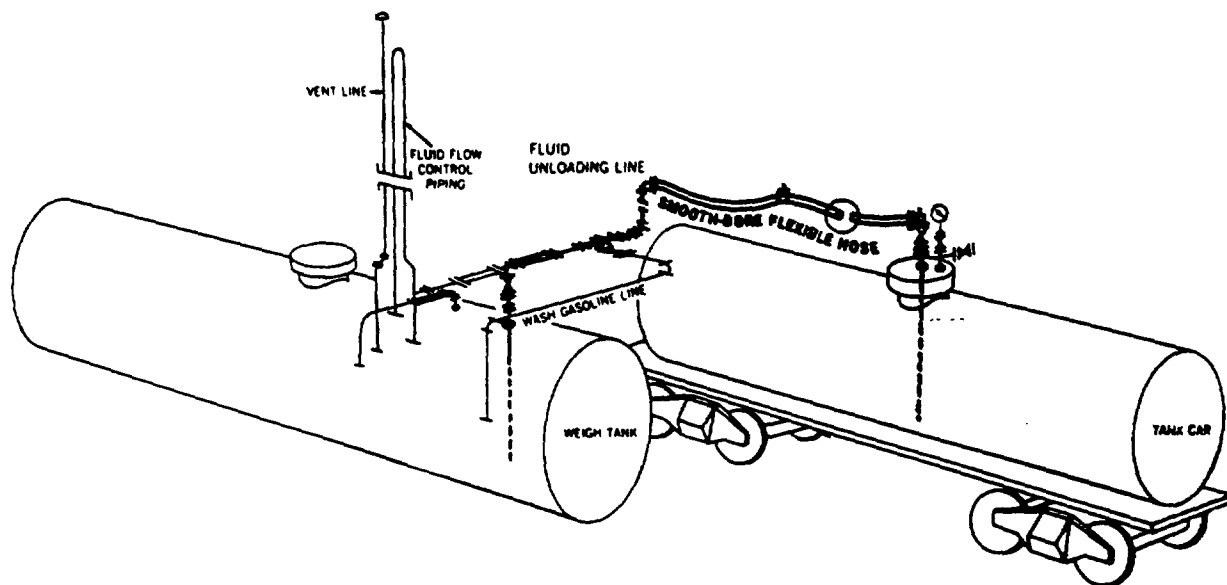
CONSULTANT. With oil company representatives, Russell makes periodic visits to fleet operators to review improvements or changes in maintenance procedures. Often, during these on-the-spot discussions, he is able to suggest modifications that lead to greater engine efficiency and operating economy.



LIAISON MAN. Part of Marv's job is to inform fleet operators and oil company engineers of developments in the commercial engine field. Here, he reviews one of Ethyl's periodic surveys on performance of heavy duty fleets, maintenance practices and engine durability with a fleet superintendent and oil company representative.

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Ethyl innovations speed up emptying of antiknock compound tank cars, saving time and money for oil refiners

IF, AS BENJAMIN FRANKLIN once reminded a young tradesman, "time is money," then the "package" of five time-savers that Ethyl Corporation is making available to oil refiners are money-savers too.

The innovations can cut in half unloading time for each 6,000-gallon tank car of "Ethyl" anti-knock compound. They enable refinery personnel to transfer fluid from an Ethyl tank car to the refinery mixing plant weigh-storage tank 2½ hours faster than formerly.

Moreover, two of the five time-savers cost refiners nothing. The other three can be installed inexpensively—for a total of about \$655 at existing antiknock compound mixing plants, and for only

about \$230 more than conventional equipment at new plants.

The five time-savers are:

- FLUID FLOW CONTROL
- SHORT TANK CAR WASH
- BALL VALVES
- SMOOTH BORE HOSE
- MANIFOLDED TANK CAR VALVES

By using these improvements in unloading procedure and equipment, refinery mixing plant personnel can unload and wash a 6,000-gallon tank car in about 135 minutes (2¼ hours), as compared with about 285 minutes (4¾ hours) presently required. This is a saving of 150 minutes (2½ hours)—more than 50 percent.

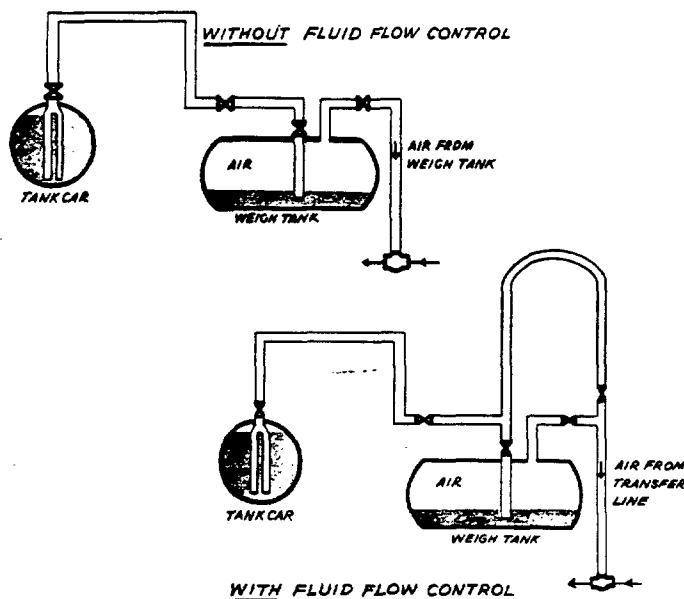
THE TIME

FLUID FLOW CONTROL

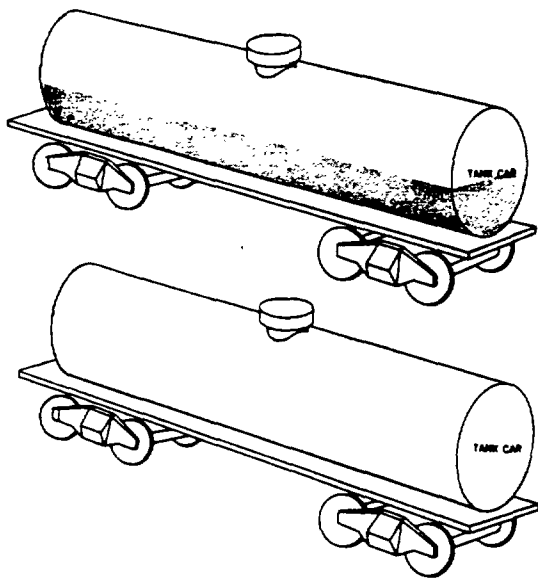
FLUID FLOW CONTROL, the first of the time-savers, was developed by Ethyl early in 1954, and since has been patented and installed in a number of plants. Essentially, it is a vertical loop of pipe, with an extra valve, connected to the antiknock compound transfer line. In starting tank car unloading, Fluid Flow Control makes it possible to evacuate air from the transfer line. The line can then be primed and the flow of fluid started immediately.

In a plant without Fluid Flow Control, as much as 50 minutes can be required to build sufficient vacuum in the weigh tank to *start* unloading. With Fluid Flow Control, practically *no* time is required to *start* unloading a tank car.

Average time saved: 25 minutes.



SHORT TANK CAR WASH



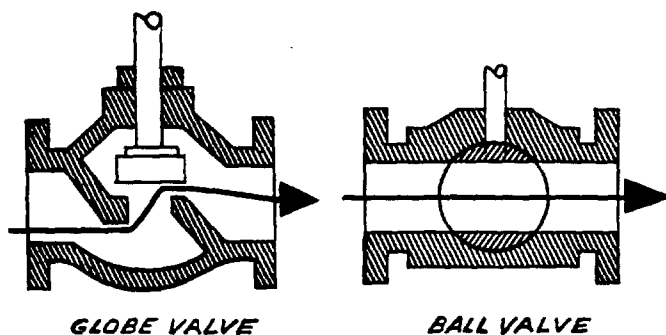
SHORT TANK CAR WASH is an accelerated way of performing the standard practice of rinsing the interior of antiknock compound tank cars with gasoline after unloading. Cars are washed for two reasons: to insure that the refinery gets all the fluid out of the tank car, and to flush the unloading line so that there will be no hazard from fluid spillage or drippage when the line is disconnected.

The new Ethyl system is like the former system in that two separate batches of gasoline are put into the car and withdrawn. The big difference simply is in the amount of gasoline used—2,000 gallons under the old system and 400 gallons under the short wash procedure—and the time consumed in putting it into the car and withdrawing it. It has been found that 400 gallons remove fluid and wash transfer lines satisfactorily, and there is no need to use the larger, more time-consuming quantity.

The old procedure can require up to 85 minutes. The short wash which can be put into use at no cost to the refiner has been done in as little as 17 minutes.

Average time saved: 35 minutes.

BALL VALVES



BALL VALVES, the third Ethyl time-saver, can be used in place of globe valves at the three valve locations in the transfer line, to accelerate

the flow of fluid from the tank car to the mixing plant weigh tank. The basic difference between globe and ball valves is this: In a globe valve the fluid must come in through the bottom and make two sharp right-angle turns before passing out of the valve. In the ball type there is a straight passage, almost the same as a piece of straight-through pipe.

Interrupted flow direction and constrictions in the globe valve cause considerable turbulence. This results in flow restriction. Replacement of globe valves with the proper type of ball valves speeds up unloading.

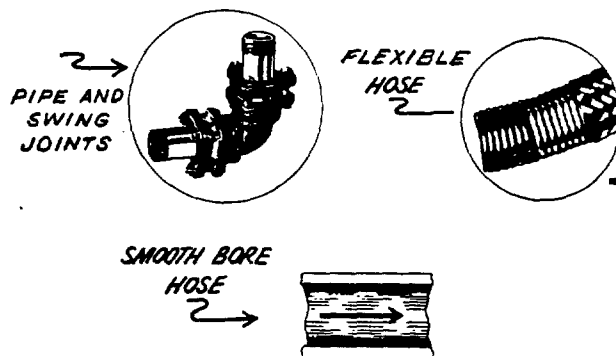
Average time saved: 55 minutes.

SMOOTH BORE HOSE

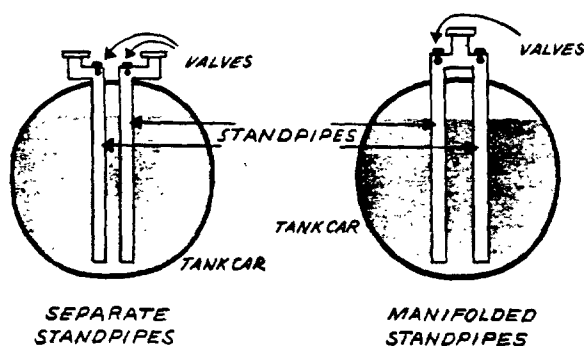
SMOOTH BORE HOSE, a recent unloading improvement, was made in 1959 to the swingline. The swingline connects the tank car to the line leading to the mixing plant weigh tank.

The new hose, developed by Ethyl Corporation and a hose manufacturer, is a steel-reinforced, plastic lined neoprene hose. Its smooth bore provides faster, smoother passage of fluid than swinglines made of pipe and swing joints or flexible hose.

Average time saved: 25 minutes.



MANIFOLDED TANK CAR VALVES



MANIFOLDED TANK CAR VALVES comprise the last of the five time-savers. It involves connecting the two tank car standpipes together above their valves. When this is done, fluid can be drawn up through both standpipes, through both tank car valves and through a single outlet and into the transfer line at the same time. Thus, rather than drawing through only one standpipe and one tank car valve at a time, it is possible to achieve a faster flow rate. This time-saver has been incorporated in many of Ethyl's tank cars and costs the refiner nothing.

Average time saved: 10 minutes.

Still other developments are offered by Ethyl to facilitate tank car unloading. These include the "Ethyl" Vacuum Pump System, three-inch transfer

lines, and Auxiliary Circulating System. Because of their increased cost, these developments are recommended only for special situations. #

THERE'S HISTORY IN MAGIC CIRCLES

WILLIAMSBURG, VA.; New Salem, Ill.; the Alamo at San Antonio; Tombstone, Ariz.—these and many other historic spots will be featured in Ethyl Corporation's Magic Circle advertising campaign this year. Designed to focus attention on America's priceless but hard-won heritage, the advertisements will urge parents to help make history come alive for their children by taking them to visit outstandingly significant places in the country's past.

As a part of Ethyl's market expansion program for the oil industry, the 1961 Magic Circle advertisements also are intended to stimulate more automobile travel and thus help marketers sell more gasoline and other service station products.

The new advertisements will feature dramatic, full-color photographs of parents and children at the nation's historic shrines. They will emphasize the new appreciation of American history youngsters—and adults, too—can gain by visiting such places. At the same time, the message and map in each ad point out other places of interest in the same Magic Circle. They also remind readers that in the Magic Circle in which they live, there are equally fascinating places of scenic and historic interest—and that they can learn and have fun by visiting them in the family car.

Ethyl's Magic Circle advertisements will appear during the peak driving months this year in *The Saturday Evening Post*, *Life*, *Reader's Digest* and, on the Pacific Coast in *Sunset*. These magazines are seen by a total of some 78 million people each month.

Four different regionalized ads will run simultaneously the same month in each of the national magazines. A different one will appear in each of four major geographic areas, tailor-made to appeal to the motorists in that area. For example, eastern editions will feature Williamsburg; western, Tombstone; central, New Salem; and southern, the Alamo.

Supplementing the advertisements again this year is the publicity phase of Ethyl's market expansion program—the Magic Circle Travel Clinic. It too will feature historic areas as well as those of scenic and recreational interest. More than 175 major daily newspapers throughout the country use Magic Circle tour articles on a pretty regular basis. The articles also are sent to some 500 smaller dailies and county-seat weeklies in ready-to-print mat form.

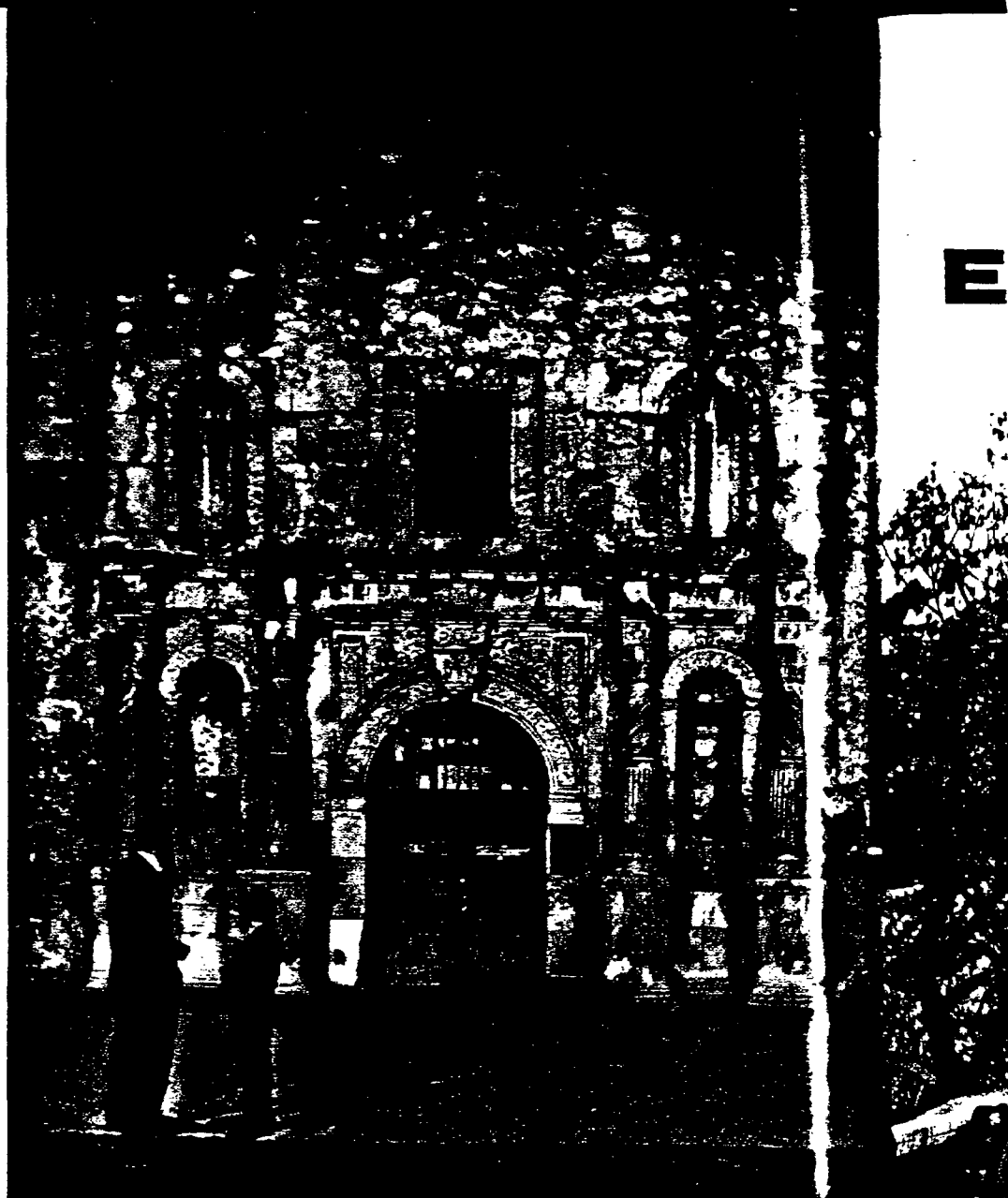
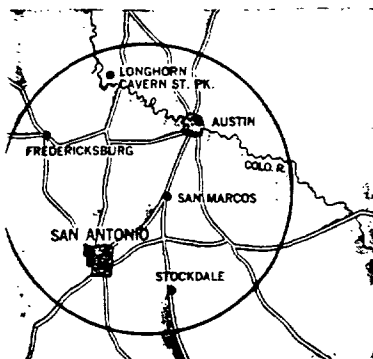
Each week, an article, accompanied by an illustrated map, describes an inviting tour in a different area. Travel Clinic articles with a historic flavor scheduled for this year include California Mission Trails; Cradle of America (Virginia); Valley Forge, Pa.; Plymouth Rock-New Bedford, Mass.; Sturbridge, Mass. and the Natchez Trace Parkway in Mississippi and Tennessee.

An adaptation of one of the new Magic Circle advertisements, this one featuring the Alamo, appears on the back of this issue of ETHYL NEWS.



This Magic Circle

is in the great Southwest. Other things you can enjoy in this area are the beautiful University of Texas campus in Austin, and Long Horn Cavern State Park. Or your service station dealer will help you map out a Magic Circle trip in your own area.



"Why do they say, 'Remember the Alamo'?"

"WHY, son? Because inside that mission church a couple of hundred Texans held out ten days against an army of thousands. Men with names as sharp as their knives—Crockett, Travis, Bowie."

YOUR children have read how "Remember the Alamo" became a battlecry that rallied all Texas to arms. How in six short weeks, Santa Anna's armies were defeated and Texas was free.

But take them to the Alamo. Let them imagine the hunger, the heat, the exhaustion, the desperate hand-

to-hand fighting. Suddenly, learning becomes fun; that black-and-white print in their history books becomes something that really happened—something far more important and exciting than their favorite TV show.

Wherever you live, there is history to be relived and a heritage to be absorbed. Battlefields, state parks, monuments, museums, historic sites—they're all within easy driving distance of your home.

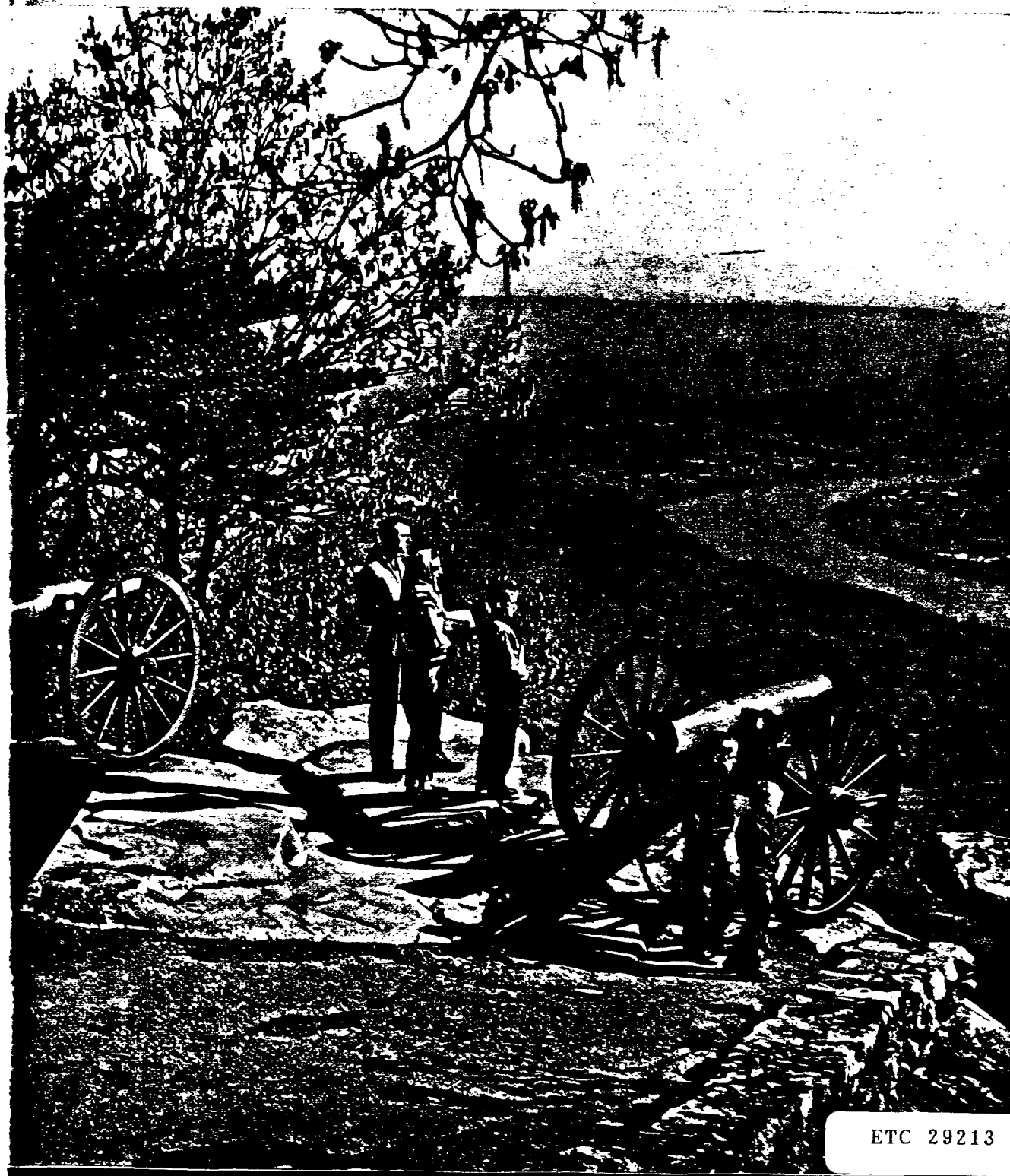
Ethyl calls this enlightening world that surrounds you a "Magic Circle." Start exploring your Magic Circle this weekend.

Ethyl Corporation, New York 17, N. Y. • Ethyl Corporation of Canada Limited, Toronto.

These Magic Circle advertisements are published by Ethyl Corporation, to help you get more enjoyment out of your car. Ethyl makes additives used by oil companies everywhere, to improve their gasoline and your driving pleasure.

ETHYL NEWS

MARCH-APRIL 1961



ETC 29213

ETHYL NEWS

MARCH-APRIL 1961

Published by

Ethyl Corporation

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

manufacturer of "Ethyl" antiknock compounds and other additives used by oil companies to improve the quality of petroleum products.

B. B. Turner, President

William R. Perdue, Jr., Vice President and Treasurer

Herbert A. Savage, Secretary

Richard F. Cook, Editor, ETHYL NEWS

Stanton P. Nickerson, Associate Editor

Corsten Grande, Art Director

Articles from outside sources are welcomed.

Upon request, permission to reprint material appearing in ETHYL NEWS will be granted

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ON THE COVER, as Ethyl Magic Circle ads suggest, a family visits an historic spot—Lookout Mountain, near Chattanooga, Tenn., scene of the Civil War "battle above the clouds." Oil's part in the War is told on pages 1-5.

PHOTO CREDITS: Cover, Alpha Photos; pages 1-5, The Bettmann Archive and N. Y. Public Library; pages 9 (left), 10 (right) and 11 (center), Lead Industries Assn.; page 9 (right), J. Alex Langley; page 10 (left), American Airlines; page 11 (top), American Smelting and Refining Co., and (bottom), Socony Mobil Oil Co.; page 12, Fabian Bachrach; page 17 (top right), The Photo Mart; page 18 (top right), Bangor, Me., Chamber of Commerce, (left center), Enterprise, Ala., Ledger, (bottom left), William Soriano, (bottom right), New York City Department of Parks, all other photos on pages 16-19, Jack B. Kemmerer.

Printed in U.S.A.



OIL

Less than two years old when hostilities broke out, the

THE OMINOUS SOUND of Confederate shells crashing into Fort Sumter, signalling the beginning of the Civil War, echoed and re-echoed across the country in the Spring of 1861. It reverberated through the hills and valleys of northwestern Pennsylvania, rolling up Oil Creek, through bustling Oil City, Petroleum Centre and Titusville, and among the forests of rough wooden drilling rigs and refinery stills that blanketed the landscape.

But unlike World War II, when the Allies "floated to victory on a sea of oil," and the Korean conflict, when 65 percent of all tonnage shipped to United Nations troops was petroleum products, oil wasn't quite ready to answer President Lincoln's call for volunteers to defend the Union. Less than two years had elapsed since the infant industry had been launched on the meager but steady flow of oil from Col. Edwin L. Drake's discovery well.

Before the bloody, tragic war had dragged to an

ETC 29214



GOES TO WAR

ut, the petroleum industry played a key role in the North-South conflict

end four years later at Appomattox, however, oil did don the blue uniform of the North and see limited military service. Behind the battle lines, it played an even larger part, bolstering the civilian economy and contributing to ultimate victory and the preservation of the Union.

Still undiscovered below the Mason-Dixon line, petroleum played practically no part in the South's war efforts.

Little Mention of War Record

There is no lack of recorded oil history for the Civil War years. It was the well-documented period of sensational strikes, quickly made fortunes, and the dramatic beginnings of petroleum production, transportation, refining and marketing. But because oil's role on the battlefields and on the sea was limited, there is little mention of its war service in military or civilian texts covering those years.

The few that do exist, however, point up oil's interesting—if primitive—applications and underscore once again the tremendous progress the industry has chalked up in a hundred years.

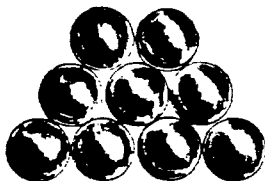
Beyond its use as an illuminant and lubricant, one of oil's most direct and vital war uses was in first aid. Tried intermittently for centuries as an internal and external medicine and revived as a "cure for nature's ills" in the 1840's by the enterprising Samuel Kier, petroleum was effectively applied to wartime gunshot wounds by Union army medics. Its curative qualities are described in *Petroleum: A History of the Oil Regions of Venango County, Pennsylvania*, published in 1866, just a year after the war's end.

"The testimony of an assistant-surgeon from the bloody field of Gettysburg, will be here in place, as to the effects of petroleum in the medication of wounds: 'What water is to a wound in an inflamed

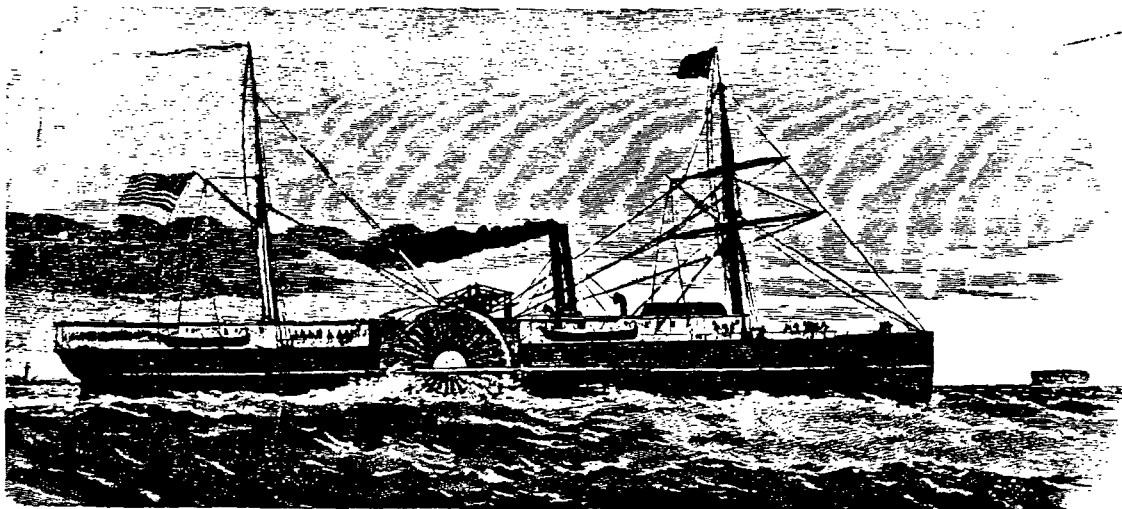
OIL GOES TO WAR



Applied directly to gunshot wounds, crude oil was effective in promoting healing, according to an Army surgeon at Gettysburg.



Petroleum was found to be a good substitute for coal in naval steamers, but potential safety hazards ruled out its practical use in existing equipment.



state, petroleum is to a wound in a suppurating state. It dispels flies, expels vermin, sweetens the wound, and promotes a healthy granulation. Having dressed the wounds of two patients with it, I found they had sunk to sleep before I had finished the dressing of the third.' "

While petroleum was finding successful medical applications on Civil War battlefields, potential safety hazards were ruling it out as a practical fuel for naval vessels at sea. A report of the Secretary of the Navy for 1864 tells why:

"Nearly all the various coals of the seaboard states have been the subject of careful experiment, to ascertain their relative value for naval purposes. A board of engineers has also experimented with petroleum as a substitute for coal in naval steamers, but while the results were very favorable, the further development of this important substance as a fuel has been prevented by the discovery that when exposed to the air of a confined space at summer temperatures, it gives off, even through the open bunghole of a barrel, a gas which, when mixed with atmospheric air, becomes explosive and detonates with the force of a gunpowder. Until a practical remedy for this is found, it is manifestly useless to experiment upon the best form of apparatus for burning it."

But if petroleum failed to replace coal as a fuel

for naval vessels, it did substitute for much-needed naval stores—turpentine specifically—according to John Ise's *The United States Oil Policy*.

"At the beginning of the war, the North was shut off from the turpentine districts of the South, and the small supply of turpentine soon advanced to exorbitant prices; in fact, it was not adequate to the demand for painting and other mechanical purposes. Happily, some of the products discovered in refining crude oil proved a satisfactory substitute for turpentine, for many purposes."

"Best Oil for Guns"

The superior lubricating qualities of "rock oil," of course, had long been recognized, and it didn't take the military long to realize that its weapons could be maintained at peak combat efficiency by using it. In May 1861, just a month after the war's outbreak, *Scientific American* carried an article proclaiming that "the best oil for guns is coal oil or petroleum."

While the far-off firing at Fort Sumter and other early engagements may have seemed quite remote to oilmen frantically scrambling for fortunes in the hills of northwestern Pennsylvania, subsequent withdrawals by Union forces brought wavering battle lines much nearer. In a couple of years, they were so near, in fact, that they directly affected oil pro-

duction and prices. Here is how John T. Flynn reported it in *God's Gold*:

"The tide of war was rolling close to the oil creeks of Pennsylvania. Lee's victorious and apparently invincible army was marching northward. May 2nd and 3rd, 1863, the battle of Chancellorsville was fought and Lee was driving into Pennsylvania.

"The news of this movement sent a shudder of alarm through the oil regions. There was almost total suspension of business. The price of oil shot upward. Men were asking \$3.50 a barrel . . .

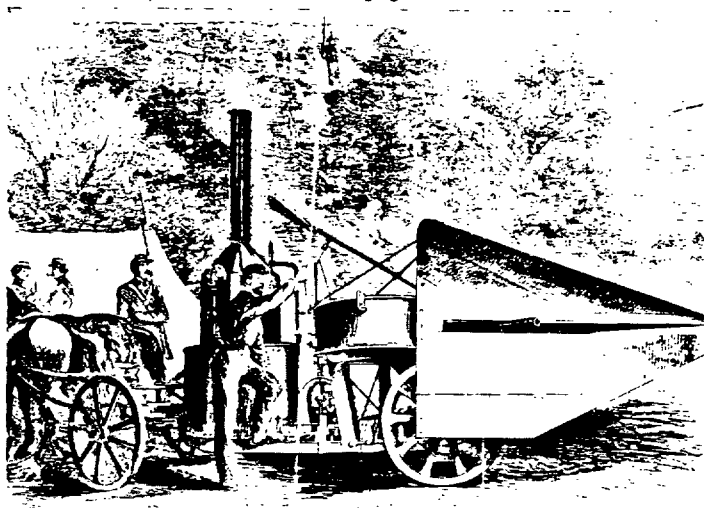
"But workers were leaving for the army. The draft officers were moving around the country gobbling up slackers. By the end of June notices were posted in the oil towns that the draft officers would be in the oil country Monday and Tuesday, July 9th and 10th. The government wanted seven hundred men from that district. It would be a blow to the business. 'But,' said the *Oil City Register*, 'everyone is ready to face the music.'

"Then came the belated news of the defeat of Lee at Gettysburg and [the Union victory at] Port Hudson. And a wave of relief swept over the regions."

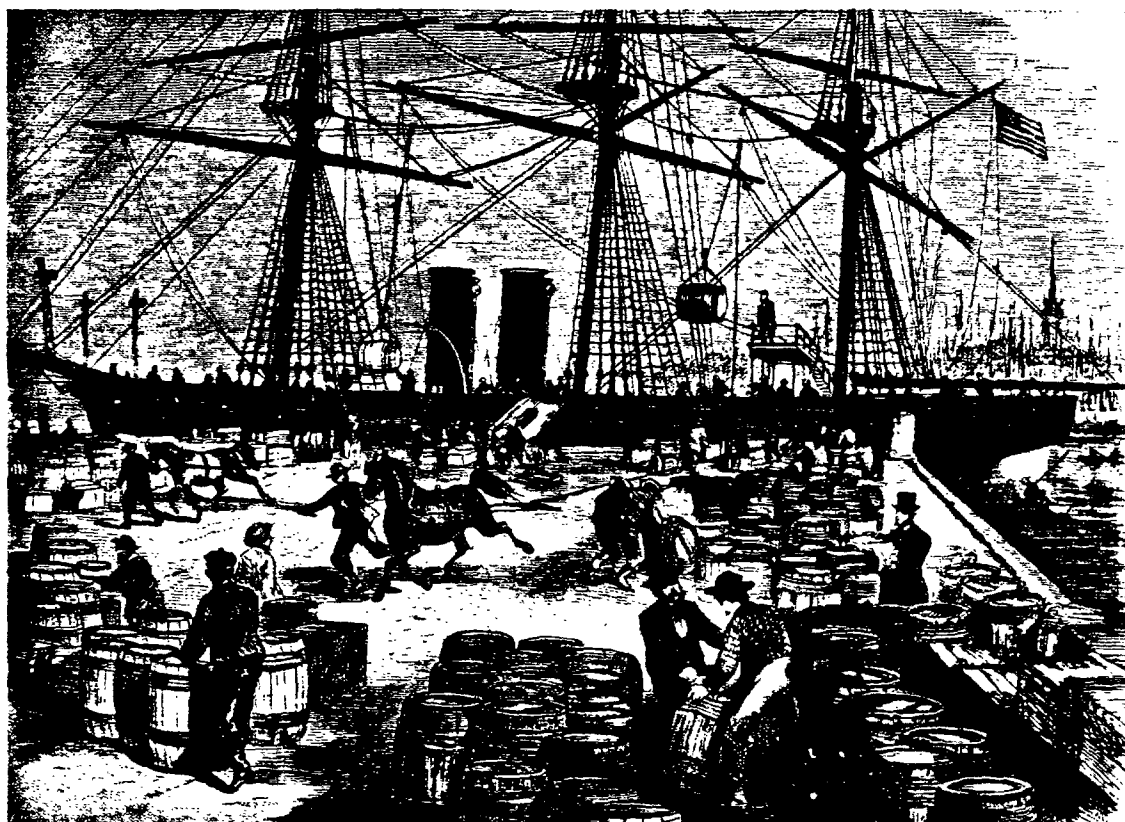
Although the tide of war upped the price of oil—it went to \$14 a barrel in 1864—and even caused temporary suspensions of business, generally production continued unabated throughout the 1861-



Widely used as an illuminant and lubricant by civilians in the 1860s, petroleum was used by the military for lighting hospitals and headquarters and for oiling guns.



OIL GOES TO WAR



Oil's greatest contribution to the war effort was as a valuable export, bringing in needed revenue.



1865 period. And it was a good thing it did, for the substantial export market that developed provided an important source of revenue, helping to offset the North's outflow of gold and to finance the war.

Oil's valuable contributions along these lines are documented in several reports on the period, among them *The American Petroleum Industry—1859-1899, The Age of Illumination*. According to authors Williamson and Daum, "Wartime abnormalities during 1861 and 1862, made it difficult for members of the American industry to push petroleum exports. Shipping space was particularly in short supply, even for the coastal trade, as the American government pressed many ships into service, including 150 vessels from the whaling fleet.

"Added to this difficulty was the menace of Confederate privateers, which led to war-risk insurance rates so high that American vessels became virtu-

ally unavailable for foreign trade. Owners of foreign ships were also reluctant to expose their craft to the hazards of fire and explosion by hauling petroleum. . . . By the fall of 1862, these tensions had been resolved sufficiently to remove any lingering doubts about the possibility of developing an important export market for American Petroleum.

On the same subject, *The Venango Spectator*, weekly newspaper of Franklin, Pa., in the heart of the oil region, reported in November 1862: "The foreign demand in 1860 was comparatively nothing—the few shipments made in that year being mere ventures. In 1861, oil began to attract attention in Europe and has now become one of the heaviest, as it soon will be the largest article of export from this country. Taking the present year, we have exported from January 1, to October 27, 7,658,680 gallons. This foreign demand is increasing."

Oil's economic importance to the North was recognized on both sides of the Atlantic. In 1866, Sir S. Morton Peto, of London, reporting on a visit to America the previous year, told of its value: "At a moment of civil war, when the balance of trade was against the nation, when gold was necessarily going out . . . petroleum sprang up . . . in quantities sufficient to make sensible diversion in the national commerce. . . . It is difficult to find a parallel to such a blessing bestowed upon a nation in the hour of her direst necessity."

Back home in America, William Wright, in *The Oil Regions of Pennsylvania*, wrote: "This foreign trade . . . had taken on an almost hallowed, sacred character . . . petroleum invaded world markets just when the demand for war material here was at its height. Consequently, the liquid gold allowed the solid metallic gold to remain in the United States and thus, petroleum, according to the popular belief, more than any one commodity, helped to preserve the financial structure of the North."

Petroleum taxes, too, helped finance the war, according to reports of the United States Revenue Commission in 1866. They record that under the

laws of July 1, 1862 and June 30, 1864, both of which levied taxes on refined and crude oil, the government collected about \$7,000,000 during the Civil War.

The first of these two acts put a duty on refined oil of 10 cents a gallon, effective September 1, 1862, but when the product was exported "a drawback was given in the amount of duties paid." The law of 1864 put a duty on refined oil of 20 cents a gallon, "except that naphtha with a specific gravity exceeding 80° Beaume, commonly known as gasoline, shall be subject to a tax of five per centum ad valorem."

Still another act, this one passed March 3, 1865, continued the same tax on naphtha, but the gravity was reduced to 70° Beaume at which the tax became effective. The same act also provided a duty of \$1.00 on each barrel of petroleum or rock oil of not over 45 gallons capacity.

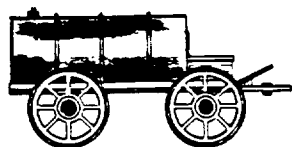
Helped Pay War Debt

Important as a current source of income during the war, petroleum taxes also were counted on to help liquidate the debt that remained after Appomattox, according to Eaton's *Petroleum: A History of the Oil Regions of Venango County, Pennsylvania*.

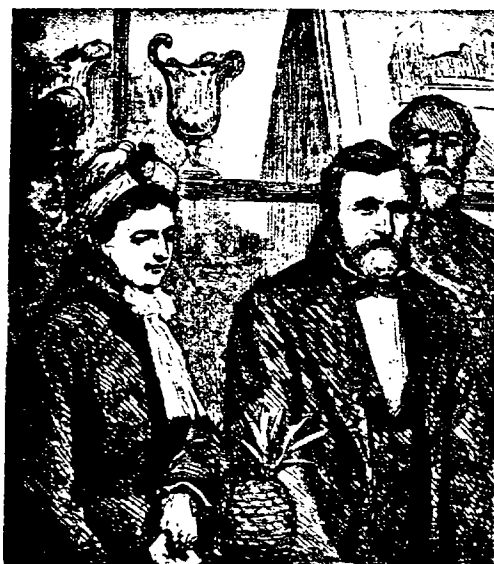
"We have a national debt that is already enormous—a debt that may well frighten even cool heads and well-balanced nerves, as it is contemplated in the future. But with this [oil] trade growing strong in our midst . . . we may well expect to pay off our national debt, and still have the balance of trade in our favor."

While little documented history remains today relating to oil's contributions to the winning of the Civil War, its contributions were not forgotten by President U. S. Grant when he visited Pennsylvania's oil regions in September 1871. In town after town, he addressed the cheering crowds that turned out to greet him, thanking them for their part in the winning of the war.

At Franklin, he said, according to the *Titusville Morning Herald*, "I must thank you heartily for the cordial welcome I have received here and throughout the oil regions generally, a pleasure which is enhanced by remembering, not alone how promptly Pennsylvania contributed her quota during the rebellion, but also the importance of her oil production as an element of national wealth and resource during the same period." #



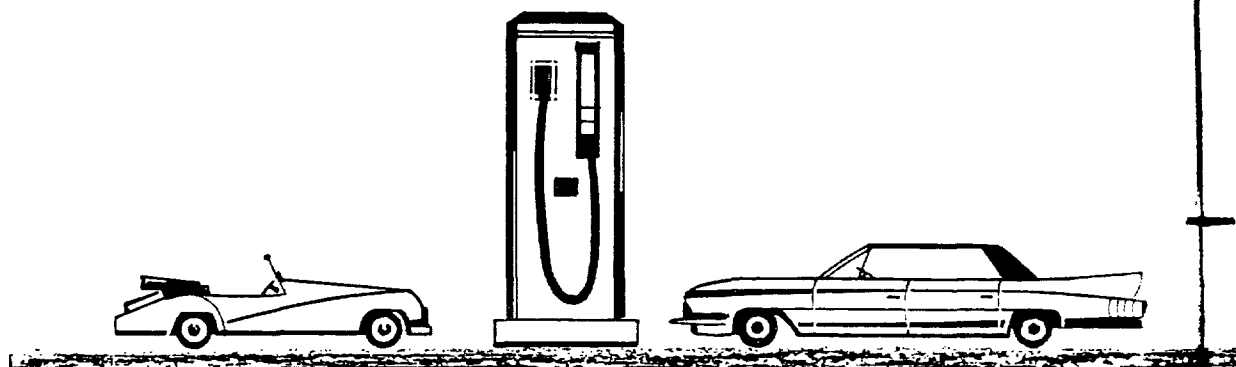
In oil country speeches in 1871, President Grant hailed petroleum's contributions to victory.



Which Antiknock

MLA-750
MLA-500
TML 7

Ethyl helps oil refiners find their in



TODAY'S GASOLINE is not only a mixture of many hydrocarbons, it also is a blend of many important decisions by refiners.

One of the most important of these decisions is how to bring fuel composition, car population requirements, the best antiknock for a specific fuel, and marketing objectives into agreement—to produce the most satisfactory and most profitable fuel.

The solution to the problem of matching fuel composition and antiknock is a complex one, but one that can be rewarding in terms of better road performance at the same or less cost. Essentially it involves the optimum allocation of gasoline components and the blending of the right antiknock in the right concentration.

The selection of the antiknock is vital. It can contribute to the correction of an antiknock deficiency in a fuel, such as unsatisfactory motor octane number and/or road performance, and at the same time reduce costs.

Changes in engine design and engine size are changing the octane requirement of the car population. Foreign and compact cars, especially, have their own peculiar demands for fuels in which they can operate satisfactorily and economically.

Complex Problem

Because there are so many factors that must be taken into consideration, the problem of antiknock selection becomes quite complex. That is why Ethyl Corporation is now more actively engaged than ever in a program to assist refiners in finding their own individual answers to "Which antiknock—*exactly?*"

In the past, changes in fuels and fuel-engine relationships have been met satisfactorily by changes in the formulation of the one antiknock compound universally used by the oil industry.

Today, however, because the hydrocarbon composition of gasoline components varies from company to company—and even from refinery to refin-

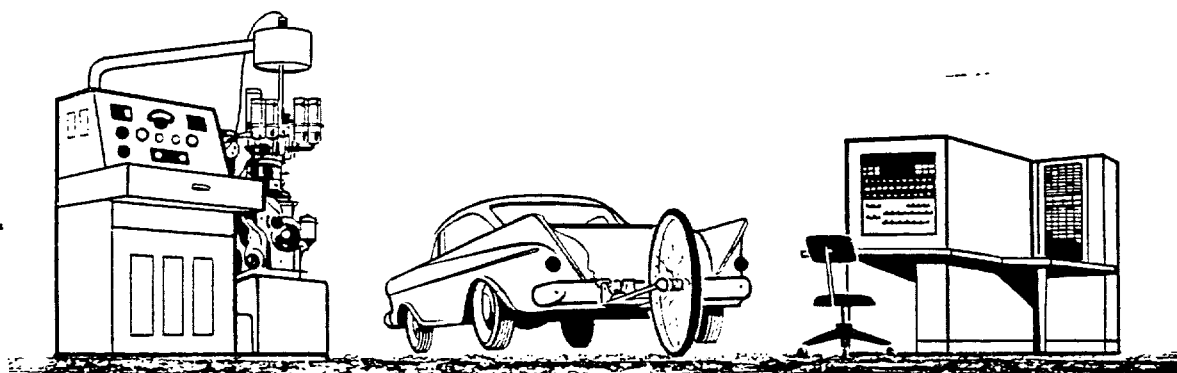
-and Why?

TEL 33 MIX

MLA-250

TELMEL

individual answers to this important question



ery in a single company—no one antiknock is best for the whole industry or even for a single company. Therefore, Ethyl is now offering a number of antiknock compounds.

To help refiners in the selection of the antiknocks best suited to their needs, Ethyl has broadened its long-term program of matching fuels and antiknocks. A number of antiknocks and combinations of antiknocks, are being tested in hundreds of gasoline blends from many refiners. These tests are for both laboratory and road rating and will be related to cost effectiveness. The project will produce a wealth of timely information for individual refiners throughout the petroleum industry.

This information will help them select antiknocks that will insure optimum processing balance and minimum refining costs. In addition, antiknocks thus selected may well supply refiners with exclusive and promotable benefits that can be invaluable in their marketing efforts.

Long experience in the technology of antiknocks is necessary for the development of new antiknocks and their manufacture. Knowledge of the manufacture of one antiknock does not necessarily mean the knowledge required for the manufacture of another. While there may appear to be surface similarities, there are often significant differences of major proportions.

Experience Necessary

Experience also is the necessary ingredient in holding costs down. The successful, economical production of finished antiknock compounds results from a complete know-how of the many manufacturing processes involved and their economical operation.

Ethyl, with 37 years' experience in the field, feels that it is especially well qualified to help all refiners, regardless of size, who are facing the problem, "Which antiknock for us?" #



Ethyl uses one-ton blocks to make TEL.

A NEW Lock c

**Market expansion efforts are extending
uses for this familiar metal
into increasingly diverse fields**

By Stanton P. Nickerson

HEAVY TRAINS RUMBLE over switches next to steel columns supporting a skyscraper, but no detectable tremor reaches even the building's lower floors. Nor do tenants in upper stories realize they are close to rooftop pumps and air conditioning machinery.

The new structure is a soaring monolith of glass and metal, with color accenting its vertical lines. Inside, there is no hubbub from business machines, lobby traffic and conference-room discussions.

Much of the beauty and quiet of modern office buildings are possible because of new and expanding uses for metallic lead. The construction and related industries are applying it with particular dexterity, drawing upon lead companies' adroitness in developing new markets for the age-old metal.

Other recent applications range from electronics and nuclear fission to chemical processing, transportation, precision instruments and fuels. Their potentials for lead consumption vary from a few hundred pounds to multi-thousand-ton increments.

Current market expansion efforts are being carried out to supplement familiar roles for the metal, including those under competitive pressures from other materials. First used by prehistoric man, lead has become well known in more recent times because of its essential applications in metallurgy, insecticides, paints, building and plumbing supplies, foil, ammunition, electrical systems, solder and in making a variety of other products. The

oil and automotive industries depend upon lead extensively.

Many new bulk usages for lead are often completely inconspicuous. In construction, for example, pads of lead and asbestos between bed rock and the foundations of new skyscrapers eliminate vibration. Acting as shock absorbers, these pads prevent structural damage or annoyance to tenants of buildings adjoining railroads, subways or busy highways. Similar insulation muffles service machinery on roofs and interior floors.

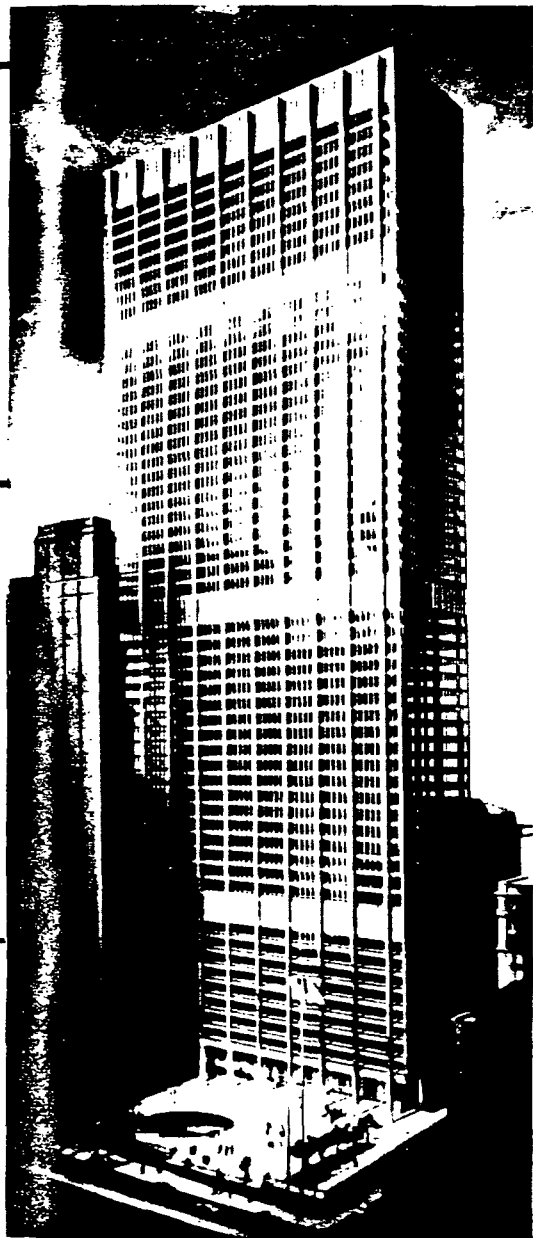
The largest and most complex foundation project ever attempted involving lead is for the 59-story Pan Am Building, now under construction in New York. Its underpinnings intersperse a network of 123 tracks feeding into Grand Central Terminal, and will support more floor space than any other structure ever built.

Prevents Leaks

At Niagara Falls, where the largest hydroelectric development of its kind was completed this winter, the metal is helping to insure uninterrupted operations. Sheets of lead prevent leaks between concrete wall sections and the foundations of huge underground conduits supplying water to turbine generators.

Although it has been an essential ingredient of paints for generations, lead is winning new laurels in making more durable surfaces possible. Recent developments in the chemistry of low-temperature

at LEAD



Lead is used in porcelain-enameled panels on the exterior of the Chase Manhattan Bank

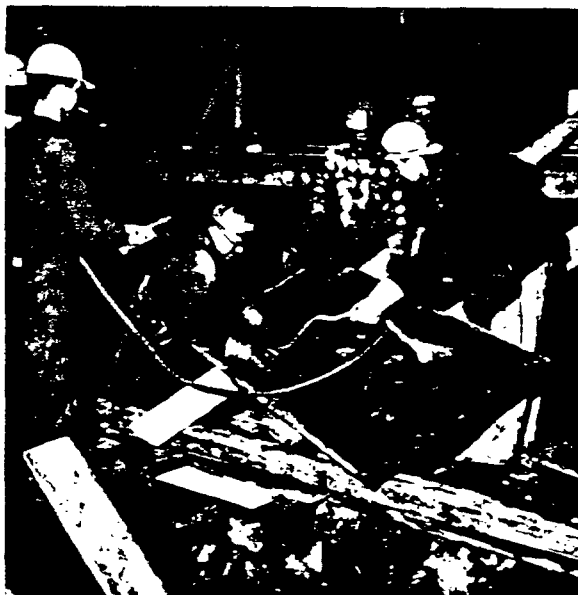
porcelain enamels containing lead mean that color can now be superimposed permanently on construction metals.

Panels of porcelain-enameled aluminum on the Chase Manhattan Bank's new headquarters in the New York financial district are noteworthy examples of how lead is contributing dramatic color relief to skyscrapers. Similar progress with vitreous enamels for use in glass is resulting in more applications of colored structural glass sheets.

Other new contributions of lead to the field of color include the pearlescent properties of some automobile finishes and plastic seat covers and pigmented lead glazing on bricks and tiles, giving them washable surfaces of permanently attractive hues.

One of the most promising new potentials for metallic lead in the construction and building fields is in sound-proofing.

Lead throttles unwelcome decibels effectively under some conditions when only thin sheets are affixed to walls, partitions or doors. Powdered lead combined with plastics and textiles rebuffs more intense noises, so that such materials are ideal for lining the cabins of helicopters and jet planes. When exceptionally severe conditions must



... and in anti-vibration pads under the foundation of the new Pan Am Building in New York City.

A NEW LOOK AT LEAD

be controlled, a lead membrane around absorbent agents like glass wool multiplies resistance to the most penetrating commotion.

In a more novel way, lead and sound are partners in the new field of applied ultrasonics. They work together in cleaning complicated parts, inaccessible areas and delicate instruments. Invaluable to certain industries, ultrasonics involves the application of inaudible sound waves of high frequency. Barrages of these waves literally blast off dirt, grease, insoluble solids and contaminants once difficult or impossible to remove.

Sound Bombardment

Cleansing takes place in a tank of soapy water, solvent or pickling bath, where articles to be treated are immersed and subjected to a brief but intense sound bombardment. Ultrasonic power units utilizing lead zirconate-titanate are ideal for this process. Results are more satisfactory and costs are less than with other kinds of equipment.

Thermoelectric generators taking advantage of waste heat from furnaces and burners will soon be at work in offices, commercial buildings and homes. The thermocouple behavior of lead telluride elements in these generators makes electricity

to run blowers or exhaust fans, so that line power is not needed.

The corrosion of steel exposed to salt water is now being combatted effectively and economically with lead as a weapon. Impressed current systems using anodes of lead alloyed with antimony and silver, when installed on underwater surfaces and charged electrically, confine corrosion to the anodes and keep it from attacking steel surfaces.

Some ships, including oil tankers, are finding that this protection is not only valuable, but also that lead anodes last almost indefinitely. Steel piers, bridges, flumes, breakwaters and other structures exposed to salt water continuously are using lead anode systems to particular advantage.

Busy at docks and ashore, the latest interior trucks and fork lifts are driven by electricity from improved lead-acid batteries. Some industrial lifts easily carry loads up to 30,000 pounds. Others are used to roll tennis courts and as "electric caddies" at golf courses. Smaller versions of today's better batteries, of course, provide power for the 12-volt electrical systems of most cars.

In its relationships with automotive transportation, lead continues to play a vital role in improving the octane quality of gasolines. Recent changes in the composition of antiknock compounds, introduced by Ethyl Corporation, are contributing to the



Plane passengers enjoy freedom from engine noises when cabins are insulated with sound-absorbent lead.



Lead zirconate-titanate power units contribute to efficient ultrasonic metal cleansing.

compatibility of modern fuels and engines. Antiknock compounds are second only to storage batteries as the largest consumers of metallic lead.

While tetraethyl lead was once the only active ingredient of antiknock additives for gasolines, oil refiners today have a choice of leaded compounds. These products contain either TEL, tetramethyl lead, or a combination of lead alkyls.

Absorbs Harmful Rays

Of all the principal innovations and milestones for lead's usage, none overshadows its contributions in putting the atom to work. The metal's ability to absorb harmful rays makes it almost indispensable in the practical application of nuclear energy.

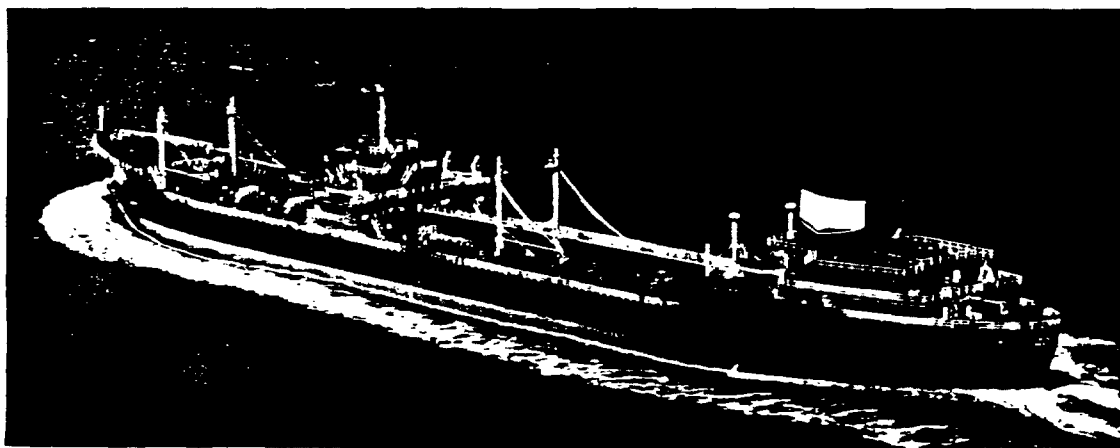
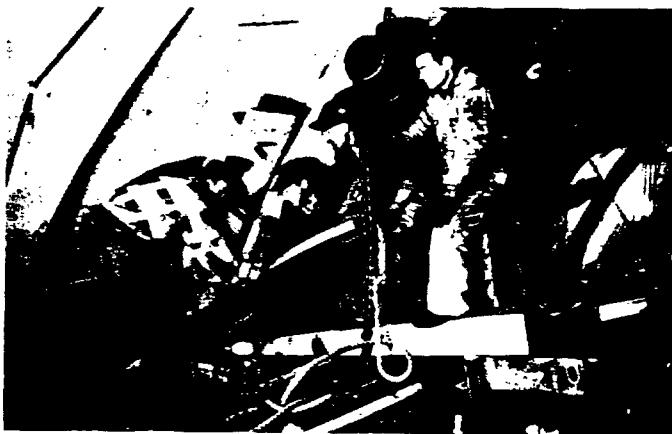
This unique property helped the United States develop and launch the world's first atomic ship, the *N.S. Savannah* last year, and paved the way for the Navy's nuclear-powered submarines. Shields of metallic lead around the reactors of these vessels protect crews against lethal gamma rays.

Progress in the further application of atomic energy depends to a large extent upon the effective absorption of comparable radiation. Because no better protective material than lead is known, it is bound to find important uses as the nation and world advance further into the atomic age.

Every new use for lead and progress in ways and means of applying it more advantageously endorse the metal's remarkable versatility. They point to a still more promising future. #



Above, lead companies are continuing research on the metal's uses to expand its markets further . . . Below, installing lead shielding for the reactor of the *N. S. Savannah*, first nuclear-powered ship.



Salt water's corrosive attacks on steel can be offset materially by lead anode systems on ship bottoms and

on exposed surfaces of piers, bridges and breakwaters. Such systems are noteworthy for effective durability.

TAX

Highlights of a statement by John E. Swearingen* before

BACK IN 1959, the nation's motor vehicle owners were promised that if they paid a higher federal gasoline tax for a period of 21 months, ending June 30, 1961, they would thereafter enjoy fairer and more equitable treatment in the financing of the national highway program. Yet within two short years, Congress is considering an indefinite extension of the temporary fourth cent of the federal gasoline tax, plus the imposition of additional taxes on highway users.

THE PETROLEUM INDUSTRY supports the development of the highway network our country needs and recognizes that taxes on highway users—including taxes on gasoline—are appropriate as a major source of funds to build those highways. But the petroleum industry also feels that these special taxes, imposed upon only those citizens making direct use of the highways, must be kept within the bounds of equity, recognizing that these same citizens pay all other taxes as well.

FROM THE OUTSET, the financing of the federal highway program, launched in 1956, has been unfair to the highway user. While he was singled out to pay the entire cost of the program, only part of his special highway taxes were credited to highways. All of his fuel and tire levies went into the highway fund, but only half the tax on trucks, buses and trailers was so designated. His taxes on automobiles and on parts and accessories remained in the general fund. To compound this injustice, his highway taxes have actually been increased in the process.

IN THE FIRST FOUR YEARS of the new program, the federal government collected more than \$14 billion in special taxes on highway users. Only \$8 billion of this amount was applied to the highway program, while no less than \$6 billion went into the general fund of the Treasury. Over 40 cents of every highway-user tax dollar, in other words, was withheld from the highway program and diverted to the support of general government or non-road purposes.

* Mr. Swearingen is president of Standard Oil Company (Indiana). He testified about gasoline taxes before the Ways and Means Committee of the United States House of Representatives on behalf of American Petroleum Institute, General Mid-Continent Oil & Gas Association, National Petroleum Association, Rocky Mountain Oil & Gas Association, Western Oil & Gas Association, and Western Petroleum Refiners Association.



TALK

before the House Ways and Means Committee

WHEN the new interstate highway program was launched in 1956, great stress was placed on its defense aspects as well as its importance to the entire economy. In the face of this, it is surprising that no portion of the cost is being borne from general funds. There is not even a charge upon general funds for particular features which have been requested solely because of their military importance, such as the recent decision to increase the height of all bridges to permit passage of large military vehicles. The single requirement added approximately three-quarters of a billion dollars to the cost. Yet the highway user alone is being asked to bear the full expense.

FROM 1950 to the end of 1960, the national average retail price of gasoline, excluding tax, increased only 4½ percent, compared with an increase of nearly 23 percent in the retail consumer price index for the same period. At the same time, the national average tax on a gallon of gasoline increased by 52 percent. The federal gasoline tax increase was a big factor. It was raised from 1½ to 2 cents a gallon in 1951; to 3 cents in 1956; and to 4 cents in 1959 on a "temporary" basis.

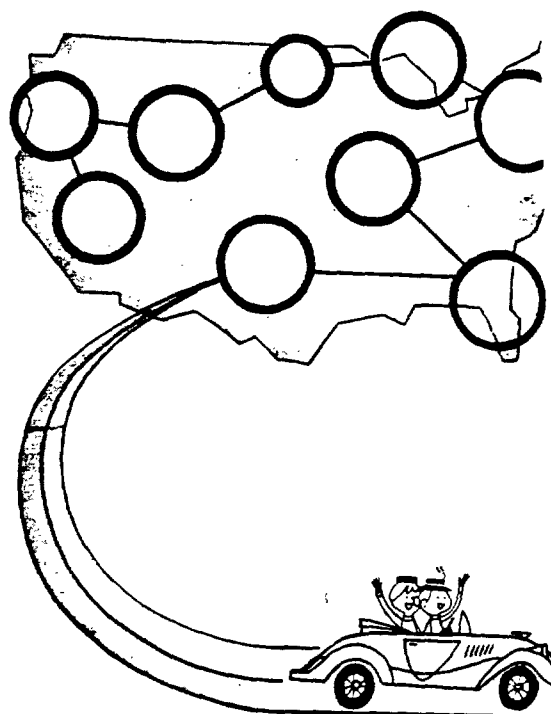
THE RETAIL PRICE of gasoline, excluding tax, averages just a fraction over 21 cents a gallon. This means that the total average tax on gasoline of 10 cents a gallon (four cents federal and six cents state) is now equal to a sales tax of 48 percent of the retail price. No similar necessary product is priced at a rate even approaching that. A tax of this size on a product of the nature of gasoline makes a rate reduction imperative.

ACCORDING to the Bureau of Public Roads' Highway Cost Allocation Study, if the additional automotives excises are earmarked for the Highway Trust Fund as called for by the Highway Act of 1959, approximately \$250 million *more* will be available for highway construction in fiscal 1962 alone than would be generated by the fourth cent of the federal gasoline tax. It is significant to note that if this partial earmarking were continued over the scheduled life of the present program, the trust fund would come within a fraction of meeting the entire federal share of the cost by 1972, as scheduled, without the need for further taxes on highway users.

Should Congress at a later date conclude that more revenue is needed for the highway program, it could appropriately come from any other federal highway-user taxes that still continue to be diverted to the general fund or from general revenues of the government in partial recognition of the broad benefits of highways extending beyond the actual users of the roads.



Something for the Girls



Ethyl presents MAGIC CIRCLES, U. S. A., a woman's club travel program

FOLLOWING SOME FAMILIAR, but still-sage advice, Ethyl Corporation is not underestimating the power of a woman. Instead, it is capitalizing on woman's influence in a unique new effort to increase the use of the family automobile and further expand the demand for gasoline and other service station products.

MAGIC CIRCLES, U.S.A., the newest phase of Ethyl's Magic Circle advertising and publicity market expansion campaign for the oil industry, is directed to members of the country's 30,000 woman's clubs. It is designed to encourage them to see, know and better understand America by exploring and rediscovering their own state and area.

The program has been planned to

- Guide woman's club members in exploring their own area by car, with their families and with other club members.

- Suggest how reports on trip discoveries can be used as the basis for an exciting series of club meetings.
- Help clubs compile a wealth of knowledge that can be shared with others as a community public service.

Through The Woman's Club Service Bureau, Ethyl is providing club program chairmen with informative literature and helpful instructions and suggestions. These materials outline the value of the MAGIC CIRCLES, U.S.A. program to clubs, club members, members' families and the community. The materials explain that women will enjoy taking part in this new kind of action program as they learn how best to see, know and appreciate their own region, state and country. Not only will the club members, themselves, feel a warm glow of civic pride, it is pointed out, but

they also will be able to help their families to the educational benefits of seeing and discovering, first-hand, places and things of scenic, historic and commercial interest and importance.

With the peak driving months ahead, woman's club program chairmen are reminded that now is the time to hold introductory **MAGIC CIRCLES, U.S.A.** meetings, appoint committees, and then get members to get in their cars and go!

The chairman's guide includes all necessary working materials to help her and her club members turn recreational travel fun into a worthwhile project. The materials include

- Meeting plans and ideas to stimulate members' interest.
- Display poster to announce meetings, showing typical Magic Circle trips.

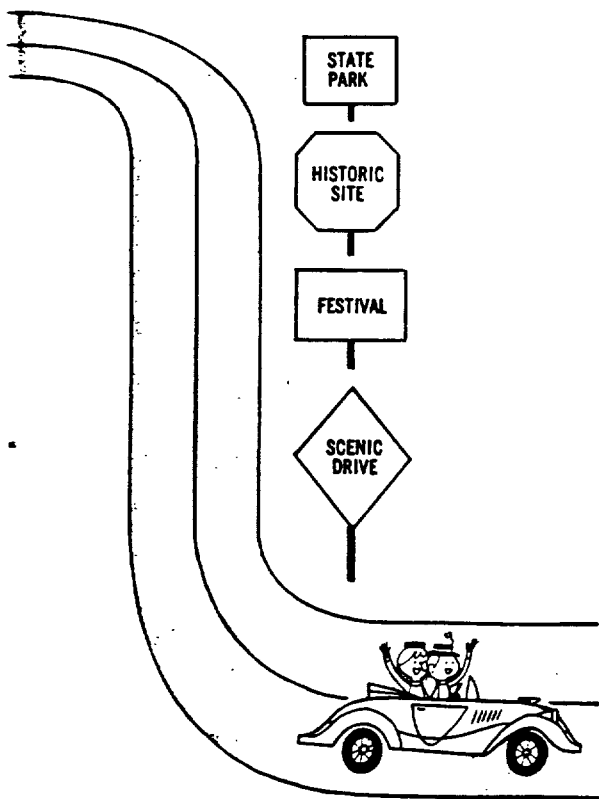
- News releases to inform local newspapers about the club project.
- A newspaper feature story, based on a typical Magic Circle trip, for publicity chairmen to use as a guide in preparing articles about members' trips for local newspapers.
- Member booklets in quantity. Entitled "Find Your Own Magic Circle," these booklets, one for each member, tell how to plan successful trips and provide space for users to record how they went, what they saw and what they did.

The program plan for **MAGIC CIRCLES, U.S.A.** suggested in the literature provides for a club activity based on three meetings. The first meeting is to explain the project and organize Magic Circle explorations; the second, to hear reports of individual members and committees on the results of their trips; and the third, to plan ways and means of developing this information for the benefit of the club and community.

Flexible Program

This is, however, a flexible program which can be adapted to meet the interests of members and requirements of individual clubs. For example, the **MAGIC CIRCLES, U.S.A.** program can be condensed into a single meeting designed to inspire members as individuals to discover and enjoy the resources of their area. Or it can be expanded to a comprehensive year-long program, in which a club can join with other civic, educational and historically-minded groups to develop a whole series of activities that will contribute to the enrichment of the community and state.

Market expansion studies have shown that the lady of the house is an important influence in the use of the family car—and consequently in increasing sales of gasoline and other service station products. If she is enthusiastic about trips to see places of interest in the state and area, the chances are pretty good that the family will take such trips. That's why Ethyl has added this new **MAGIC CIRCLES, U.S.A.** program to its market expansion activities and why the program may be expected to help the oil industry sell more petroleum products to the American motorist. #

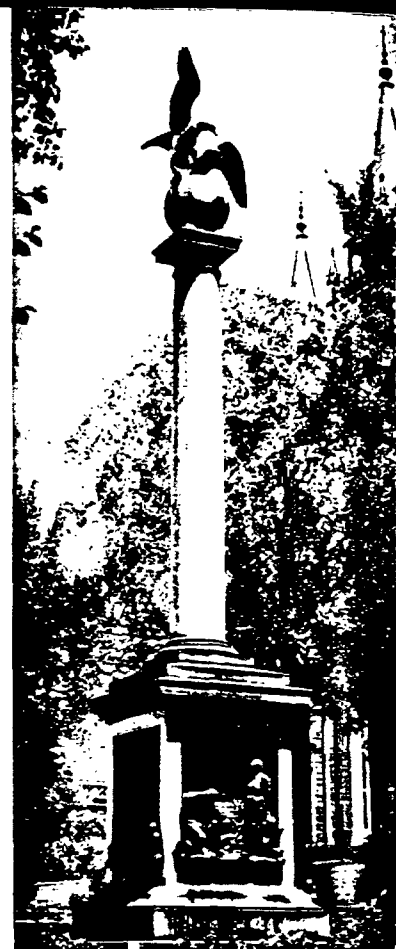




An impressive ceremony takes place at the fishermen's memorial at Gloucester, Mass., every year. Thousands of flowers are cast on the waves in memory of those who have lost their lives at sea.



The work of Mary Pickford, Douglas Fairbanks, Will Rogers, Harold Lloyd and other movie stars in preventing the annexation of Beverly Hills, Calif., by Los Angeles in 1922 is commemorated by this marker.



The citizens of Salt Lake City pay tribute to God and sea gulls with this \$40,000 shaft. The birds devoured huge swarms of locusts that were destroying crops and threatening early settlers with starvation.

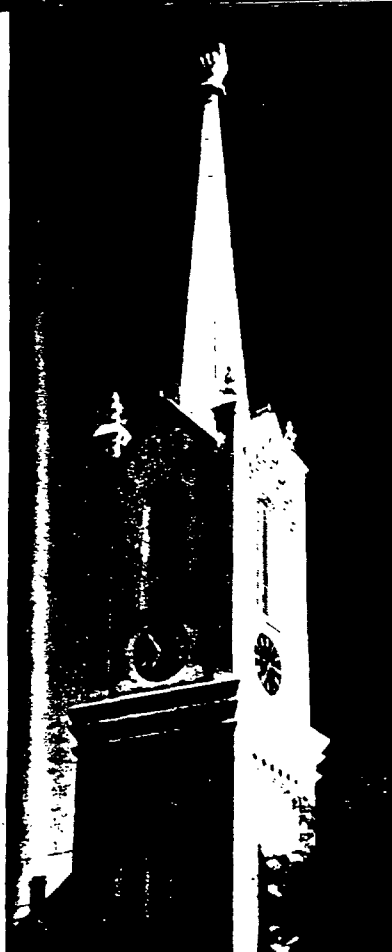
A Miscellany

Tex Rickard, the famous prizefight promoter, staged his first bout in Goldfield, Nev., in the early years of the century. The site is marked by a tablet adorned with boxing gloves.



WHAT do a Roman god, a Revolutionary War general's leg, a 17th century bull, a laundress-turned-philanthropist, a pesky insect and the remote site of a prize fight have in common?

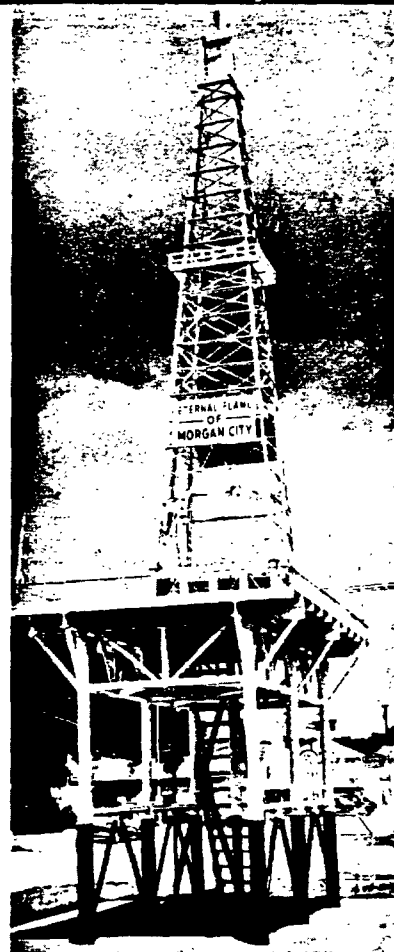
Like thousands of other people, animals, objects and events, they are subjects of the national penchant for memorial building. In city, state and national parks, on country roads, at historic spots and in isolated climes, Americans have placed monuments, markers and statues. They have memorialized in wood, metal, stone—and even plastic



The First Presbyterian church, one of nine on Church Street in Port Gibson, Miss., stands out above the others. Its steeple is topped by a 14-foot hand, with the index finger pointing upward to heaven.



Kissimmee, Fla., boasts a marker as unusual as its name. It's built of 1,500 stones from 48 states and 23 foreign countries. When this photo was taken efforts were being made to add stones from Alaska and Hawaii.



A 42-foot replica of an offshore drilling rig, topped by an "eternal flame" of natural gas, at Morgan City, La., is a tribute to the oil industry for bringing prosperity to the area.

of Monuments

—highlights in the country's military, civic, industrial, philanthropic, literary and sports history.

A select few of the markers are nationally known, but the fame of most extends little beyond their own locale. Many, because of their design, location, inscription or subject matter, have to be classed as "unusual."

Pictured here are a few of these unusual memorials and markers. In driving the countless Magic Circles that blanket the country, motorists can see many more. #

Longhorn cattle, driven up over the trails from Texas, led to the founding of Dodge City, Kan., and were responsible for its growth. A marker on Boot Hill honors the livestock.



ETC 29231

A MISCELLANY OF MONUMENTS

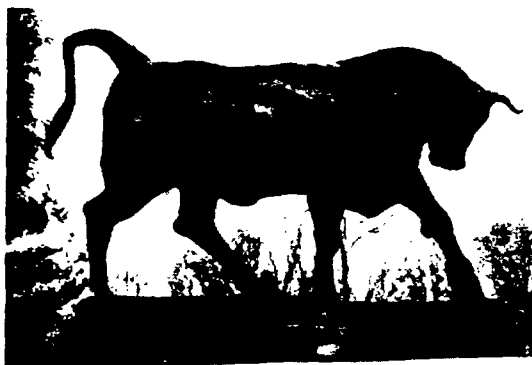


The memory of New Orleans' Margaret Haughery, a poor laundry woman who gave two-thirds of her pay to help widows and orphans, is honored in a gray stone monument.



In Enterprise (Coffee County), Ala., now "the peanut capital of the world," rises a statue to the boll weevil. The only monument in the world glorifying a pest, it hails the insect for forcing diversification from a one-crop (cotton) economy, increasing area's prosperity.

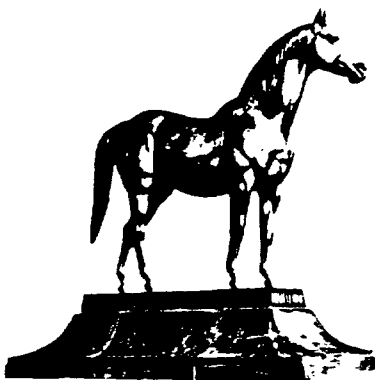
The bronze Smithtown, Long Island, N. Y., bull is a replica of one ridden by Richard Smith, the community's founder. Nissequogue Indians gave Smith 58 square miles he encircled in one day riding the beast.



Made in Brooklyn, this 31-foot fiberglass Paul Bunyan was erected in Bangor, Me., on the 125th anniversary of the city's incorporation. It acknowledges the role of forestry in the life of the Pine Tree state.



A sculptured scene in New York City's Central Park recreates the Mad Hatter's tea party from "Alice's Adventures in Wonderland" by Lewis Carroll. The March Hare, Cheshire Cat and the Hatter are portrayed.



The most famous race horse in the world, Man o' War, is immortalized by a beautiful statue in his likeness near Lexington, Ky.



A pyramid crypt at Quartzsite, Ariz., is "the last camp of Hi Jolly, camel driver, packer, scout" who was born "somewhere in Syria" and who helped U.S. Army in experimenting with the use of camels on American deserts.

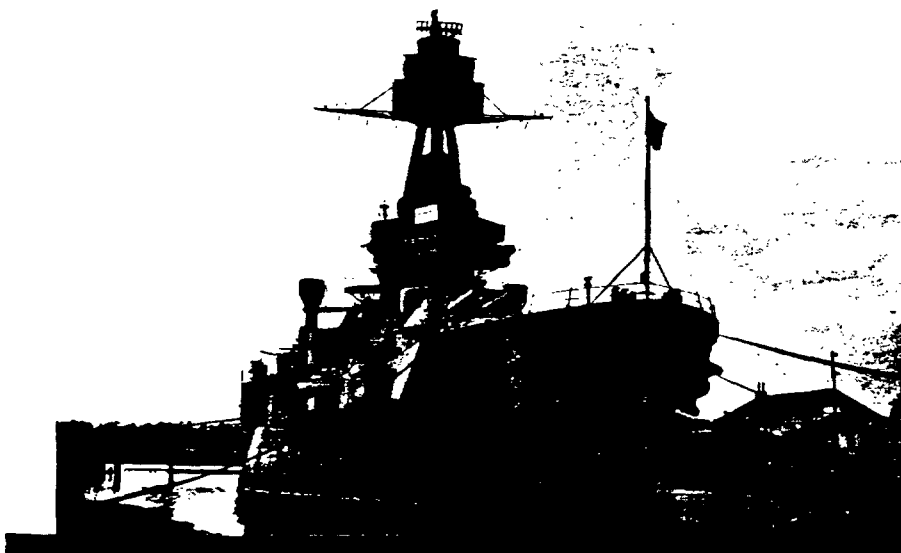
Right, at the Revolutionary War battlefield at Saratoga, N. Y., stands a monument to General Benedict Arnold's left leg, the only part of the man to die honorably. After being wounded while rallying American troops to victory there, Arnold turned traitor to his country.



Moored in the Houston Ship Channel, on the edge of the San Jacinto battlefield, the Battleship Texas is a different kind of state memorial. Nearby, looms the 570-foot San Jacinto monument, the world's tallest masonry monument.



Vulcan, god of fire and metalworking, is cast in iron 55 feet high in Vulcan Park at Birmingham, Ala., saluting the city's iron and steel industries.



New Ethyl Installations

On the Pacific Coast



Gasoline testing laboratory at Long Beach, Calif., provides important data

ETHYL CORPORATION's new gasoline testing laboratory at Long Beach, Calif., has been serving oil companies on the Pacific Coast since mid-March. The new laboratory, located in the heart of the Los Angeles basin refining area, provides western refineries with a wide range of gasoline inspection test data and quick service on the analysis of individual gasoline samples.

The Long Beach installation utilizes the latest equipment and methods for the precise measurement of gasoline characteristics. It is equipped to perform all of the standard gasoline inspection tests and also to rate diesel fuels for cetane number. In addition, the laboratory is prepared to assist refiners in the maintenance of knock-testing equipment, to provide emergency replacement parts for knock-test engines, and to cooperate with oil companies in training and educational programs highlighting the importance of gasoline quality.

The new laboratory, which will handle thousands

of gasoline samples annually, will test for octane number, volatility, vapor pressure, antiknock compound content, and hydrocarbon type, as well as for other gasoline characteristics that are important to the petroleum industry.

Provides Survey Data

Like Ethyl's other gasoline testing laboratories at Kansas City, Mo., Tulsa, Houston, and Yonkers, N. Y., the Long Beach facility supplements the work of refiners in measuring gasoline quality. It also helps provide the basic data for Ethyl's monthly surveys of gasoline quality.

Generally, the Long Beach laboratory serves all refineries west of the Rocky Mountains and those in western Canada. It replaces an older laboratory at San Bernardino, Calif., which has been discontinued. Robert W. Adams is manager of the new laboratory, and Dean A. Painter is assistant manager. #

and the Gulf Coast



Advanced blending system at Houston demonstrated to refinery executives

REFINERY EXECUTIVES from a number of oil companies have been visiting the Ethyl Corporation manufacturing plant at Houston recently to study operations of the new multi-component in-line blending system now in full-scale use there. The system, which uses digital computer techniques specially developed for the purpose, represents an important advance in in-line blending.

At the Houston plant, the system blends anti-knock compounds, but it was designed by Ethyl primarily as a service to the oil industry for use at refineries. It can be readily adapted to local refinery situations to blend any number or combination of petroleum stocks and additives in any precise proportions desired.

Additional features are the new system's simplicity of operation, its flexibility, which permits a change in blends at a moment's notice, the pinpoint accuracy of its finished blends, and the fact that it makes use of existing lines and tankage. Moreover,

it provides an automatic proportional cutback of all components if the flow of any one component is restricted, rather than shutting down the entire blending operation.

The new Ethyl system eliminates the necessity for bringing component lines to one location or even near the blending control center. Control valves and meters can be several thousand feet away from the control center.

Stops Automatically

When a blending operation is to be performed, a card is punched with coded information as to the required amount and composition of the blend. The card is then inserted into a card reader, the master control turned on, and the blending starts. When the desired quantity of the blend is reached, the master control automatically stops all operations. The used punched card is destroyed as it is removed from the reader and another blend can be started, simply by inserting a new punched card.

The system provides a means for close control of expensive components going into a finished blend. Also, with in-line blending, the finished product can bypass storage tanks and go directly into a pipeline. Thus, the new system makes possible substantial savings in capital investments in tanks, materials and operating costs. #

ETHYL IN THE NEWS

Dr. Frank Princi Named Director of Medical Department; Dr. Lester W. Sanders, Sr., Appointed Associate Director

DR. FRANK PRINCI, who has been associate director of Ethyl Corporation's Medical department for the last two years, has been appointed director. In his new position, Dr. Princi succeeds Dr. Karl V. Kitzmiller, former medical director and a veteran of 35 years' experience in Ethyl medical activities. Dr. Kitzmiller has been named staff medical advisor.

At the same time, Dr. Lester W. Sanders, Sr., has been appointed associate medical director.

Dr. Princi has been associated with Ethyl medical activities for the last 12 years. He is professor of industrial medicine and assistant director of the Institute of Industrial Health at the University of Cincinnati and associate director of the Kettering laboratory there.

Dr. Princi received his B.A. and M.D. degrees at the University of Colorado, received graduate training as a Rockefeller fellow in industrial hygiene and general medicine and studied in the Department of Clinical Physiology at the Trudeau Sanatorium. He is a fellow of the American Public Health Association, the American College of Physicians, the American College of Chest Physicians, the American College of Occupational Medicine

and the American Medical Association, where he is vice chairman of the Section on Preventive Medicine. Dr. Princi also is a member of a number of other professional societies, is consultant to the Air Force, the surgeon general of the Army, the Los Alamos Medical Center, the National Research Council, the American Public Health Association and other agencies, and is the author of many articles in the field of clinic toxicology.

Dr. Sanders, Ethyl's new associate medical director, has been associated with the Company since 1925, specializing in clinical and investigative work related to organic lead compounds. He received M.B. and M.D. degrees from the University of Cincinnati, taught in the College of Medicine, and has been assistant professor of industrial medicine in the Department of Preventive Medicine and Industrial Health at the University of Cincinnati. He is a member of the American Medical Association, the American Academy of Occupational Medicine and a fellow in the Industrial Medical Association. He is certified by the founders group of the American Board of Preventive Medicine in Industrial Medicine, and has written numerous articles and reports on his investigative studies.



Dr. Lester W. Sanders, Sr.



Dr. Frank Princi



Dr. Karl V. Kitzmiller

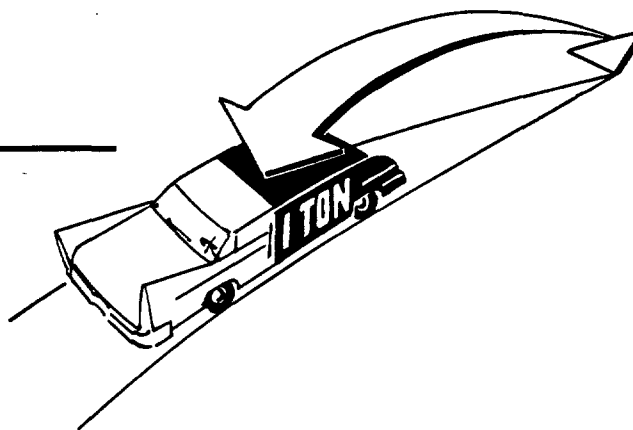
Revised Presentation Tells Story of Gasoline Progress

MOTOR GASOLINE now does more work—and at less cost—than ever. This advance is reported in a revised version of "A New Concept of Gasoline Progress," a full-color slide, film strip and script presentation on motor fuel quality and performance prepared by Ethyl Corporation.

Originally presented by Ethyl in 1958 as a service to the oil industry, the "New Concept" is based on ton-miles-per-gallon, a realistic yardstick for measuring gasoline performance. It has been widely used by the industry to tell the public of gasoline's contributions to more economical and efficient automobile transportation.

The new version is based on recent statistics. It points out that present-day gasoline does 75 percent more work, resulting in 20 percent less cost, than gasolines of 1930. These figures are even more impressive than they were when the original presentation reported 70 percent more work than 1930 gasolines, at 18 percent less cost.

Today, the script relates, regular grade gasoline sells for about 22 cents a gallon, but taxes



add more than 10 cents, making a total of over 32 cents. When taxes are excluded, the cost of gasoline required to move one ton of automobile one mile in 1930 was about 66/100 of a cent. Now, it averages 53/100 of a cent per mile. Therefore gasoline is 20 percent cheaper than in 1930 in terms of actual work it can do.

Even when total price is considered, including taxes, the cost per ton-mile is less than it was in 1930—76/100 of a cent today in contrast to 81/100 in 1930—and this despite a 170 percent increase in gasoline taxes.

Like the original version of "A New Concept of Gasoline Progress," the revised presentation is designed for oil industry use. Copies are available through Ethyl Corporation offices in the United States and Ethyl Corporation of Canada Limited offices in Canada. #

Facilities Enlarged for Production of Antioxidants

FACILITIES FOR THE PRODUCTION of "Ethyl" antioxidants have been expanded to meet the rapidly growing demands for these products by oil refiners and other industrial users. The expansion almost doubles Ethyl's capacity for its principal antioxidants and enables the Company to produce other ortho-alkylated chemicals in commercial quantities.

Since their introduction a few years ago, "Ethyl" antioxidants have become widely known in the United States and abroad as highly effective, low-cost additives with many uses.

"Ethyl" Antioxidant 702 is used in lubricants for automotive and aviation piston engines, for railroad and marine diesel engines, for outboard

motors and in industrial oils and automotive transmission fluids. Because it is ashless, it has been especially effective in ashless lubricating oils for aircraft piston engines, two-cycle engines and most recently, passenger car engines.

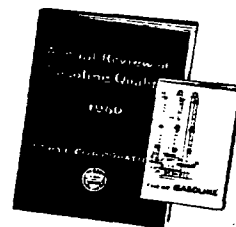
"Ethyl" Antioxidant 703 is used in synthetic jet engine oils, industrial and motor oils, and greases.

"Ethyl" 733 has found extensive applications in motor and aviation gasolines and in jet fuels and industrial oils.

Ethyl's antioxidants and related ortho-alkylated chemicals also are finding growing uses in such non-petroleum applications as rubber, plastics, resins and related fields. #

ETHYL IN THE NEWS

Two New Gasoline Books Published



TWO NEW BOOKS ABOUT GASOLINE have been published for the oil industry by Ethyl Corporation. They are the *Annual Review of Gasoline Quality*, a comprehensive compilation of motor fuel statistics for 1960, and *Facts About Gasoline*, a 32-page primer on gasoline composition, manufacturing, additives, tests and usage.

This is the sixth consecutive year that Ethyl has published the *Annual Review*. The volume reports on gasoline quality as found at service stations and presents data on octane numbers, hydrocarbon composition, TEL content, volatility, road antiknock performance, gum and sulfur content and other characteristics. The data are reported for the country as a whole, for geographical regions and for the 57 marketing centers which are surveyed by Ethyl each month.

Besides reporting on gasoline quality trends in the United States, the *Annual Review* presents extensive data on Canadian gasolines and year-end octane ratings of gasolines in 20 other countries.

In some respects, *Facts About Gasoline* is a less detailed version of *The Story of Gasoline*, originally published by Ethyl several years ago and revised in 1959. The new booklet presents basic information briefly and in readily understandable terms. It explains the principal gasoline manufacturing processes and the various gasoline additives and their uses. It describes gasoline tests, including octane number determination, and relates octane number to compression ratio and the efficiency of internal combustion engines.

These subjects are followed by a discussion of knock and other types of abnormal combustion. A question-and-answer section and an explanation of the proper way to select the best gasoline for a particular automobile conclude the booklet.

Attractive sketches and drawings are used throughout to help explain the various subjects discussed. #

New Gulf Coast Region Now in Operation

THE NEW GULF COAST REGION, announced last winter as another step in Ethyl Corporation's continuing efforts to increase its service to the oil industry, is now in full operation. The new region, which has its headquarters in the First City National Bank building in Houston, was created because of greatly expanded oil industry activity in the territory it serves. It brings to five the number of regions covering the United States in the Ethyl organization. The others are Eastern, Central, Mid-Continent and Western.

Ellis K. Locher, assistant manager of the Central region for the last five years, is manager of the new Gulf Coast region. Assistant regional manager is J. O. Balzer, formerly assistant manager of the Southern region, predecessor to the Mid-Continent region.

D. P. Jeppe is manager of the region's New Orleans district, which includes Mississippi and most of Louisiana. J. E. Hendrick is manager of the Houston district, covering the southern half of Texas. #



E. K. Locher



J. O. Balzer



D. P. Jeppe



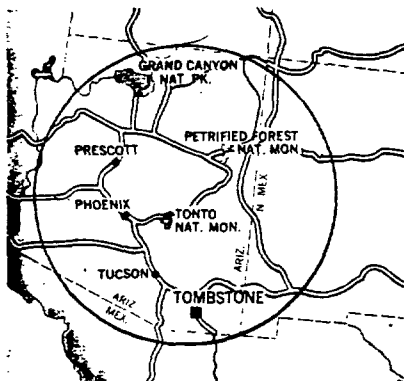
J. E. Hendrick



The cooper shop at New Salem, Ill., where a gawky country boy named Abe Lincoln watched workmen making barrels, is featured in one of Ethyl Corporation's Magic Circle advertisements in national magazines this spring. Timed to coincide with the Civil War centennial, this ad and others in the current series focus attention on places prominent in American history. The Ethyl advertisements urge parents to take their children—by car—to visit such places.

This Magic Circle

is in the great Southwest. Other points of interest you can enjoy in this area are Grand Canyon, Tonto National Monument and the Petrified Forest. Or your service station dealer will be glad to help you map out a Magic Circle trip in your own area.



"No wonder they call it 'Tombstone'"

THE gunfight at O.K. Corral must have been the prototype for a thousand westerns and you probably think your kids have seen them all. But drive them to Tombstone. Show them O.K. Corral where Marshal Earp laid down the law with spitting six guns. Take them up Boot Hill where the losers are buried. It's more exciting than the movies.

What's more, they'll start sensing the truth: that these were real men, good and bad. Not as heroic as movies and TV may have pictured them, but still a restless breed that found a place in our history.

One of the greatest gifts you can give your children is a sense of history—a sense, for instance, that the boundless energy still characteristic of America goes back in part to those men who opened the West in great-grandfather's day. The best way to give them that gift is to show them the places where history was made. Battlefields, museums, historic sites—they're all within driving distance of your home.

Ethyl calls this fascinating world which surrounds you a Magic Circle. Get in your car and explore your Magic Circle this week end.

Ethyl Corporation, New York 17, N. Y. • Ethyl Corporation of Canada Limited, Toronto.

These Magic Circle advertisements are published by Ethyl Corporation, to help you get more enjoyment out of your car. Ethyl makes additives used by oil companies everywhere, to improve their gasoline and your driving pleasure.

ETC 29240

ETHYL NEWS

MAY-JUNE 1961



More Campers Mean More Motorists

ETC 29241

ETHYL NEWS

MAY-JUNE 1961

Published by

Ethyl Corporation

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

manufacturer of "Ethyl" antiknock compounds and other additives used by oil companies to improve the quality of petroleum products.

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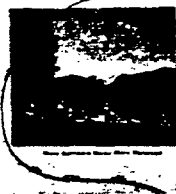
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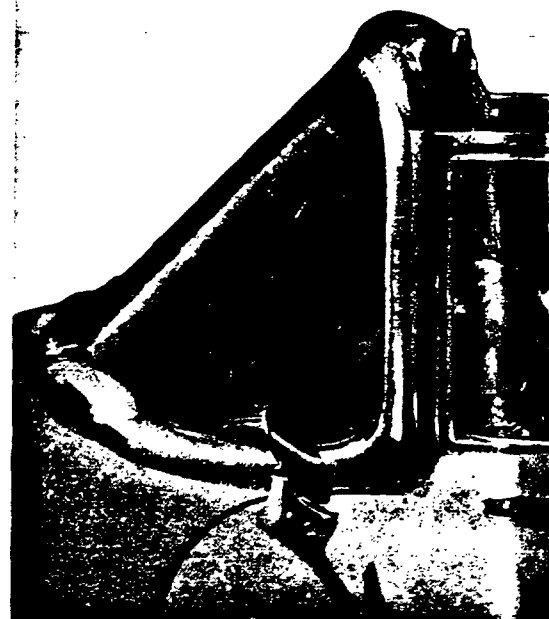
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ETHYL NEWS



ON THE COVER, a cool lake and snow-covered Mt. Baker provide the setting for a camping vacation in Washington state. Ethyl is promoting camping to help expand the demand for service station products (see pages 8-9).

PHOTO CREDITS: Cover, State of Washington; pages 1-3, and 12 (left), A. Devaney; page 3 (top left), John Hancock Mutual Life Insurance Co.; pages 4-7, Donald Reynolds through Dodge News Bureau; artwork pages 8 and 9, Ovac Publishing Co.; pages 10 and 11, Richfield Oil Corp.; page 12 (bottom right), Baltimore Association of Commerce; page 13 (bottom left), Fellows Studio, (right), United Press International; page 14 (top left), Marvin Richmond, (bottom left), Don Blair through Taos Chamber of Commerce; page 16 (top left), Bell Telephone Laboratories; pages 20 and 21, Outboard Marine Corp.; pages 22-24, Ben and Sid Ross.



Getting to

Petroleum marketers are learning about motorists' driving likes and dislikes from the results of an Ethyl survey

AMERICA'S MOTORISTS are more than just a big statistic.

They are more than a huge herd of people who own and operate a 62-million-unit fleet of automobiles.

Motorists are real individuals, with likes and dislikes, wants and needs, and, of course, peculiarities.

Motorists are the housewife across the street going shopping, the man around the corner driving to his favorite fishing spot, the mother off with the Cub Scouts on a field trip, the father taking his family on a summer vacation.

Motorists are people who drive across town, across the state and across the country.

Getting to know motorists better is important to petroleum marketers. It's important in planning and conducting successful advertising and sales promotion campaigns, in locating, designing, building, stocking and operating profitable service sta-



Know Them Better

tions, and in expanding the demand for gasoline, oil and other automotive products.

Mindful of the importance of oil marketers' getting to know motorists better, Ethyl Corporation has just sponsored a major national survey to find out how motorists feel about driving—especially pleasure driving. Entitled "How to Motivate Motorists," the results of the survey—many of which are unusually interesting and significant—are being studied carefully by marketers throughout the country.

The information also is being used by the API's Travel Development Committee in planning mar-

ket expansion activities and by Ethyl Corporation in its Magic Circle advertising campaigns.

Highlights of the survey findings reveal that

- The large majority of motorists prefers automobile travel to any form of public transportation.
- They find driving pleasant, relaxing and adventuresome.
- Cost of automobile operation is not a major factor in limiting car use.
- Sightseeing is the principal attraction on trips of all kinds, followed by visits to friends and relatives.



Locally, women like to drive alone, but on long trips they want husbands along and expect them to drive.



ETC 29243

GETTING TO KNOW THEM BETTER



- Most trips range from one-day to weekend excursions because motorists prefer not to be on the road for more than a few days at a time.

Overall, the survey covers three general areas: (1) psychological feelings about driving; (2) attitudes toward road and driving conditions; and (3) attitudes toward pleasure driving.

Women, an increasingly important group of drivers (see "Women on Wheels, ETHYL NEWS, January-February 1961), have an even stronger preference for driving than men, even though they do less of it than their husbands, it is reported. Although most of their driving is local—shopping, visiting friends, running errands—women welcome driving because it gives them a change of pace from household chores.

Over one-third of women drivers like to drive

alone—except on long trips—and then they prefer to have their husbands along and expect them to do most of the driving.

But whether a man or woman is at the wheel, driving has good psychological effects. Drivers feel a sense of power and control and enjoy the rhythm and motion of the car. It relaxes them.

And this relaxation generally is not disrupted by the "other fellow" on the road. Most drivers feel that other motorists are competent and, by and large, courteous and friendly.

Almost three-quarters of the drivers interviewed in the Ethyl survey said that there still is adventure in driving a car, in going to new places and seeing new things. A majority enjoy trips where they have no particular destination in mind. This means, among other things, that the Sunday afternoon drive apparently is far from dead. Almost seven out of 10 motorists favor it as a pleasant diversion.

Where do people like to drive? Scenic places are first choice, with locations near water—oceans and lakes—preferred far more than mountain and desert areas.

When asked about roads, most motorists report that they enjoy driving on major highways and turnpikes rather than on back roads, although some object to the monotony and boredom of turnpikes.

The three principal reasons for pleasure trips—whether for a day, overnight or weekend, or for a week or longer—are, first, sightseeing; second, visiting friends and relatives; and third, such things as hunting and fishing.

Marketers are also interested to learn about other

Most motorists prefer to drive in scenic places—especially near water—and they prefer turnpikes to back roads.



ETC 29244



Principal reasons for pleasure trips are sightseeing, visiting friends and relatives and hunting and fishing.

types of trips suggested by the survey that appeal to motorists and are studying them for possible sales promotion opportunities. These include sleep-at-home vacations, where families take motor trips during the day and return home each night; and camping trips. Families in lower income groups and those with several children are especially interested in such outings.

Speaking of children, over half of all drivers say that they enjoy driving with their children and find that youngsters amuse themselves quite easily while traveling by car. The only time they tend to become restless is on long trips. Moreover, 70 percent of the motorists feel that sightseeing by car has great educational value for children.

While the complete survey contains an exhaustive amount of information on motorists' attitudes about pleasure driving, petroleum marketers naturally are interested in the application of its title—"How to Motivate Motorists." They are studying the pluses and minuses in attitudes about car use. They are determining how some of the obstacles can be overcome and how motorists can be encouraged to drive more.

On the plus side, and contrary to popular belief, the survey reveals that people generally do enjoy driving. They find it a pleasant way to visit friends and relatives and go to interesting places. In spite of all the publicity by railroads, airlines, and bus companies, 86 percent of the people use cars for all their long trips. The majority say that they do not find other forms of transportation as pleasant.

Further, while motorists, of course, don't like congested roads, traffic conditions are rated very low

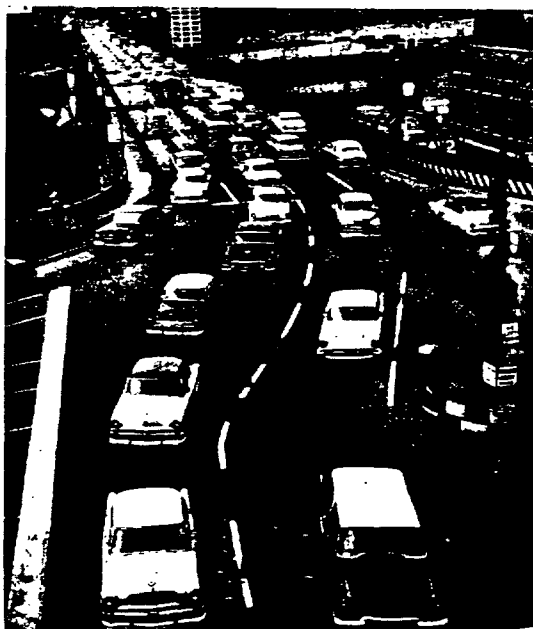
as a deterrent to increased pleasure driving. And so is fear of accidents. Most people don't list lack of safety as a major factor in limiting automobile use for pleasure trips.

Finally, and perhaps most important of all, two-thirds of the drivers do not limit the miles they put on their cars to reduce the cost of gasoline and of operating the car.

Lack of available time is the reason most frequently given by most motorists for not doing more pleasure driving. This seems to present an opportunity for promoting greater use of automobiles for short, one-day or weekend trips.

Overall, the survey indicates that motorists can be motivated to use their cars more. If they are, it will expand the demand and increase the sale of gasoline and other service station products. #

While drivers don't like congested roads, traffic conditions are rated low as a deterrent to more travel.



Man



Fifty-two-year-old Clarence Lundy, of Buffalo, N. Y., owns and operates one-man trucking company. Working under contract for North American Van Lines, he averages one round-trip haul a month to California.

Clarence Lundy helps transport household goods for the country's mobile millions



First stop on typical cross-country trip is at Brooklyn apartment house where 500-cubic-foot shipment, weighing 2,580 pounds, is loaded by locally-hired assistants.



Inside his huge van, Lundy makes sure that furniture and other household goods packed in special cartons and containers are stowed securely.

on the Move

AMERICANS NO LONGER cling to the old family homestead. We're a nation of movers. This year, one person in every five—33 million altogether—will change his place of residence, setting up housekeeping in a different location.

Such domestic gyrations mean lots of work for commercial movers. Packing and transporting household goods is a big business. It keeps thousands of men and trucks busy across the country and around the clock.

One of the country's busy man-vehicle moving teams is Clarence Lundy, of Buffalo, N. Y., and his big semi-trailer. Lundy is an independent owner-operator who hauls under contract for North American Van Lines. He is on the road 24 to 27 days a month, driving 8,000 to 10,000 miles. More often than not, he finds himself heading west, usually to California, helping transport the belongings of some of the 300,000 people who move to the Golden State each year.

Since his cavernous van holds 2,500 cubic feet of cargo—about 20 rooms or three full-size houses of belongings—trips are scheduled to include several shipments from one general area to another at the same time. In the trip pictured, Lundy picked up household goods in Brooklyn, N. Y., and Philadelphia, Scranton, Shamokin and Moosic, Pa.

After taking on the last shipment in Moosic, Lundy, who usually hires local men to help him load, headed west alone over the Pennsylvania Turnpike. He rode the Ohio and Indiana pikes and crossed Illinois and Iowa, before dropping off the Moosic load in Scotts Bluff, Neb. Then it was on to Wyoming, Utah, Nevada and California where he unloaded shipments in San Francisco and Sacramento three days out of Scotts Bluff, and a Los Angeles cargo a day later.

Two weeks had elapsed since Lundy had left home in Buffalo. It was time to turn around and do the same thing all over again.

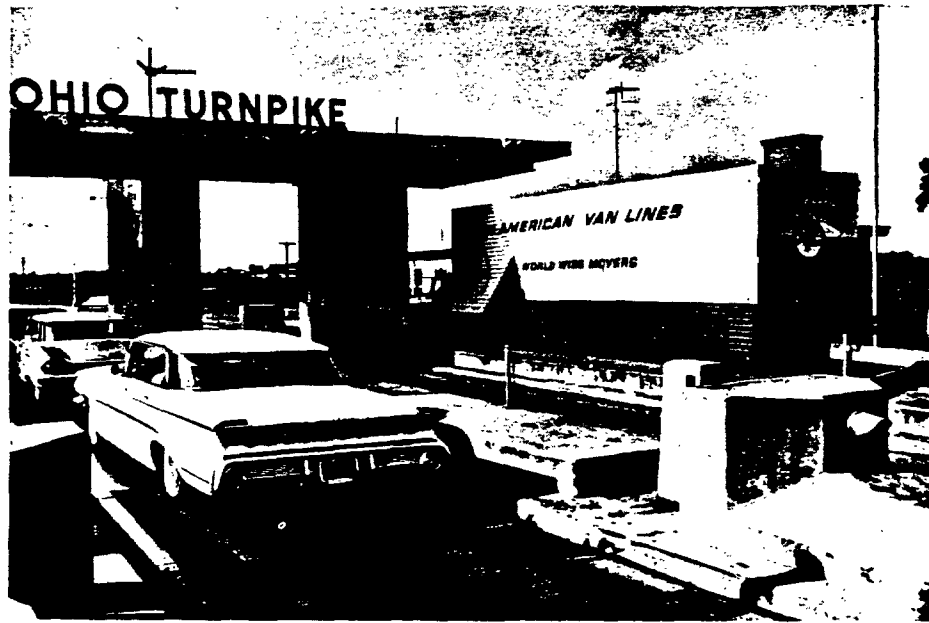


After Brooklyn pickup, Lundy takes Holland Tunnel from New York to New Jersey, en route to Pennsylvania where he will stop in Philadelphia, Scranton, Shamokin and Moosic, to take on six more loads.



Overnight stop is made at trucker's station at Carlisle, Pa. Such places offer clean inexpensive lodging.

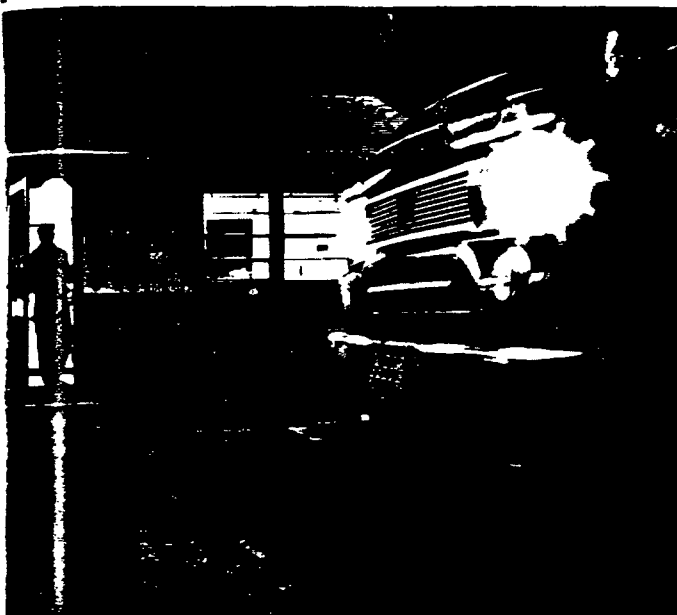
MAN
ON THE
MOVE



The big van rolls to a stop at the entrance to the Ohio Turnpike while Lundy pays toll as he also was required to do on the Pennsylvania and Indiana pikes. Total payments for bridge, tunnel and turnpike tolls for the two-week trip amounted to \$38.95.



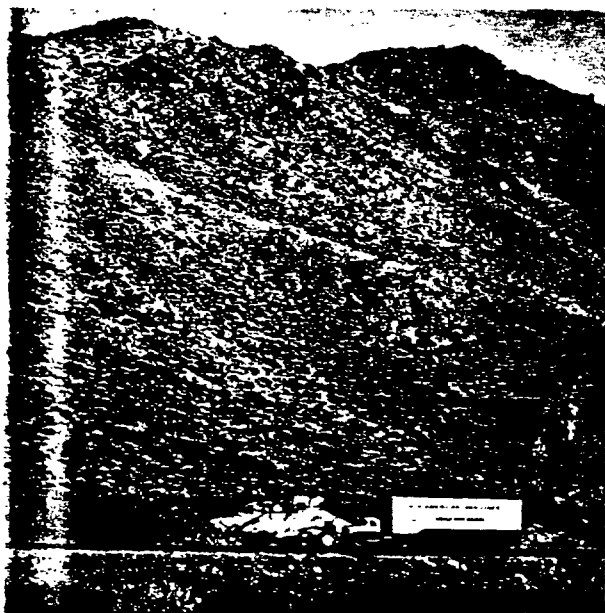
His Scotts Bluff, Neb., stop now far behind, Lundy pulls into a service station in Green River, Wyo., for re-fueling. Truck used 810 gallons of gasoline on trip which cost about \$165. However, state and federal gasoline taxes added another \$80, raising total motor fuel expense to \$245.



Crossing the state line into Wyoming, Lundy, like other truckers, must stop at check stations to have trip permit inspected. Besides requiring permit, state also levies ton-mile tax.



On the road constantly, Driver Lundy dines carefully and economically. On 12-state journey, he succeeded in limiting food costs to \$35.



Desert hills and the Rocky Mountains themselves are among the many varied types of scenery this moving man sees crossing the country 12 times a year.



The hills of San Francisco signal the beginning of this trip's end. But when shipments have been unloaded, it will be time to start all over again.



Ethyl promotion is designed to make motorists out of stay-at-home families

ARE MEALS, lodgings, other non-automobile costs of family vacation trips keeping potential motorists off the road?

Surveys show that in many cases they are.

That's why Ethyl Corporation is enlarging its market expansion program for the oil industry to include promotion of low-cost camping trips and camping vacations. If non-travelers are persuaded to get out on the road and drive to camping areas, it will help expand the demand for gasoline and other service station products.

Spearheading Ethyl's new camping promotion efforts are illustrated two-page advertisements in the June issue of three leading sportsmen's magazines—*Outdoor Life*, *Sports Afield* and *Field and Stream*. These publications are seen by more than 3,000,000 readers every month.

Headlined "There's no vacation like a camping vacation," the advertisements emphasize that "nothing else offers so much fun at such low cost for the entire family!"

"More and more American families are discovering the joys of camping—the outdoor living, the freedom of movement, the low cost, the exciting and educational opportunities for children," the ads point out. They explain that these are among the reasons why camping trips are fast becoming the country's number one vacation activity. The ads urge readers to take their families on a camping vacation *this year* because it is so easy—by car.

To further stimulate interest in camping trips, Ethyl offers, in the same advertisements, the 138-page illustrated *Camping Blue Book* for 50 cents, half its regular retail price. Readers are invited

to clip an attached coupon and send for their copies of this handy, helpful camper's guide.

The Camping Blue Book includes a directory of the 3,500 best camping grounds in the United States and Canada—plus dozens of valuable camping tips. Designed to be helpful to veteran campers as well as novices, it supplies information on everything from the proper way to load a car to how to pick a good camp site.

The book gives helpful hints on:

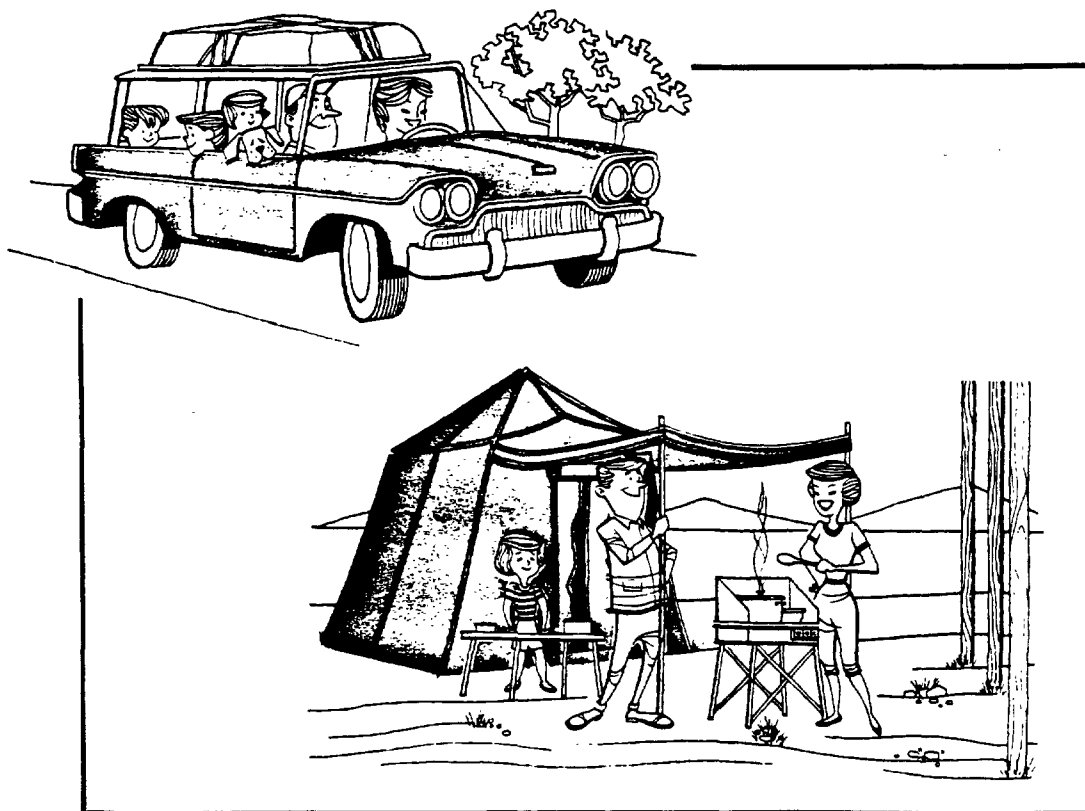
- How to select tents, sleeping bags, camp furniture, lights and cooking utensils.
- How to prepare good meals in the outdoors.
- How to stay comfortable in bad weather.
- How to make an attractive, serviceable camp.
- How to use special station wagon equipment.

Perhaps the most valuable section of the book is the directory of over 3,500 national, state and

commercial camping grounds throughout the 50 states and Canada. Each site listed has water and toilet facilities; most of them have fireplaces and tables. The directory gives the exact location of the camp, and tells what recreational facilities, such as swimming, fishing and boating, are available.

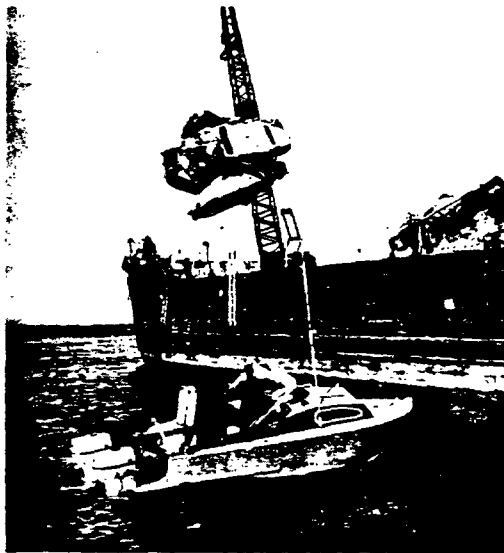
With so many camp sites to choose from, there's a spot to appeal to all types of motorist-campers—in their own areas and all across the country. Once they get used to the idea of camping and try it a time or two, most families make more and more camping trips—especially those who previously felt they couldn't afford to go away for a vacation.

That's the whole purpose of Ethyl's new camping promotion—to get families who otherwise would stay at home out on the road—in their cars—expanding the demand for gasoline and other service station products. #



The Reef that Oil

Made of car bodies, this Richfield-sponsored underwater structure promotes all forms of marine life



Tied together in bundles of five, car bodies were lowered to the ocean floor in a prearranged pattern drawn up by marine conservationists.

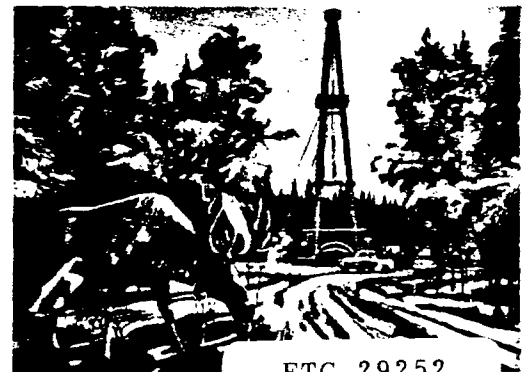
OIL AND AUTOMOBILES, powerful partners on land, have teamed up in a new kind of effort at sea. Off the coast of California's Santa Barbara county, just seaward of a man-made oil drilling island, some 120 old car bodies have been sunk to the ocean floor to form an artificial reef, attracting large numbers and varieties of fish.

The car-body reef, sponsored by Richfield Oil Corporation as part of its conservation program, is adjacent to Rincon Island, state-owned tidelands leased by Richfield for oil and gas production. It was built by depositing bundles of five scrapped automobile bodies, tied together with steel cable, on the ocean floor in a prearranged pattern. The pattern was prescribed by marine biologist-divers of the California Department of Fish and Game who also furnished technical advice and supervision. When completed, the reef was turned over to the Department for management and study.

Richfield's care in drilling operations has prevented pollution of surrounding waters by oil or other wastes. Consequently, the man-made oil drilling island has taken on the appearance of a mature natural reef and thousands of fish not previously found in that part of the Pacific have been drawn to these waters.

Since the ocean is approximately 50 feet deep in the area, the car-body reef presents no hazard to navigation. Buoy markers on the surface locate it

Besides promoting marine life, Richfield conservation programs also have been devoted



Built



for fishermen and for marine biologists who study the aquatic plants, organisms and other marine life that now abound there.

Richfield's conservation program extends into several other areas. In southern California's oil-rich, water-poor Cuyama Valley, the company has tapped its extensive water pipeline to provide "drinking fountains" for gamebirds and other wildlife, and is cooperating with the Cuyama Rod and Gun Club in controlling hunting. It has produced and distributed thousands of wild flower books and seed packets. In Alaska, Richfield has cooperated with the Fish and Wildlife Service and the Alaska Game Department to prevent damage to the Kenai moose refuge where it has drilled for oil. The company also has produced a series of widely viewed motion pictures on wildlife, forest, grassland, water, oil and mineral conservation.

The Richfield program results from a corporate philosophy that sound business practice, good citizenship and conservation of natural resources are inseparable. The company puts this philosophy into practice and publishes advertisements in national publications explaining it. #

Richfield Oil Corporation is drilling on Rincon Island, above, a man-made formation off the coast of California's Santa Barbara county. The car-body reef, 50 feet below the surface of the Pacific, has attracted a large assortment of fish and other marine life.



• wild flowers, an Alaskan moose refuge, educational motion pictures and water for game birds.





"Through
the night...
our flag
was
still there"

The Flag of the United States of America is

ONE HUNDRED YEARS have passed since that July day in 1861, when an enraged Capt. Smith Simpson nailed an American flag to a hastily-erected cottonwood pole in the center of tiny Taos, N. M. But it has stuck.

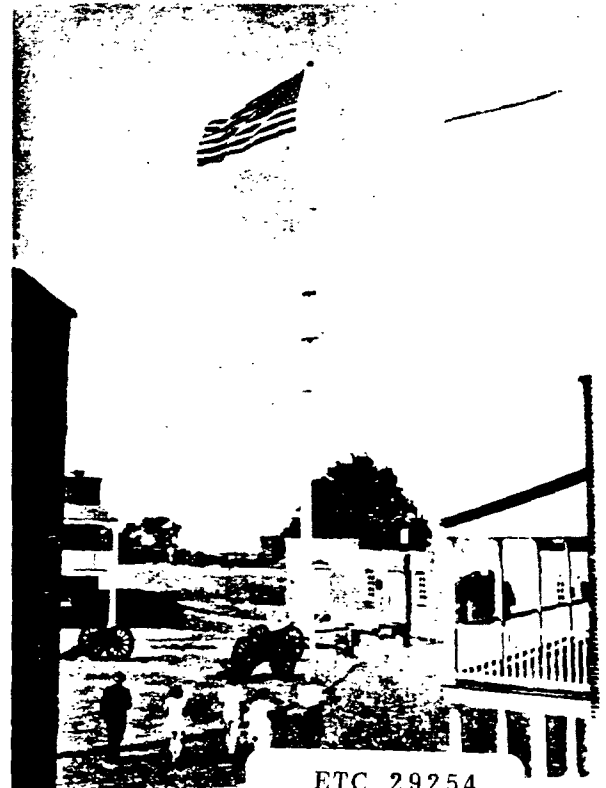
The Stars and Stripes has been flying night and day in Taos ever since—one of several places in the country where the flag is displayed around the clock.

Like many other events celebrated this year, the Taos incident had its origin in the early months of the Civil War, when Confederate sympathizers smashed the town flagpole and hauled down the National Ensign. Loyal to the Union, Captain Simpson leaped into action. He chopped down and trimmed the tallest cottonwood tree available and dragged it to Taos plaza. Then he fastened a flag from his own home to the pole, and with the help of Kit Carson, Col. Coran St. Vrain and a Lieutenant Boggs, hoisted it into position.

The defiant quartet retired to St. Vrain's store to a position of day and night watching—with rifles at the ready.

★ ★ ★ ★ ★

At Fort McHenry, in Baltimore, Old Glory flies on the spot where it once survived British bombardment.



Display 24 hours a day at several places across the country

The absence of ropes and pulleys kept the Taos flag at the top of the pole. When military authorities at Santa Fe learned of the heroic action, they agreed to continuing day and night exposure of Old Glory.

When Captain Simpson died, his daughter, Mrs. Margaret Simpson Gusdorf, painstakingly replaced tattered, weather beaten flags, in accordance with her father's instruction. Six years ago, the old wooden pole was replaced by a modern steel one and the Taos Kiwanis Club assumed responsibility for the flags.

The Flag of the United States of America, fittingly, also is on 24-hour display at the Capitol in Washington, D. C. This dates from World War I requests that it be flown continuously on government buildings. Authorities decided to confine night-and-day display to the Capitol. Spotlighted during hours of darkness, Old Glory presents a striking sight to visitors to Washington.

Some 40 miles away, in Baltimore, the Stars and Stripes is on 24-hour view at the Flag House and Museum and at Fort McHenry national monument

★ ★ ★ ★ ★ ★ ★

The Stars and Stripes also is displayed around the clock at Francis Scott Key's grave in Frederick, Md.



Spotlighted at night, the Red, White and Blue on the nation's Capital is a stirring spectacle.

"OUR FLAG WAS STILL THERE"



In Worchester, Mass., the Flag has been flown night and day at the city war memorial since 1933.



Mrs. Margaret Simpson Gusdorf, daughter of the first perpetual Flag-flier in Taos, N. M., helps local officials run a new ensign up the pole.

and historic shrine. What is now Flag House was the home of Mary Young Pickersgill, the flag maker who fashioned the 42 x 30-foot, 15-star, 15-stripe Fort McHenry flag that inspired Francis Scott Key to write the stirring poem that became the words of our National Anthem. Appropriately, a replica of that 15-star flag also flies there in addition to a regulation 50-star model.

At Fort McHenry, a present-day flag flies at a spot on the parade ground where stood the pole, on which the original "Star-Spangled Banner" survived British bombardment in the War of 1812.

Francis Scott Key's immortal words "Gave proof through the night that our flag was still there" inspired the official flying of Old Glory night and day at his grave in Mt. Olivet cemetery, in Frederick, Md., and at his birthplace in Keysville, Md.

At City War Memorial

Since 1933, Worchester, Mass., has been flying the flag around the clock at its city war memorial. The memorial is a semi-circular stone facade in Lincoln Square on which the names of battles in which Worchester troops have participated are inscribed.

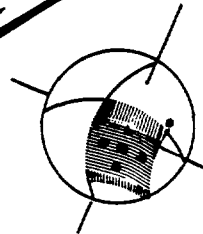
The Flag of the United States of America also is reported to be flown in daylight and darkness at: Sunset Hill Cemetery, Jamestown, N. Y.; Riverdale Cemetery, Niagara Falls, N. Y.; Northwestern State Bank, St. Paul, Minn.; Mount Slover, Colton, Calif.; and the castle of Death Valley Scotty in California.

Visitors to places where the Red, White and Blue flies at night as well as during the day usually are quite surprised. Further surprise comes when they find that the Flag Code indicates that any citizen can display Old Glory at night "on special occasions when it is desired to produce a patriotic effect."

Gridley Adams, founder and director-general of the United States Flag Foundation, goes even further. Says Mr. Adams: "The Flag is YOUR Flag and MY Flag. It is our inherent unalienable right to display it (properly and respectfully, of course) whenever we wish to show allegiance to these United States. There are no—there should *not be any*—day in the year, nor any hour in the day of 24 hours, more 'historic' than every one of the 365 days."

A War Department *Flag Circular* states "The War Department sees no objection to flying The Flag at night on civilian property, provided it is not so flown for advertising purposes."#

Power to Grow on



A variety of new devices may be used to generate the abundant supplies of electricity that are destined to play a big part in future progress

By John S. Wintringham
Ethyl Corporation Research Laboratories

AS AMERICA SURGES AHEAD in an era of unparalleled growth, one of its big needs is for bountiful supplies of power to drive the whirling wheels of industry, agriculture, transportation and national defense.

Since electricity—already doing a big job—is among the sources of power on which future progress will depend, there is great interest in proposed new ways to generate it as well as in the improvement of existing generating methods. Energy specialists predict that steam turbines will continue to

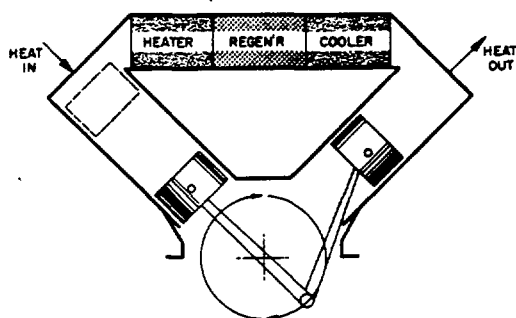
generate most electricity for domestic and industrial purposes, with hydroelectric plants ranking second. But even with projected expansions of these and other types of generating stations, there must be additional sources, particularly for special purposes.

The oil and automotive industries—both great power producers and widely experienced with fuels, lubricants and engines—are making important contributions to the development of new sources for electricity.

May Propel Space Vehicles

One of these contributions involves the Stirling engine, the 150-year-old invention of a Scottish minister which has been redesigned and made quite efficient in recent years. Powered by heat from solar or atomic sources, the Stirling engine may eventually be used to propel space vehicles and to drive electric generators and power plants for ships and locomotives.

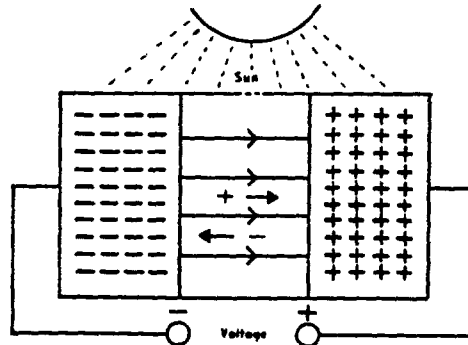
The Stirling engine is an external combustion machine with a power output shaft driven by two connecting pistons. Its operating cycle begins when externally applied heat causes air or some other working gas inside a cylinder to expand and push the power piston downward. The gas then moves through a regenerator, as the displacement piston



STIRLING ENGINE

POWER TO GROW ON

moves down. Gas volume is reduced by a cooler. At the same time, a water jacket or fins lower the temperature of the displacement cylinder.



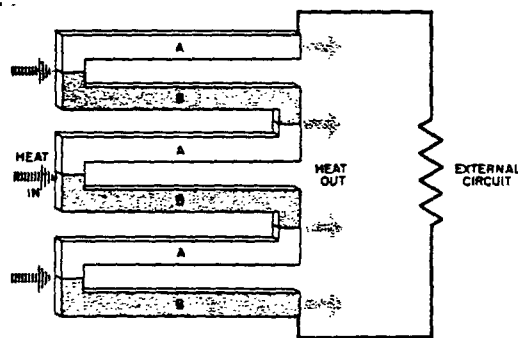
PHOTOVOLTAIC CELL

The cycle begins again as the heater helps warm the gas in the power cylinder.

Several problems must be overcome before the Stirling engine evolves further, but recent improvements have indicated that it has a promising potential.

Photovoltaic cells, which generate current directly when sunlight falls on them, also are potential new sources of electricity. These cells already are being used in space vehicles to recharge storage batteries and to provide energy for other purposes aloft. So far, however, their cost, bulk and limited efficiency have kept them from competing successfully with other generating systems.

Thermoelectric generators, made up of series of thermocouples, have been restricted by similar

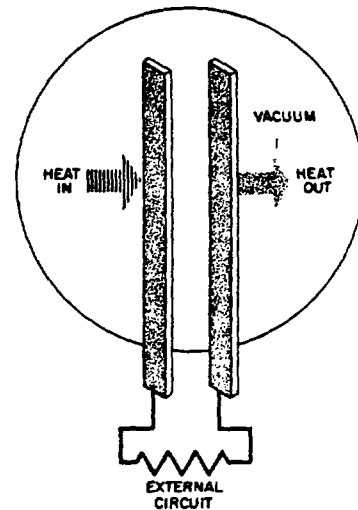


THERMOELECTRIC GENERATOR

handicaps. Electric current—at present limited to a few kilowatts—is produced when the junction of two wires of suitable but unlike metals is heated to an elevated temperature by chemical, nuclear or solar heat.

As thermoelectric generators are improved, they may be used to provide power for unattended stations in desert, mountain and underwater locations and perhaps even in future space stations, space ships and on other planets.

Another method of converting heat to electricity is by thermionic emission, the same phenomenon that takes place in radio tubes. A thermionic generator works when chemical, nuclear or solar heat is applied to a metal plate in a sealed unit. As the

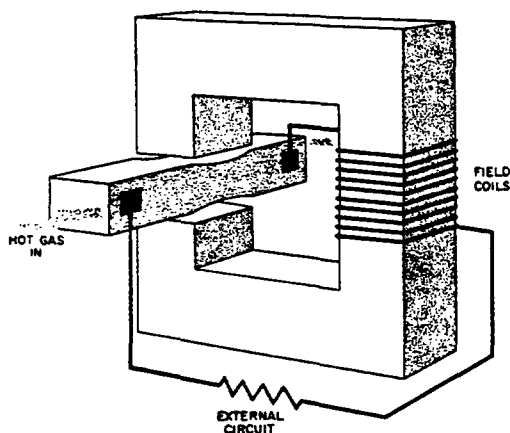


THERMIONIC EMISSION

plate's electrons bombard a nearby metal target, electric current is produced.

Two basic designs for this kind of generator are undergoing study. In one, the plate and electron target are close together in a vacuum. In the other, the space between them contains cesium vapor, which increases the device's efficiency.

So far, the output of units of this type has been limited to one kilowatt. Progress in making thermionic converters more useful hinges on overcoming a difficult metallurgical problem. Electrical output depends largely on the temperature of the electron-source plate—the hotter it is, the better it performs.



MAGNETOHYDRODYNAMIC GENERATOR

To produce even minimum voltage, however, the plate's temperature must exceed 3,500°F.

Still higher temperatures are required in the operation of another possible source of electricity—magnetohydrodynamic generators. These devices produce current by pumping an extremely hot ionized gas through a magnetic field. Theoretically they can be made as efficient as the best conventional steam turbine plants, but the need for gases in the range of 5,000° to 6,000°F. creates metallurgical difficulties in handling such streams.

Potential high efficiency is stimulating interest in another generating device—the fuel cell. Although the principle of the fuel cell has been known

for 150 years, applications are just beginning.

The simplicity of its construction and operation is a noteworthy advantage. Fuel cell power plants are composed of a series of cells that produce current. In each cell, a chemical fuel and an oxidizer, introduced through porous electrodes immersed in an electrolyte, react without burning to form electricity.

Hydrogen has been used as the fuel and oxygen as the oxidizer. When these elements react to form water, electricity is generated. However, both chemicals are expensive and bulky. A more practical fuel cell requires a low-cost, readily available fuel such as liquefied petroleum gas, a petroleum fraction or alcohol. The preferred oxidizer, of course, is air.

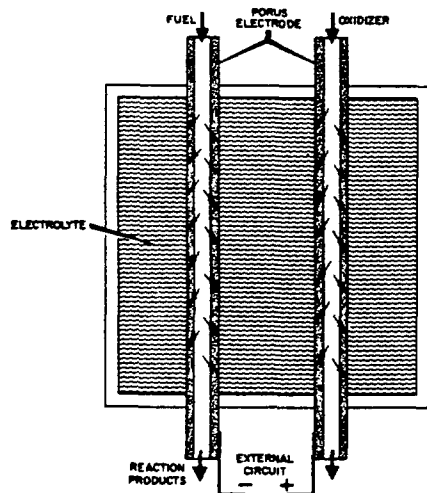
Chemical reactions in the cell are promoted by catalysts on electrode surfaces. As a result, intense efforts are now being devoted to the development of good catalytic accelerators. While no cell has been produced so far which matches the economy or the 60 to 70 percent efficiency of hydrogen-oxygen units, it seems probable, as research and development continue, that these and related problems will be solved.

Powers Radar Set

A fuel cell unit is now being used successfully by the Army Signal Corps to power a portable radar set. The complete silence of the unit and the absence of smoke and fumes give it military advantages. Fuel cell power may also have a future in fork-lift trucks, in isolated dwellings, in space travel and in other military applications. Some proponents speculate that cell generators in homes and plants, with fuel delivered by truck or pipeline, could produce electricity more efficiently than central power stations.

Now that atomic fission is producing steam for turbo-electric generators, the world has already begun to tap the incredible reservoir of nuclear power to produce electricity. Recent breakthroughs in the control of nuclear fusion point to mankind's ultimate access to an inexhaustible supply of useful energy.

Meanwhile, conventional generating systems and others now in experimental stages will be available to produce the electricity that will be vital to the amazing growth and progress that can be expected in the years just ahead. #



FUEL CELL



Informing Customers. Bringing timely information on a wide variety of subjects to customer people who can best use it is an important part of Ed's job. Here, he points out highlights of Ethyl's latest *Annual Review of Gasoline Quality* to an oil company vice president.

Meet Ethyl's Ed Erskine

He is typical of the men who tailor the Company's services to oil refiners' needs

STREAMLINE a blending system? Aid in the promotion of a new gasoline? Plan a "different" dealer training program?

These are the kind of problems Ed Erskine gets as a key contact man, serving district and division offices of oil companies on the West Coast.

To provide answers, he can call in Ethyl specialists, or arrange for his customers to utilize Ethyl's varied technical facilities.

As a recent example, Ed and an Ethyl product service engineer made a detailed analysis of a customer's gasoline blending operation. Ed then recommended the use of Ethyl-designed jet nozzles and a revision in operating procedure. Result: a much more uniform blending program with a three-hour saving in mixing time.

Another refiner cut unloading time of "Ethyl"

fluid by over 40 percent after Ed recommended a Fluid Flow Control unit and full-flow valves.

Erskine practically grew up in the oil business—his father was an oil man. After working summers in service stations, while getting his Indiana University degree, Ed came to work for Ethyl. That was 11 years ago.

Since then—except for a hitch as a Marine Corps pilot—Ed has toured half the country with Ethyl training presentations for oil company personnel. He has served as product service engineer and in other posts, preparing him for his present job.

His extra-curricular activities include membership on the Southern California Committee on Training, API Division of Refining.

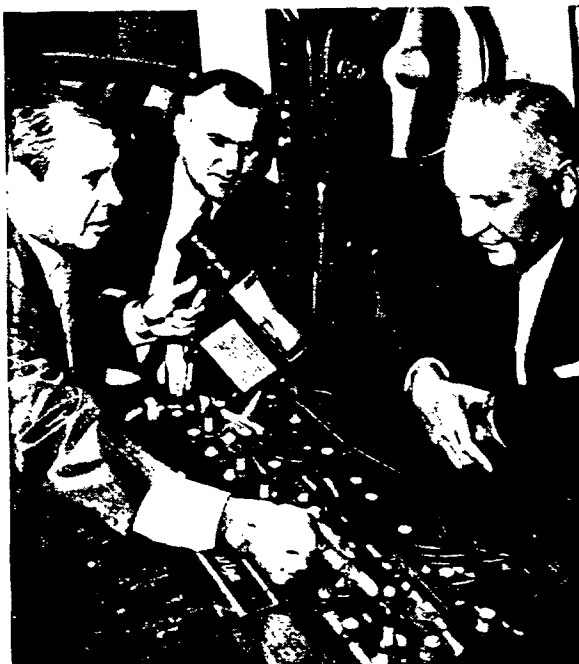
Ed Erskine is typical of the men who tailor Ethyl's wide range of services to oil refiners' needs.



Following Through. Ed and an Ethyl product service engineer recommended several innovations to aid in fast, uniform mixing of antiknock compounds with gasoline at this refinery. Now Erskine is checking on performance during one of his periodic visits.



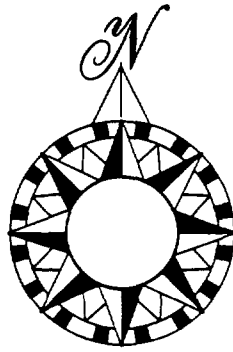
Staying Alert. This refinery had been using phenylene diamine (PDA) for inhibitor sweetening and gasoline storage stability. Ed suggested using an experimental mixture of "Ethyl" Antioxidant 733 and PDA. This combination did the job for about half the previous cost.



Solving Problems. Whenever an Ethyl specialist can be of service, Erskine makes arrangements to bring him in. Here, he and automotive engineer Marv Russell joined the oil company representative in the investigation of an operating problem in marine engines.



Supplying New Data. Erskine and Ethyl product manager Bob Carleton combine forces to discuss the widening application of Antioxidant 702 with oil company executives. This unique ashless product for lubricants is proving itself the ideal companion to ashless detergents.



A Guide to

Engine manufacturers' fuel and lubricant recommendations listed in new booklet

EVERYONE KNOWS that boating is booming. But just how big has it become?

A few statistics tell the story. Last year:

- 40 million people participated in pleasure boating, spending
- \$2½ billion for new and used boats, motors, accessories, safety equipment, fuel, insurance, docking maintenance, launching, storage, repairs and boat club memberships.

They used

- 547 million gallons of gasoline
- 25.5 million gallons of diesel fuel
- 25.2 million gallons of lubricating oil to fuel and lubricate
- 6 million outboard motors and nearly one million inboard marine engines.

For 1961, boating looks even bigger.

Bigger and Better Engines

One reason for this phenomenal growth is the outstanding gains that have been scored in the size and power of boat engines. In the last few years, engine manufacturers have made great strides in the output of both inboard and outboard engines. Much of the improvement can be traced directly to the widespread availability of high quality fuels and lubricants.

Time was, when marine engine manufacturers were limited in compression ratio and power output by the octane quality of fuel that could be obtained at the waterfront. But that time has passed. No longer is it necessary for boat owners to use special "marine white" gasolines, dispensed only at a relatively few pumps.

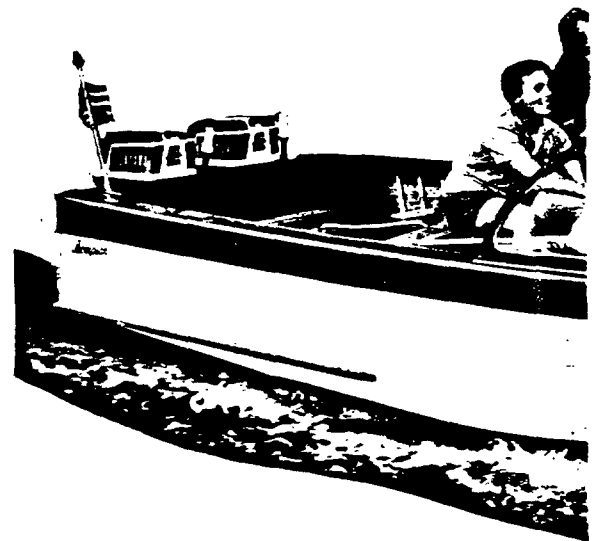
Nowadays, marine engines are designed to take advantage of the high quality and widespread availability of automotive type gasolines. Because of their uniformly high quality, automotive gasolines

provide boat owners with higher levels of performance and greater fuel economy.

For refiners, these modern fuels have eliminated storage and distribution problems once prevalent with "marine white," enabling them to supply a higher quality product in many cases at a lower cost.

To provide the real pleasure for which they were designed, boats, of course, must operate dependably and efficiently. Such operation depends on the proper selection and use of fuels and lubricants in their engines.

As a guide in the selection of fuels and lubricants, Ethyl Corporation has prepared a handy 24-page booklet, "Inboard and Outboard Marine Engine Gasoline and Oil Recommendations." The booklet is an up-to-date compilation in ready reference form of manufacturers' recommendations for fuels and lubricants for engines used in marine service. These recommendations have been obtained from engine manufacturers and are the same as those published in owners' manuals and service bulletins.

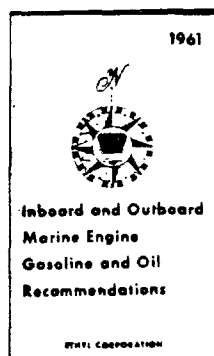


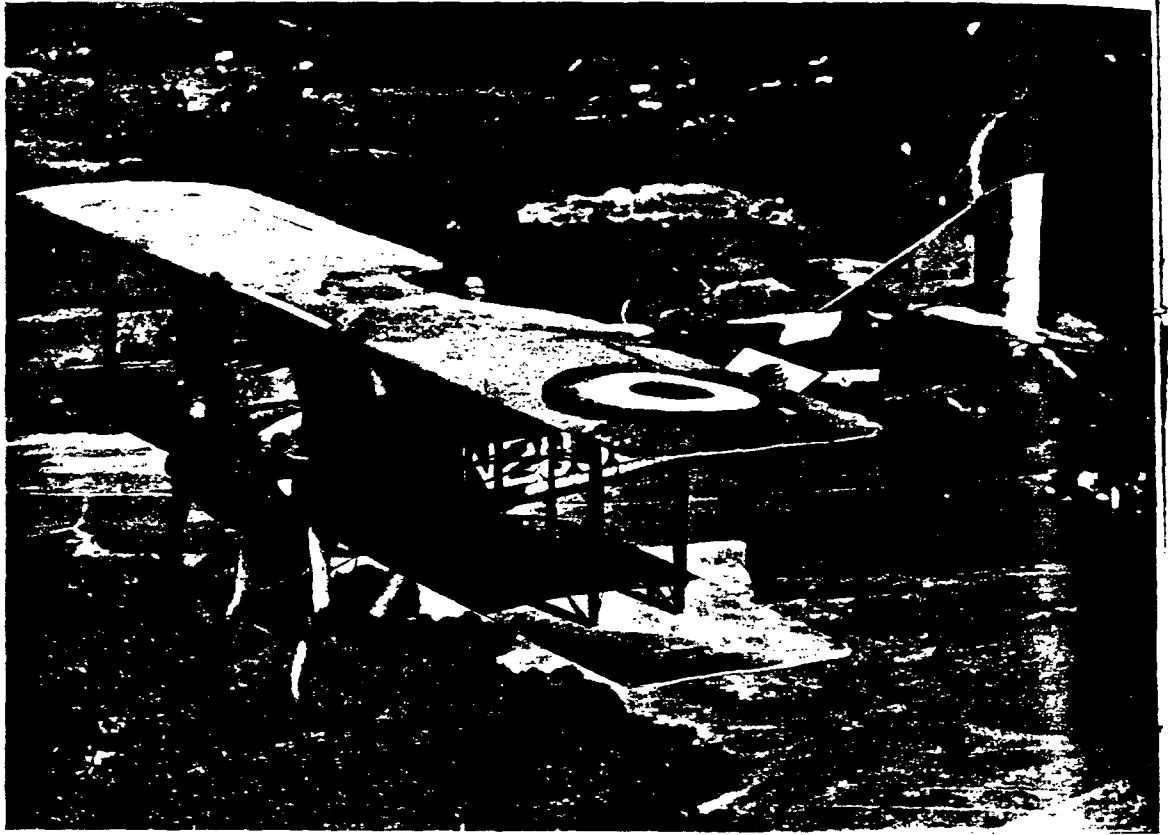
Better Boating



Nowadays, boat owners can take advantage of the wide-spread availability and uniformly high quality of automotive type gasolines. Such fuels give them higher levels of performance and greater economy.

The booklet, which is designed to make pleasure boating even more of a pleasure in 1961, is being distributed by Ethyl Corporation in the United States, Ethyl Corporation of Canada Limited and Ethyl USA (Export). Single copies are free and large quantities for qualified organizations and groups will be supplied at cost. #





He Keeps 'em Flying

An enterprising New York aviator-mechanic collects, rebuilds and pilots planes from a bygone era

AT THE OLD RHINEBECK AERODROME, at Rhinebeck, N. Y., 85 miles north of New York City, old airplanes never die—they just fly, slowly, away.

There, 35-year-old antique airplane collector Cole Palen, Jr., has created an unique "vintage" flying field of World War I, complete with aircraft of that nostalgic, flying-by-the-seat-of-your-pants era. Palen has in flying condition a 1910 Bleriot monoplane, a World War I German Fokker D-VII, a French Nieuport 28 (1917), a Spad XIII (1918), and a Sopwith Snipe (1918). All of these, except the Bleriot, saw military service during the first World War.

Bitten by the antique airplane bug in 1951, Palen has since joined the 5,000-member Antique Airplane Association, composed of old plane "buffs" who buy, swap, and rebuild into operating condition planes of the helmet-and-goggle days. A licensed private pilot and aircraft mechanic, Palen rebuilds old aircraft for himself and other birdmen. If he had the rebuilding jobs done by outside firms, it would cost him easily \$5,000 per plane to get the ancient crates into flying condition.

Palen has picked up another seven or eight aircraft of the 1909 to 1918 era and hopes to have

Seemingly suspended in space (upper left), Palen's Spad XIII, with the owner at the controls, actually is flying over Hudson River valley farmland . . . Clad in World War I-type helmet, goggles and flying suit, aviator-collector-mechanic Palen poses (lower left) with a field full of his antiques . . . To get 'em flying and keep 'em flying (upper right) often demands all of the pilot's mechanical talents . . . Just as it was in the planes' heyday, it's still necessary (lower right) to "pull the prop" to start engines.

HE KEEPS 'EM FLYING

them flying, too, before long. One of the big difficulties is finding original spare parts. Often the latter must be duplicated painstakingly by hand.

Whenever possible, Palen flies his ancient craft

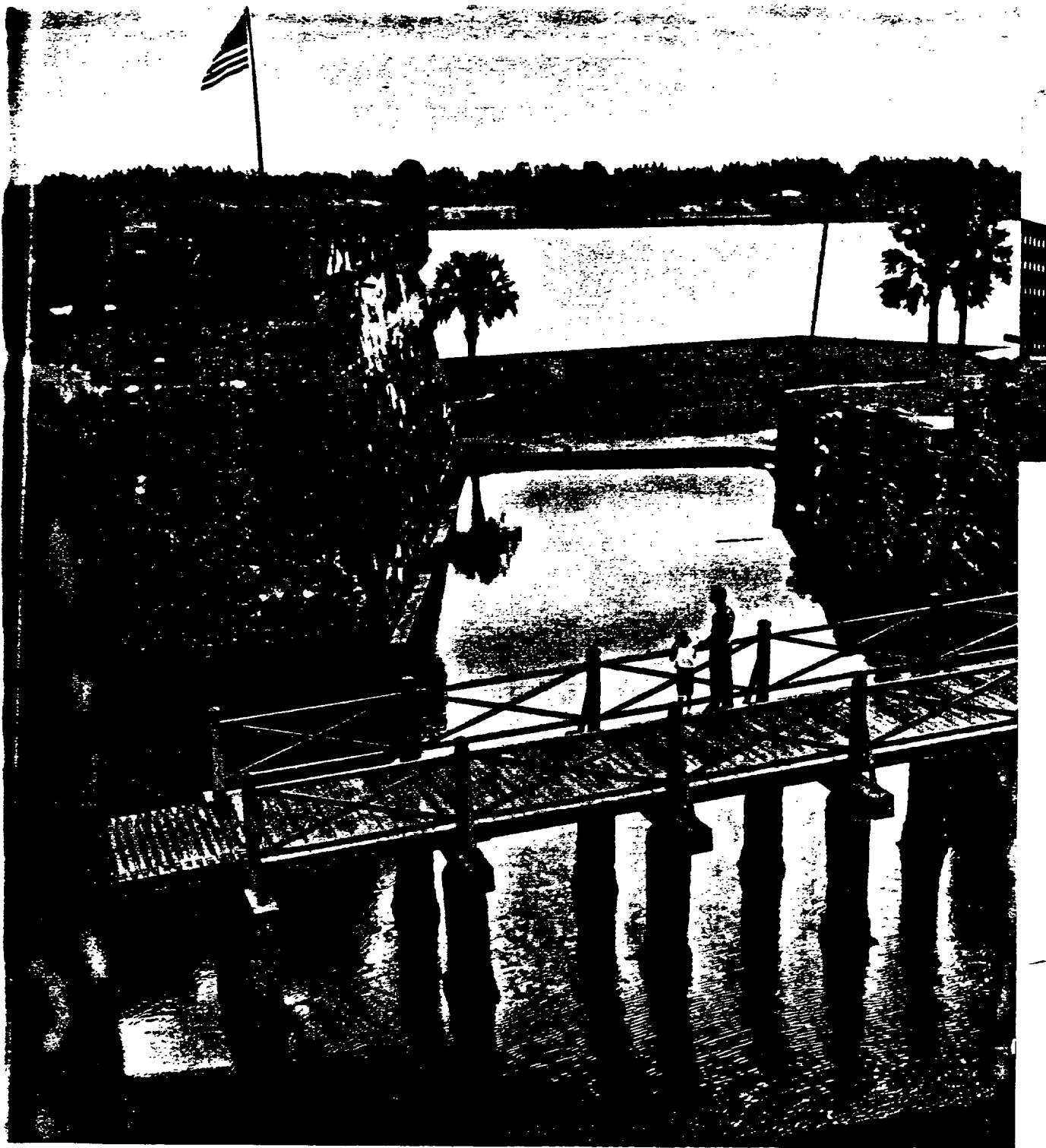
during weekend exhibitions. He hopes eventually to barnstorm at air shows and pilot his craft for movies and television. One thing he is sure of—flying the old crates is exceptionally safe. He hasn't suffered a single accident or injury to date—partly because the old planes fly so slowly. #



In an age of jet planes, rockets and missiles, a young visitor finds it hard to realize that machine guns synchronized to fire through the propeller of this French Air Force Nieuport 28 biplane were considered deadly weapons in World War I.

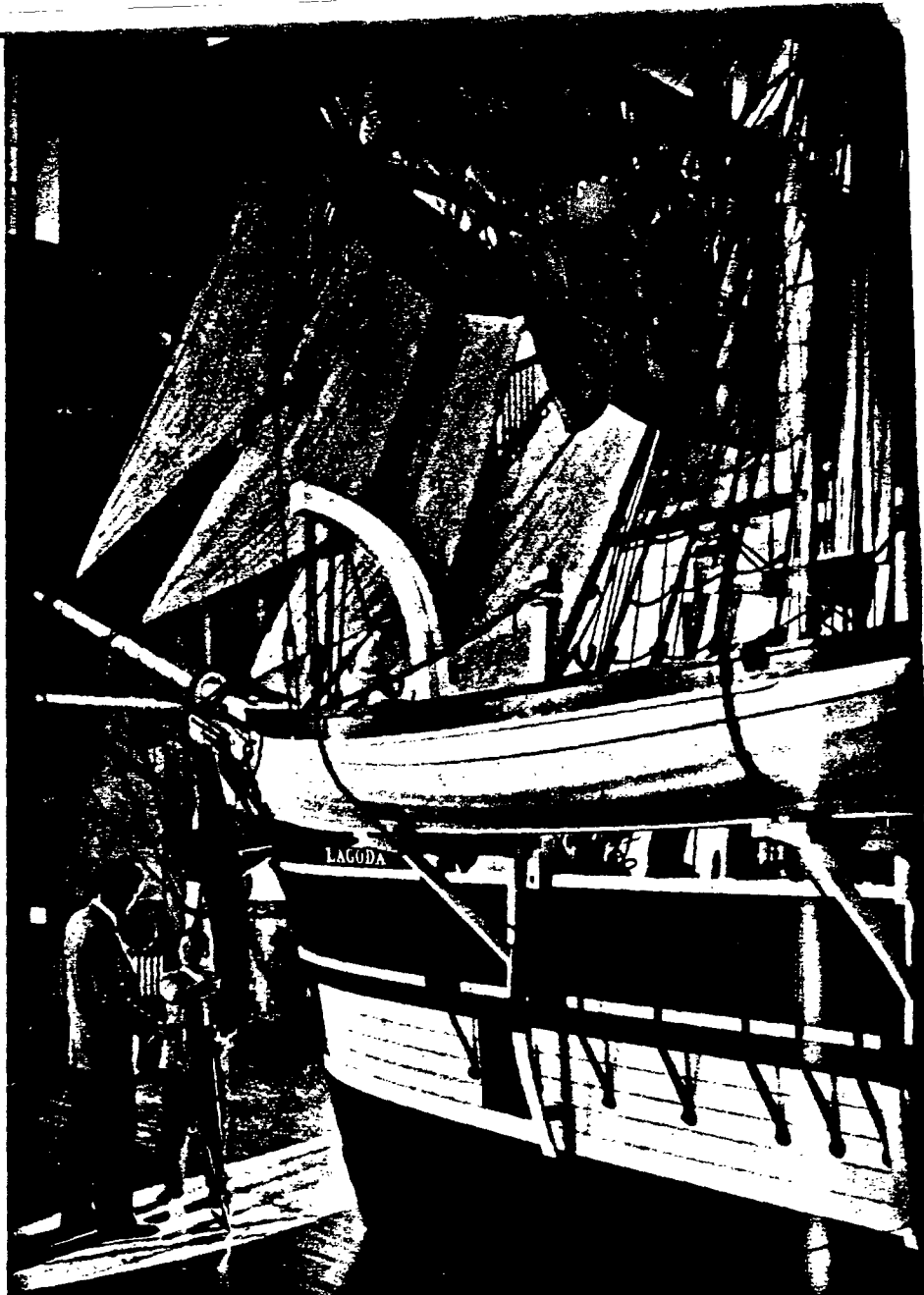
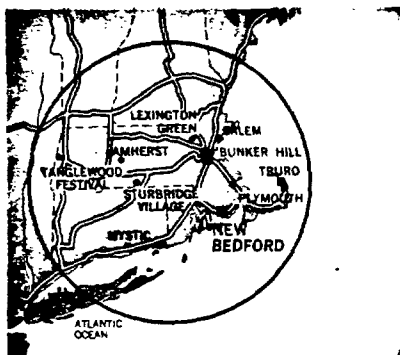


Even older, he learns, is this 1910 French Bleriot monoplane. It was in such a craft that Louis Bleriot made the first flight across the English Channel in 1909.



Castillo de San Marcos, in St. Augustine, the fort that once protected the northernmost Spanish outpost in Florida, is featured in one of Ethyl Corporation's Magic Circle advertisements this June. Part of Ethyl's market expansion program for the oil industry, the advertisements feature places prominent in American history and urge parents to take their children—by car—to visit such places.

This Magic Circle is in New England. Among other points of interest you can enjoy in this area are Old Sturbridge Village and the Giant Sand Dunes, Truro, Cape Cod. Or your service station dealer will be glad to help you map out a Magic Circle trip in your own area.



"How could a man kill a whale with a harpoon?"

"STAND UP, Tashtego!—give it to him!" The harpoon was hurled. "Stern all!" And off they go on a "Nantucket sleigh ride."

The pages of *Moby Dick* tell the story so vividly a boy almost feels he's there. But drive him to the Whaling Museum at New Bedford . . . and he is there, standing on the deck of a half-scale model of a real whaling ship, ready to cast off her lines for a three-year voyage in search of the great sperm whale.

When he stands on her quarter deck, gazing at the great incomprehensible jungle of rigging and spars

and sails . . . as he stands in the pitching cockle-shell of a whaleboat, surfing in his mind's eye in the wake of a harpooned sperm whale . . . perhaps he gets a glimmering of what it was like to be a man then.

This land of ours is filled with places that can bring history alive for your children. Museums, battlefields, historic sites . . . they're all yours, just a drive away from home.

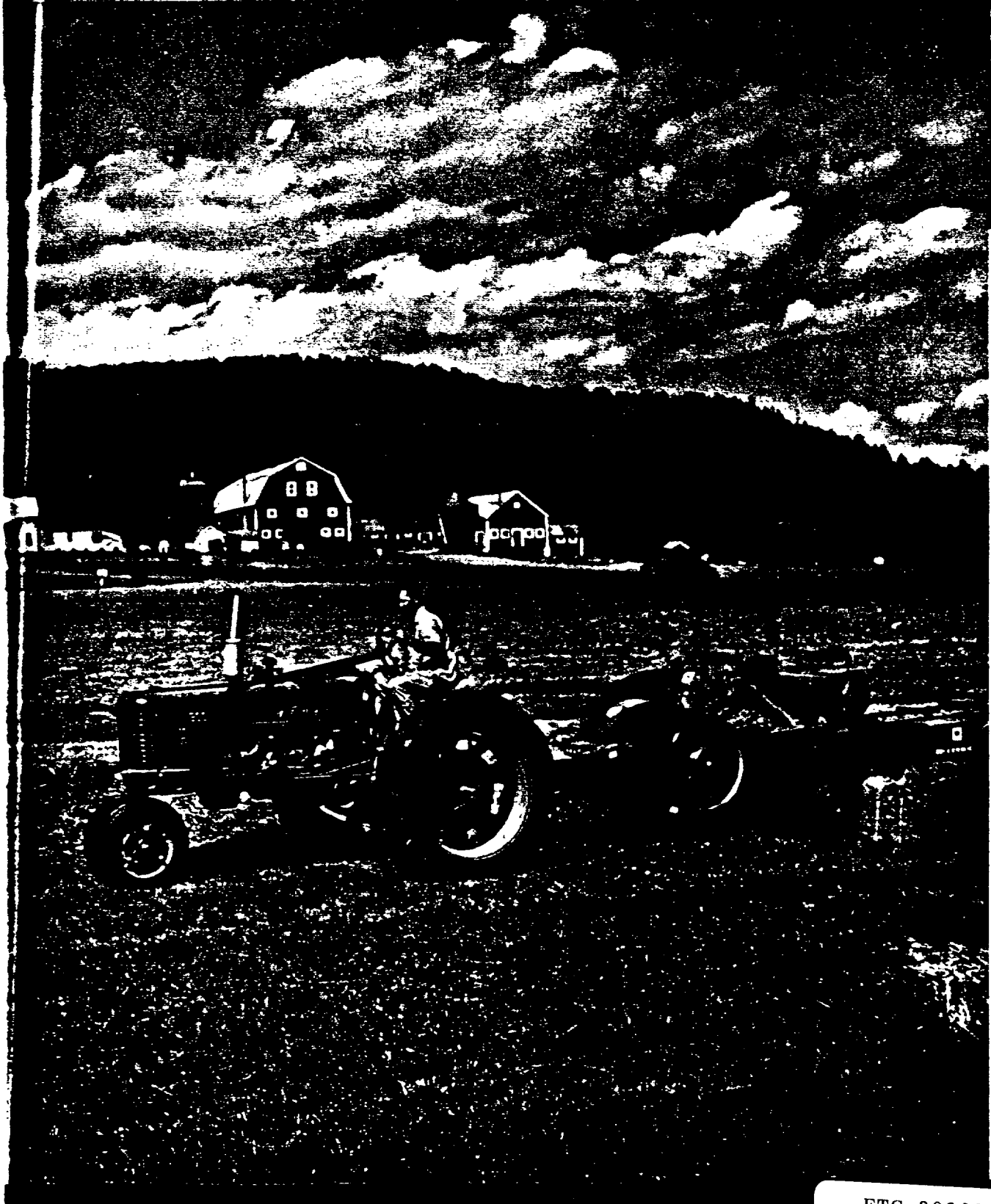
Ethyl calls this fascinating world that surrounds you a Magic Circle. Why not start exploring your Magic Circle this week end?

Ethyl Corporation, New York 17, N. Y. • Ethyl Corporation of Canada Limited, Toronto.

These Magic Circle advertisements are published by Ethyl Corporation, to help you get more enjoyment out of your car. Ethyl makes additives used by oil companies everywhere, to improve their gasoline and your driving pleasure.

ETC 29268

ETHYL NEWS



ETC 29269

ETHYL NEWS

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manufacturer of "Ethyl" antiknock compounds and other additives used by oil companies to improve the quality of petroleum products.

B. B. Turner, President

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ON THE COVER: The purchase, operation and maintenance of modern petroleum-powered equipment—such as the hay-baler working on this Vermont farm—contributes to agricultural buying. The answer to "How BIG is the FARM MARKET?" is on pages 8-10.

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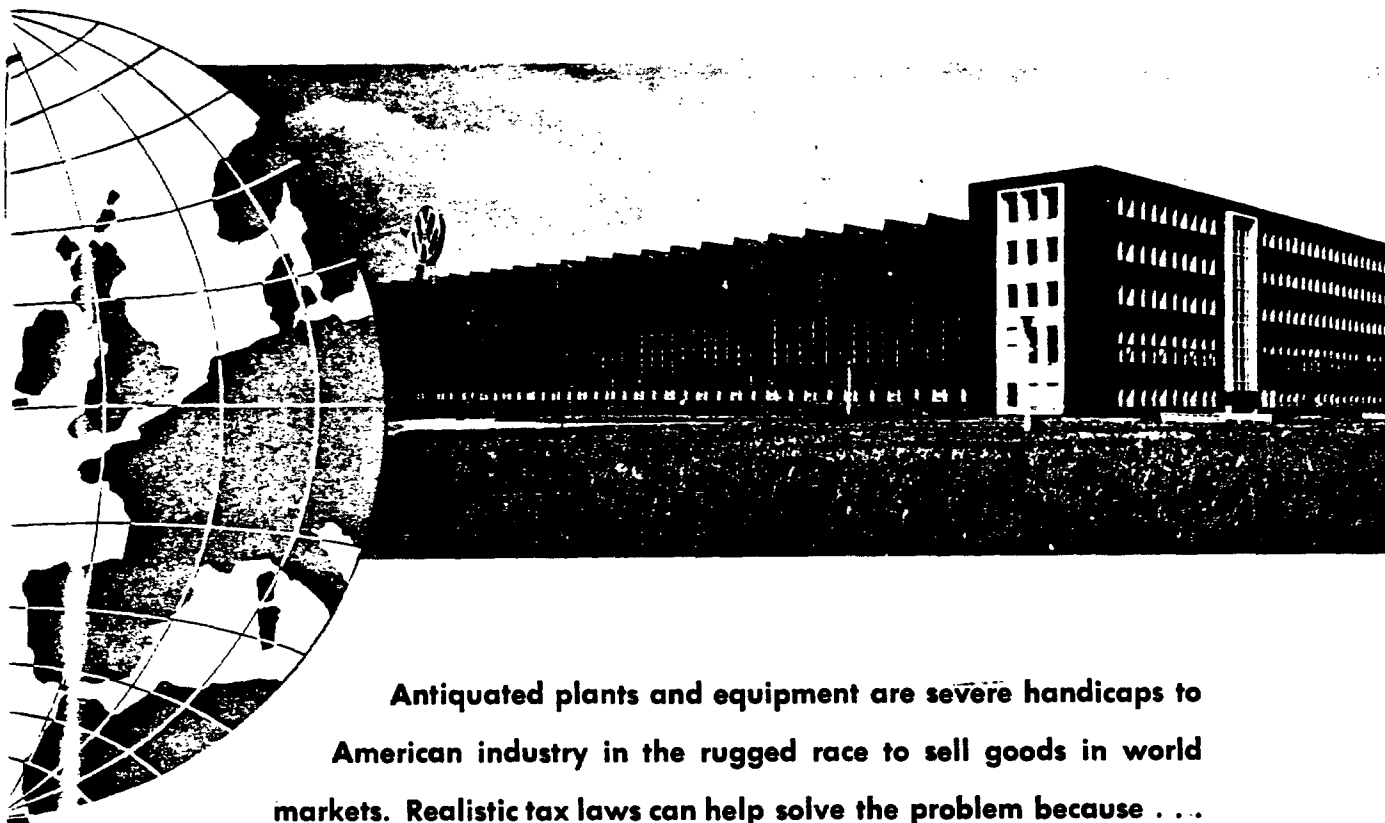
By B. B. Turner
President, Ethyl Corporation

A MERICAN INDUSTRY—the world's leading producer of goods and services—is beginning to fall behind in the vital race to supply the increasing requirements of consumer countries. With all of its inventive genius, production know-how and aggressive salesmanship, United States manufacturers are lagging in this intense global competition. They are faced with shrinking demand for their goods and, therefore, less work for their employees.

What's behind this big shift in international trade patterns? Why is the biggest, richest and most progressive country in the world unable to keep up with many of its smaller competitors?

One big reason is because United States industry is suffering from a large, compound handicap:

ETC 29270



Antiquated plants and equipment are severe handicaps to American industry in the rugged race to sell goods in world markets. Realistic tax laws can help solve the problem because . . .

Depreciation Makes a Difference

It is saddled with many outmoded plants, machinery and equipment and with depreciation provisions in tax laws that do not realistically provide for setting aside money to replace obsolete or worn-out tools and other production facilities.

New Machinery Abroad

Meanwhile, many foreign countries are using new efficient machinery that can turn out high quality products at lower prices than America's antiquated plants. Ironically, some of the new manufacturing equipment used by our foreign competitors has been paid for by foreign aid dollars supplied by the United States.

To compete successfully, American industry must produce much more efficiently than foreign industry, because it also has to offset the effect of higher wages and higher raw material costs in the U. S. A.

Too many foreign countries have depreciation laws far more liberal than those in this country. In some cases, special concessions are granted to keep foreign industrial plants modern and competitive.

What are the facts about United States industry's depreciation problem?

First, let's look at the condition of our manufacturing facilities.

One recent estimate indicates that about \$95 billion worth of the country's industrial machinery—fully one-third of all the equipment used to turn out goods and services in the United States—is outdated. Another study shows that the proportion of industry's equipment that is more than 10 years old has been increasing at the rate of two percent annually since the end of World War II. According to this study, 68 percent of all equipment in use is more than 10 years old. In 1945, only 38 per-

DEPRECIATION MAKES A DIFFERENCE

cent of industry's equipment was 10 years old.

On top of this comes the depreciation problem.

Depreciation often is regarded as a subject so complex that only economists, accountants and other financial experts can understand it. Actually, it is not nearly so baffling as it sounds. What it means is this: A manufacturer who buys machinery for his plant or a businessman who installs new equipment in his office knows that it will wear out a little each year. In other words, it "depreciates" and eventually will have to be replaced.

To recover the original cost of machines and equipment and to meet the even higher cost of replacing them, a business firm sets aside a reserve out of each year's income to provide for future purchases of new equipment. The Federal government recognizes this procedure as a cost of doing business and permits a reserve to be set aside before the payment of taxes.

Theory and Practice Differ

Consider, for example, an automobile manufacturing company that buys new machines at a cost of \$1 million. It estimates that the machines will last for 10 years, and that they will thus wear out at the rate of \$100,000 a year. The company is permitted to treat the \$100,000 yearly wear on the

machines as a business cost. At the end of 10 years when the machines will have to be replaced, the automobile company has recovered the \$1 million cost price through this regular process of depreciation. Theoretically, it can buy new machines with its million-dollar reserve.

Replacements Cost More

Unfortunately, things don't work out quite like this in actual practice. The tax laws allow depreciation only on the original investment, without providing for the fact that—because of generally higher prices and greatly improved machines—replacements may cost two, three or even five times more than original machines.

According to one widely used index, the cost of adding new industrial facilities has risen at an average rate of 8 percent a year since the end of World War II. If costs continue to rise in the future at the rate of the past few years, it will cost a company \$6.34 to buy what it originally bought for \$1 twenty-five years earlier.

Let the president of a major steel company cite an actual case history of the depreciation dilemma:

"In 1927," he explains, "we built a new rolling mill at our Butler, Pa., plant. The cost of the mill was about \$3 million, and it was depreciated at



Foreign competition is cutting deeply into markets here and abroad. Products from modern plants in Europe are among the United States' largest imports.



THE RULE . . .



. . . THE EXCEPTION

"One recent estimate indicates that about \$95 billion worth of the country's industrial machinery—one-third of all the equipment used to turn out goods and services—is outdated."

that figure over the length of a 30-year period.

"Thus, by 1957, when the mill had to be replaced, we had \$3 million set aside for that purpose. We built a larger mill, actually, with more modern facilities. But as nearly as we can figure out, an exact duplicate of the mill built in 1927 would have cost \$12 million.

"An additional \$9 million was necessary to duplicate the old mill, and it had to come—where else—out of profits. In order to clear \$9 million we had to earn \$18,750,000 before taxes; and in order to earn that much in 1957, we had to sell \$140 million worth of products.

Run Faster to Stand Still

"Additional sales of \$140 million were needed just to sustain one facility, not to improve it. In other words, we have to run faster and faster, just to stand still."

All industries, small and large, which use long-lived machinery that must be written off in a 20- or 30-year period are faced with the same problem.

Perhaps one of the most dramatic examples of how reserves are eaten up by price inflation comes from a machinery company that had to replace a 14-year-old machine tool—a turret lathe.

The company called it the "million dollar turret lathe," although the tool cost only \$12,000 when it was purchased. Here is how the firm outlined its problem:

COST OF EQUIPMENT

Cost of original lathe	\$ 12,000
Cost of replacement lathe	\$ 35,000
Cost of new lathe with improvements and attachments needed to meet competition	\$ 67,000

AVAILABLE FUNDS

From depreciation of old lathe . . .	\$ 12,000
Remaining funds which must come from profit after taxes	\$ 55,000
Required amount of pre-tax profit \$	114,600
Sales needed to generate pre-tax profit	\$1,250,000

Machines need replacement not only because of wear and tear, but because they become obsolete. That is particularly the case with much of today's complicated electronic equipment and highly-automated machinery.

Says one manufacturing executive, "Research is uncovering new processes, new ways of doing things

DEPRECIATION MAKES A DIFFERENCE

at so fast a pace that the equipment we install today may have to be replaced in only a year or two, if we aren't to fall behind our competitors."

By failing to take into account the twin factors of inflation and obsolescence, depreciation allowances are estimated to fall short by \$8 billion to \$10 billion a year of meeting industry's needs for replacing plant and equipment.



In the face of what many businessmen consider restrictive depreciation rules in the United States, foreign countries such as France, Germany, Sweden, Belgium, the Netherlands and the United Kingdom provide more rapid rates of write-off, and in some cases revaluation of property to compensate for past inflations.

Discussing the need for depreciation reform in this country, the First National City Bank of New York noted recently:

"The importance of liberalized depreciation has been recognized all over the world because of its influence on investment which in turn is the core of the growth process. Business finances capital investment from a variety of sources—sales of

stock, borrowings, retained earnings, and depreciation allowances. The biggest source is depreciation which, if earned, gives back to a company a portion of its past investments. The more freedom a company has in the timing of depreciation charges, the more opportunity it has to grow."

In January, 1961, the Treasury Department disclosed the results of a survey it had made of 11,000 businesses. The report showed that about 70 percent of the companies responding to the questionnaire considered depreciation allowances inadequate because of higher prices for equipment to replace obsolescent and worn-out property.

A decisive majority of the responding firms said they would increase their spending for new facilities and more modern equipment if the depreciation provisions of the tax laws were liberalized.

Signs are increasing that the need for depreciation reform is beginning to be understood by a broad cross-section of this country's businessmen and workers. Consider a recent statement on the subject by a committee from the Chamber of Commerce of Springfield, Vt.—a town of about 10,000 people.

Bills before Congress

The committee was made up of a dairy farmer, a manufacturer, a storekeeper, the president of a local labor union, a newspaperman, and the treasurer of a machine tool company. Its report said, in part: "We are firmly of the belief that a substantial measure of depreciation reform would materially stimulate the general economy and would increase the economic rate of growth in the United States. We believe it is one of the most important problems faced by the 87th Congress."

More than 30 bills have been introduced at the current session of Congress to answer, in whole or in part, the pressing problems created by inadequate depreciation allowances. Both major political parties have agreed that tax reform to encourage business investment and stimulate growth is desirable.

The big question now is whether Congress will take adequate action to help close the "obsolescence gap"—a gap that has been described as the greatest problem that faces the American free enterprise system at this point in its development. #

What's ahead for HELIUM

Invisible but invaluable, element has bright
future in science, industry and national defense

By Thom Yates

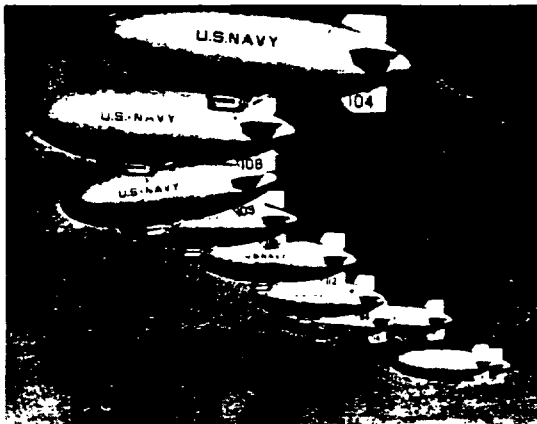
MAGICAL THINGS are happening to magical helium.

Until recent years, it was used primarily as a lifting gas for dirigibles, blimps and observation, advertising, weather and toy balloons. But even though lighter-than-air craft are rapidly becoming a thing of the past, no such fate is in store for colorless, tasteless, weightless helium. Its future is brighter than ever.

Today, 40 percent of all helium produced in the United States is used in guided missile, space and atomic energy programs.

The invisible element helps get missiles into outer space and return them to the earth's atmosphere. By expanding to take the place of liquid-fuel propellants as they are burned, helium provides the strength and rigidity needed by missile structures to continue outward flight. Conversely, the use of helium in shock-tube tests at velocities in excess

Navy blimps, once the biggest users of helium, have been grounded by recent economy measures.



Versatile element helps launch missiles
and return them from space again.

of 10,000 miles per hour is helping to solve the problems of missile re-entry.

At Atomic Energy Commission installations, low-density helium is relied upon heavily for the detection of leaks. Also, because it does not become radioactive, it is an ideal heat transfer medium in gas-cooled nuclear reactors.

Versatile helium also:

- Makes possible high quality arc-welding of aluminum, copper, titanium, magnesium and stainless steel, because it is inert and an excellent conductor of heat and electricity.
- Provides greater breathing ease for asthma

WHAT'S AHEAD FOR HELIUM

and lung congestion victims, when mixed with oxygen. Added to anesthetics, it greatly reduces the danger of operating room explosions.

- Produces various colors in neon lighting, alone or mixed with other gases.
- Is an effective tracer in determining the underground movement of gas injected into an oil or gas field.

All of helium's present uses pale in comparison to its potential in the exciting new scientific world of cryogenics. This is the study of the behavior of materials at temperatures approaching absolute zero (minus 459 degrees F.).

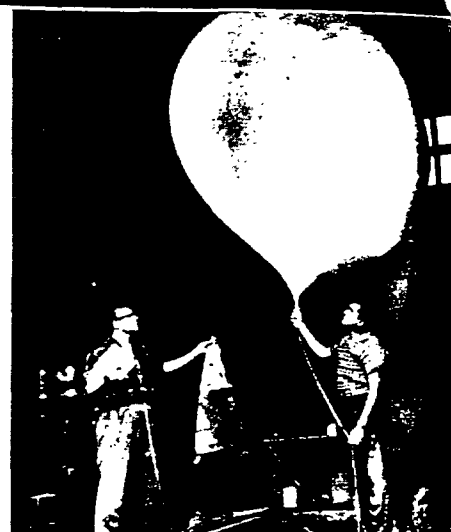
Some metals at the temperature of liquid helium become superconductors; they offer little or no resistance to the flow of electricity. This phenomenon has led to the development of the cryotron, a device no thicker than a human hair, which in a bath of liquid helium performs the functions of transistors and vacuum tubes. Use of cryotrons is expected to lead to the development, among other things, of small, highly reliable computers.

An improved type of power for space vehicles is another possibility with low-temperature helium. Liquid helium is able to capture and deep-freeze unstable bits of molecules known as "free radicals." Once released from captivity, these molecular segments unloose a tremendous burst of instantaneous energy—energy scientists think will substantially increase the power and thrust of space capsules of the future.

Found in Southwest

Capricious Mother Nature was somewhat tantalizing in placing helium. She stored a superabundance of this buoyant, nonflammable gas in the sun's atmosphere where it is unobtainable. Here on earth, she confined the Free World's entire known marketable supply to certain natural gas deposits found in a narrow strip of hilly terrain extending from the Texas Panhandle through western Oklahoma and into the southwest corner of Kansas, and in smaller quantities in New Mexico, Arizona and Utah.

Helium also exists in the gases of certain mineral springs, fumaroles and volcanoes; is present in air (in the ratio of 1 part in 200,000); and can be



Helium-filled balloons help gather weather information from stratosphere.

formed by nuclear bombardment and fusion. But its recovery from these sources is economically unjustifiable, so natural gas deposits must be relied upon to meet the expanding demand. Still, not all natural gas contains helium and even when it is present the normal volume is a meager one percent or less. Gas deposits holding as much as 8 percent helium have been discovered but they are rare indeed.

Demand for helium only ten years ago was a mere 80 million cubic feet annually. Now it is seven times greater—475 million cubic feet last year and 600 million cubic feet anticipated this year—and the end of the upward spiral is nowhere in sight. One reliable forecast is that the nation has a 300-year supply—on hand and recoverable from future natural gas production. But that outlook ignores the facts that there have been no significant helium-bearing gas discoveries in 18 years, that demand increases at a yearly rate of 20 percent, and that more than four billion cubic feet of helium is wasted annually by failure to extract it before the natural gas containing it is sold for consumer use. So instead of a comfortable three-century cushion, severe shortages are possible in as little as three decades.

To prevent such shortages, President Eisenhower last year approved legislation designed to meet the growing demand and at the same time put an additional 52 billion cubic feet of helium into storage by 1985. Heart of the conservation program is the proposed construction by private



The gas's unique properties make possible the high quality arc welding of many metals.



In hospitals, helium aids respiratory patients and reduces danger of anesthetic explosions.

industry of as many as 12 helium plants. The Government guarantees to purchase production.

Presently there are only five helium plants in the world (aside from any the Soviet bloc might have in operation). All of these plants are located within 200 miles of Amarillo, Texas, site of the mammoth Government-owned underground storage facility from which helium is shipped via railroad tank car, truck trailer and cylinder. Newest and largest of the helium plants is the \$12 million

unit at Keyes, Okla., which went on stream in mid-1959 with an annual capacity of 290 million cubic feet. All five U. S. plants are owned by the Government and operated by the Bureau of Mines, an agency of the Department of the Interior.

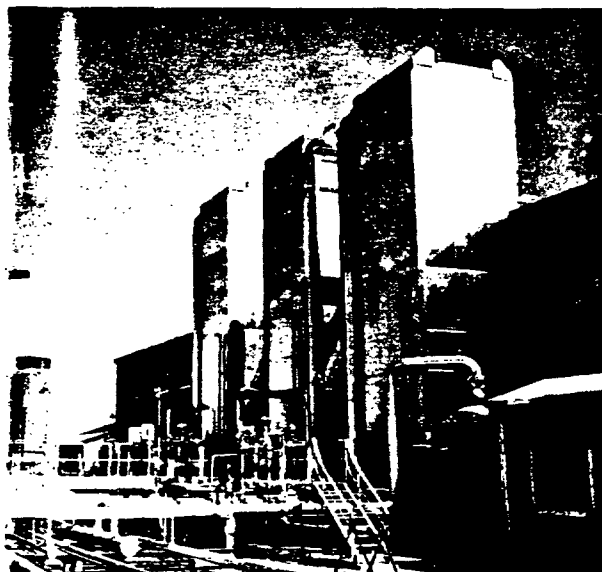
The first privately financed plant, being built by Kerr-McGee Oil Industries, in Arizona, is not scheduled for completion until late next year.

The Federal Government, the sole producer and seller of helium, also is the biggest customer. The Department of Defense, National Aeronautics and Space Administration, Atomic Energy Commission and other agencies account for about 75 percent of consumption. Private industry operating on Government contracts takes 15-20 percent. The remaining consumption is by private medical, metallurgical and research work.

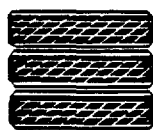
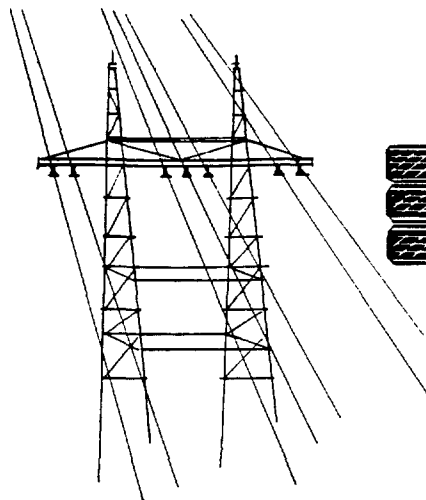
Price Fluctuates

Ever since helium's commercial introduction 40 years ago, the element has gone up and down in price nearly as much as the airships and balloons it filled. The original selling price was \$525 per thousand cubic feet. Improved technology and increased production plummeted the price to a low of \$5.36 during World War II.

In recent years, helium has been selling in the \$15-\$20 range. It soon is scheduled to shoot up to \$40 per thousand cubic feet. Even at that, remembering the versatile element's present and anticipated contributions to the advancement of mankind, helium will be a bargain. #



Helium is extracted from natural gas by a low-temperature liquefaction process in plant at Keyes, Okla.



How BIG is th

Agriculture is a multi-billion-dollar buyer of petroleum and other products

By George Krieger

LOTS OF CHANGES have taken place down on the farm in recent years, but agriculture and America's farm people still are one of the big markets for the nation's industries. Their impact on the country's economic activity is tremendous.

Just how big annual agricultural consumption has become was highlighted by Secretary of Agriculture Orville Freeman a few months ago when he pointed out:

- Farmers consume 320 million pounds of rubber, about nine percent of the total amount of rubber used in the United States.
- Farmers purchase products involving 6½ million tons of finished steel.
- Farmers use more kilowatt hours of electricity than Chicago, Detroit, Baltimore, Houston and Washington, D. C., combined.
- Farmers buy 45 million tons of chemical materials, largely fertilizers.
- Farmers use 18 billion gallons of petroleum products, more than any other single industry.

These figures give some idea of the size of the farm market in general, but what about the specifics of the farm market for petroleum products?

Spend \$3.5 Billion for Petroleum

According to the U. S. Department of Agriculture, the farmers of the nation spend \$3.5 billion annually on petroleum products, again, more than any other single industry. Last year, they used the equivalent of 357 million barrels of crude oil in the

petroleum products they consumed, or about 978,000 barrels daily. This represents about 14 percent of total domestic crude oil production. The USDA says that by the end of this year farmers should be using more than a million barrels of petroleum products every day.

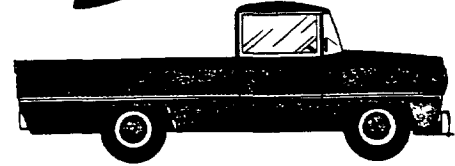
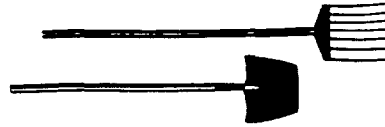
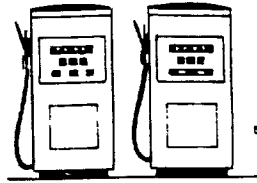
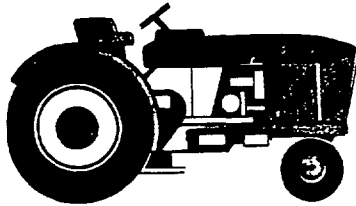
While the farmer is using \$3½ billion worth of petroleum a year, he is spending \$2½ to \$3 billion for new tractors, motor vehicles, machinery and equipment. This is a 20 to 25 percent larger expenditure for petroleum than for the new equipment using it.

What are the principal petroleum powered vehicles and equipment used in agriculture? Today, there are (in round figures):

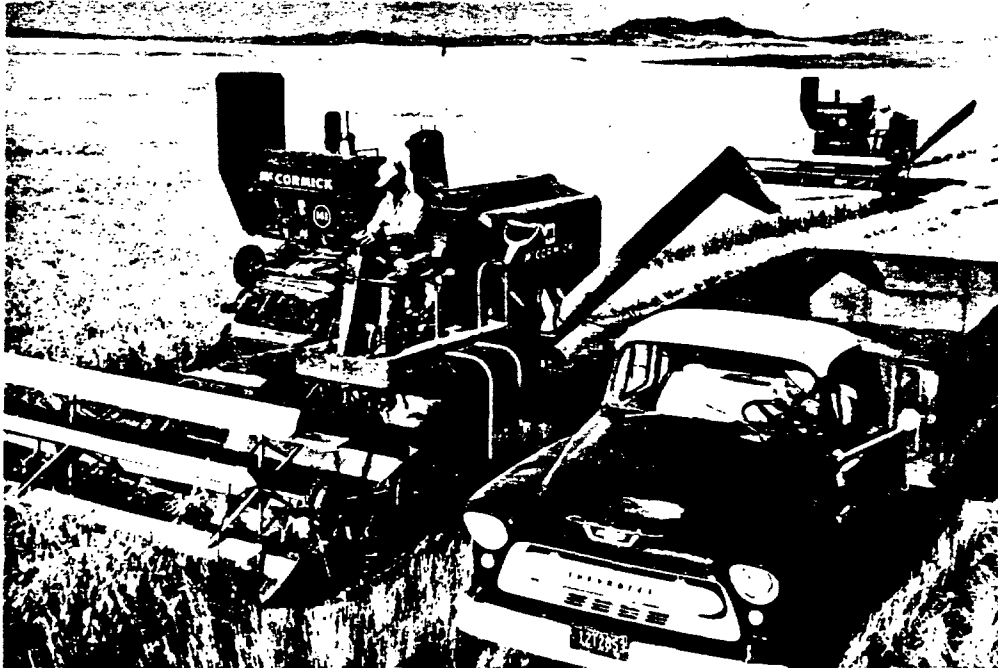
- Four million farm-owned automobiles
- Three million farm-owned motor trucks
- Five million farm-owned tractors.

Farmers use 18 billion gallons of petroleum products annually—more than any other industry.





FARM MARKET?



"The economic and profitable utilization of petroleum energy in the form of mechanical horsepower has been a major factor in farm productivity."

Together with other engine powered machines, this equipment consumes about 16 percent or one-sixth of all the motor fuels and lubricants used in the nation.

The economic and profitable utilization of petroleum energy in the form of mechanical horsepower has been a major factor in the rapid progress in farm productivity and in the resulting overall prosperity of the nation.

With farmers such large buyers of motor trucks, tractors and other heavy machinery and equipment—and chemical, petroleum and building materials—

and relatively smaller buyers of consumer goods, any curtailment of farm buying power must have a sharp impact on the industrial economy.

Clue to Economic Health

The farm market is not merely something to woo for expected profits. It is something to follow closely as a clue to general economic health. More than ever before, there must be a stable farm economy to insure stable industrial economy. Only a prosperous customer can be a good customer.

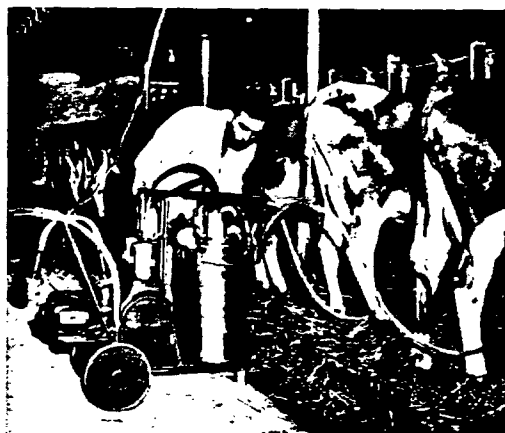
The 1959 Census of Agriculture confirms some



Farmers are big users of steel . . .



chemicals for fertilizers and insecticides . . .



and electricity for many agricultural purposes.

HOW BIG IS THE FARM MARKET?

of the reported trends of recent years in farm size and farm economics. It reveals that mostly as a result of consolidations into larger and better farms, the actual number of individual farms was reduced to 3.7 million—down more than a million in a five-year period.

The number of "commercial" farms—those with annual sales of \$2,500 or more—remained about constant at 2.1 million. The number of farms with sales over \$10,000 increased by one-third to 800,000, while the number with sales less than \$2,500 dropped 39 percent. The latter were for the most part smaller farms that were consolidated into stronger units.

The average size of a farm now is 302 acres, up from 242 acres in 1954, an increase of 25 percent. At the same time, total crop acres are down three percent, or 38 million fewer acres.

Farmers are buying more production items to step up efficiency. From 1954 to 1959, for example, expenditures per farm increased 21 percent for feed, 24 percent for machine hire, and 13 percent for gasoline and other petroleum products.

Equipment Use Increases

In the same period, changes that especially affect petroleum consumption were a 36 percent increase in the amount of fertilizer used per acre, and the following increases in the number of pieces of equipment in use: Pick up balers—52 percent; field forage harvesters—45 percent; corn pickers—16 percent; grain combines—7 percent; crop dryers—over 800 percent; tractors—10 percent; and trucks—5 percent.

Larger and more prosperous farms require more and better fuels and lubricants for more and better farm machinery. They provide an increased market for replacement parts and TBA items and an opportunity for the development of new and improved machinery to meet their needs.

In the future, it is expected that there will be a continuation of the trend toward fewer but larger farms; toward even greater farm capitalization; toward larger capital and operating expenditures for production goods. To the petroleum industry and to other manufacturers and distributors serving the farm market, the 1960's offer expanded selling opportunities. #

Oil Region Recreated — in miniature

IN THE SAME little western Pennsylvania town where it was launched 26 months previously—and with the same principals participating—the Oil Centennial observance of 1959 was officially brought to a close early this summer.

With the push of a button at the Drake Well Park museum, in Titusville, Genevieve Blatt, Pennsylvania's secretary of internal affairs, set in motion an electronic terrain model of the oil region as it was in 1866. In so doing, Miss Blatt formally concluded the Oil Centennial celebration. On April 5, 1959, she had opened the Centennial by placing a wreath on the grave of Col. Edwin L. Drake, the oil industry's founder, on the 140th anniversary of his birth.

Charles L. Suhr, board chairman of South Penn Oil Company, presented the terrain model to the state-operated Drake museum on behalf of Oil Centennial, Inc., the organization of Titusville citizens and western Pennsylvania oilmen that conducted the 1959 observance. Through what Mr. Suhr termed "astute money management," a surplus of about \$27,000 remained from funds collected by Oil Centennial, Inc. With that money, the terrain map and a life-size figure of Colonel Drake were pur-

chased and scholarship aid was given to university students pursuing petroleum courses.

An intricate electronic system in the 9-by-11-foot model synchronizes lights with sound and enables museum visitors to see and hear, at the press of a button, a six-minute summary of the birth and early development of the oil industry. It orients the visitors—most of whom are from outside the western Pennsylvania area—in the topography of the original oil region, explains the relative location and importance of such places as Titusville, Oil City, Pithole, Petroleum Center and Franklin, and describes what took place there.

While presentation of the terrain model was ending the Oil Centennial, it was beginning a new phase of the Drake Well Park museum's development. At the dedication ceremony, Dr. S. K. Stevens, executive director of the Pennsylvania Historical and Museum Commission, announced that the state had appropriated \$850,000 to enlarge and improve facilities at the oil industry's birthplace. The expansion program, which gets under way next year, will give the oil industry, Dr. Stevens said, "one of the finest industrial museum buildings in the country." #

Genevieve Blatt, Pennsylvania's secretary of internal affairs, accompanied by Robert C. Newell, executive director of Titusville Chamber of Commerce, and James B. Stevenson, publisher of *The Titusville Herald*, pushes a button to start electronic terrain model of historic oil region.



Bastions to Insure

"We must teach young citizens coming to maturity the values of the American heritage."

EACH AGE must face its own conflicts; each age must face its own challenges. But the striking fact of *our* age is that the challenge that we face holds grave consequences not only for ourselves but for future generations as well. The future of the Free World, the conditions of human life for years to come are *now* being determined. We the people of the United States must *win* this conflict or witness the death of freedom and the end of free society. The fate of our country depends on what we as a nation and as individual citizens are willing to do *today*.

★ ★ ★ ★

As Secretary of State Dean Rusk said recently: "Those who would bury us are moving with energy, speed and sophistication. We cannot compete by consulting our comforts, nor by nourishing our illusions."

★ ★ ★ ★

SOME AMERICANS have become preoccupied with the military aspect of the struggle, with the strength of our armed forces. They are aware of our tremendous military power and they feel secure. We need armed forces and we need good ones. We must possess not only the means but the *will* to deal with military aggression in any form.

But at the same time we must recognize that the ruthless forces threatening our society today depend primarily on non-military means to achieve their objectives. Our Communist opponent fights in the fields of politics, economics, psychology, culture, and even athletics. And he fights just as hard as any soldier, sailor or airman.

★ ★ ★ ★

TODAY, MORE THAN EVER, freedom and education are inseparable. That is why we must teach young citizens coming to maturity the values of the American heritage. teach them to respect these values in their daily lives. For in these values lie the real strength of our society.

★ ★ ★ ★

OUR NATION'S YOUTH must learn the real meaning of the word "freedom." Freedom really describes that magnificent privilege, with its grave responsibilities, which permits a man to work out his destiny according to his own mind and according to his own abilities. This is freedom: the unhindered opportunity for man to choose.

Our country's future will depend on the wisdom of those choices.

Our moral fiber will depend on whether we choose what is right or what is wrong.

Our national strength will depend on how much courage we choose to display.

*The accompanying quotations are highlights of a speech by Admiral Burke, recently retired Chief of Naval Operations, before the National Military-Industrial and Educational Conference.



Our Future Freedom

values of the American heritage"—Adm. Arleigh Burke*

The achievements of our industry will depend on how hard we choose to work. These achievements will be made by the individuals in the nation—by the work they choose to perform, by the self-discipline they choose to exercise, by the principles they choose to support.

★ ★ ★ ★

THE VITAL QUESTIONS which all free men must answer are: How do we *use* our freedom? What kind of choices do we make?

★ ★ ★ ★

IN ANY AGE there is one concept, one sure guide that can be relied on in making choices. That guide is a well-developed sense of responsibility. Responsibility must be learned by the new generation that is emerging, learned by those who will take charge in the 21st century. The process starts in childhood, in the home, and it continues in our churches and in our schools.

★ ★ ★ ★

OUR YOUTH must learn *less* about how to make money and much *more* about their responsibilities. We must educate them in the basic values that made our country great. We must demonstrate by our example the importance of hard work, of competition, the importance of patriotism and integrity. Most of all, we must teach our young people to respect and to stand up for principles. For at the very heart of a man's sense of responsibility are his principles, his beliefs, his convictions.

★ ★ ★ ★

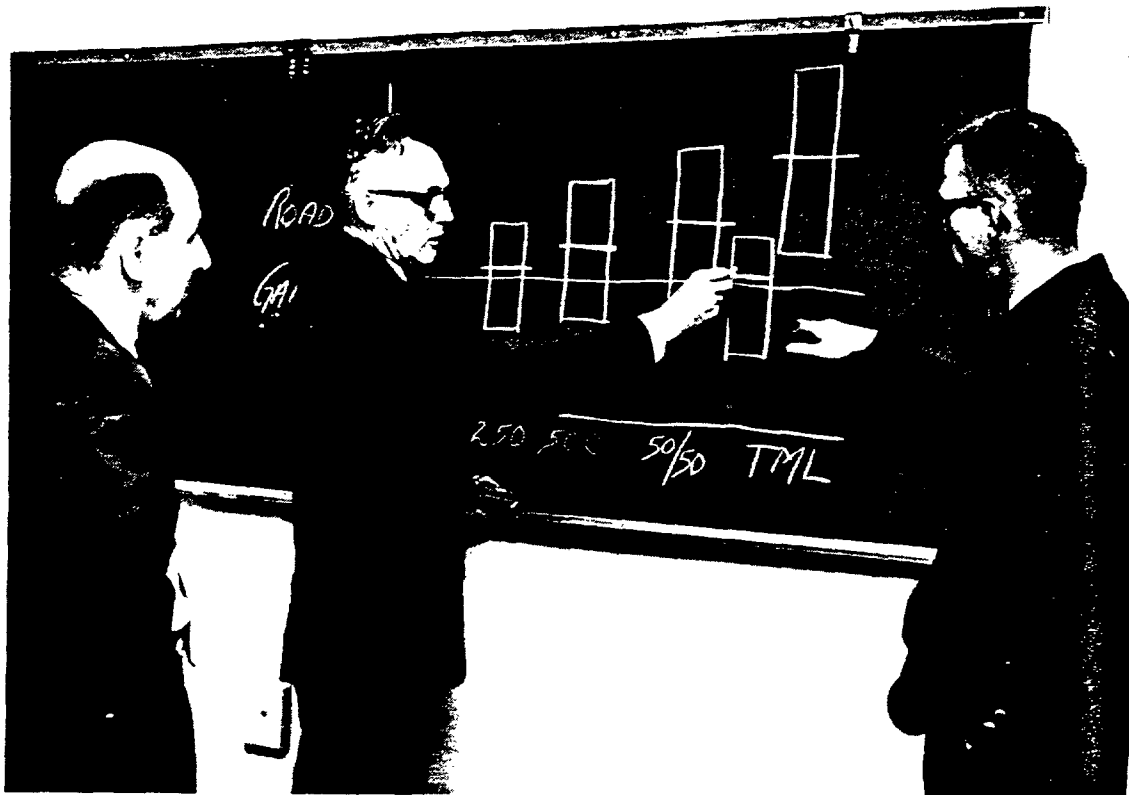
OUR COUNTRY was built by men with principles. Today, some people seem to feel that this modern age has removed the need for principles. But fundamental principles never change. When a man sacrifices his principles, he loses everything. He loses his self-confidence. He loses his self-respect and the respect of others. He loses his sense of purpose; he becomes weak and vacillating. Ultimately he becomes fearful; he loses his courage.

★ ★ ★ ★

THE FUTURE won't be easy for us. But when was the future ever easy? We've known trouble before. Our way of life was born in struggle and has survived some appalling tests. We've faced up to tyranny before.

Within our Republic are the sparks of courage and the latent qualities to meet any task, to answer any challenge. Our duty—yours and mine—is to bring out those qualities in ourselves and in others, to provide the example that young America can follow with pride. If we carry out this duty, we can look to the future with confidence. The future will be in good hands. #





Cost savings and/or improved gasoline performance can now be realized by the refiner through proper antiknock selection. Sneed works closely with oil com-

pany technical people on such matters. Here he shows recent data on the road bonus that can be expected from various "Ethyl" antiknock compounds.

Meet Ethyl's Dick Sneed

As a research representative, he applies technical know-how to refiners' problems

IF YOU HAVE A QUESTION on the fuel/engine relationship, Dick Sneed is the man to see. Your questions are his first interest. If you have a problem, chances are he has already solved a similar one.

He's one of the competent engineers at Ethyl's Research Laboratories in Detroit. Like other research representatives, Dick spends about 60 percent of his time in the field. His specific job: to act as liaison between the oil companies' research and technical people and those of Ethyl, exchanging information, and coordinating Ethyl's research activities to be most useful to the customer.

Dick joined Ethyl in 1935 immediately after

graduation from Oklahoma University. One of his first assignments was the evaluation of increasing compression ratios to better utilize higher fuel antiknock quality. Another was to study the effect of supercharging on engine performance and fuel antiknock requirement. He also worked on Ethyl's study of the road antiknock behavior of TML and the mixed lead alkyls in the late thirties.

During the war years he evaluated a wide range of fuels and lubricating oils in military power plants. These and other important research duties account for the experience and knowledge Dick uses so effectively in his present assignment. #



To check on the effectiveness of phosphorus additives in a customer's fuels, Dick set up a cooperative test program at Ethyl's Research Laboratories. He will review the data on spark plug performance with the oil company during his next visit.



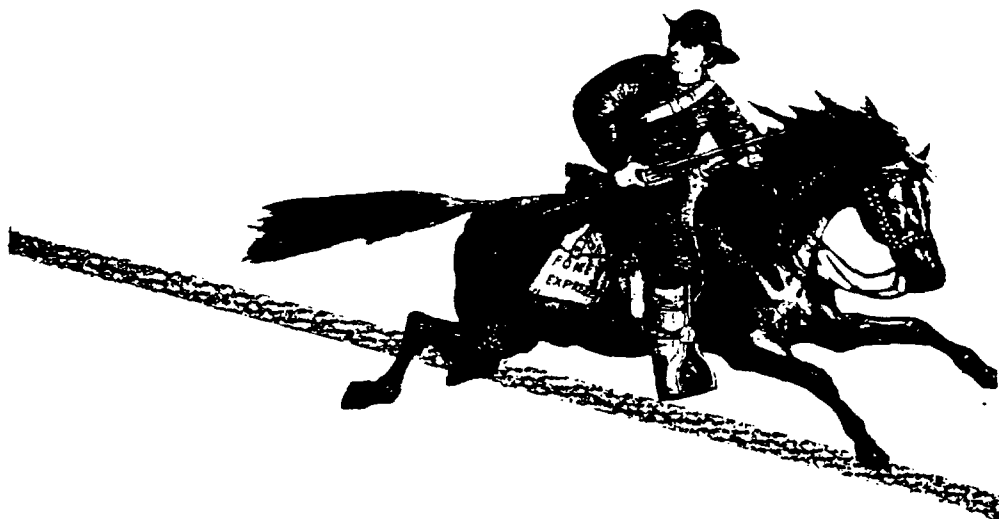
Comparing Ethyl's road test results with those of an oil company, Dick discusses a program being conducted on the customer's "indoor highway." Ethyl's broad fuel/engine experience is often helpful to the refiner in evaluating his data.



One of Sneed's most important activities is bringing new technical information to refining management. In this case he is reviewing an Ethyl report on the economic balancing of processing and antiknocks with an oil company executive.



The growing outboard market has increased the need for knowledge of the fuel/engine relationship in two-cycle engines. Sneed is getting, for a customer, the latest data on "Ethyl" ethylene dibromide as an oil additive to overcome spark plug fouling.



The big, vital American trucking industry
boasts a colorful heritage, ranging all the way . . .

From Pony Express to

By Thomas A. Hoge

THE BIG, RUDDY-FACED MAN in the leather jacket gulped down the remainder of his coffee, tossed a coin on the counter of the roadside cafe and strode out into the night.

Climbing into the cab of a giant trailer-truck standing in the gravelled parking area outside, he lit a cigarette and kicked the motor into action. A moment later he roared off into the darkness—driving one of America's 12 million trucks, which range from quarter-ton pickups to 30-ton trans-continental jobs.

This enormous armada hauls more than two-thirds of the country's freight, be it a load of tires from Akron to San Francisco or a cargo of fresh shrimp from the Gulf of Mexico to northern seafood markets.

The leather-jacketed driver and his thousands of fellow crewmen who operate this great trucking fleet around the clock everywhere are part of a tradition. It dates back to the nation's pioneers, beginning with hardy adventurers who set out with pack-horses, a few simple tools and rifles to slog their way through the wilderness.

The narrow and winding paths they broke became America's first overland arteries of trade and

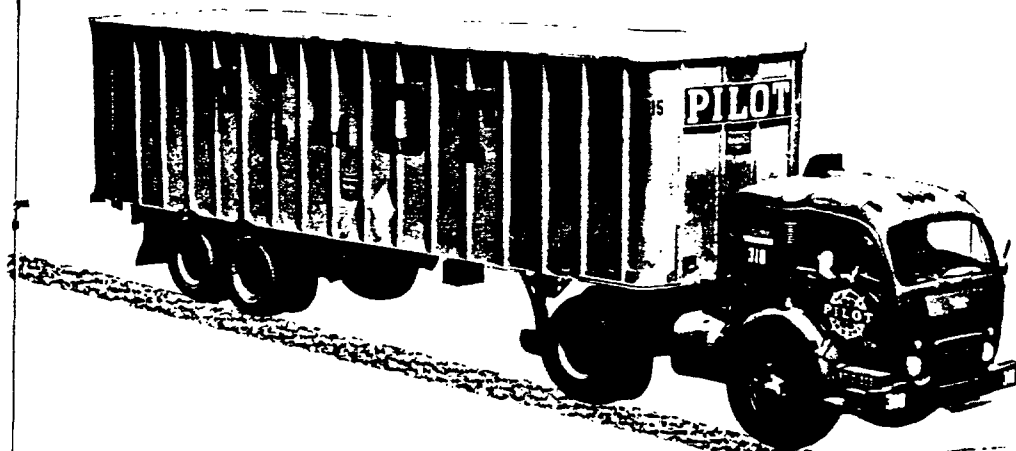
commerce. They extended from coastal colonies into the interior. Over these routes, horses loaded with household goods, clothing, weapons and other supplies reached new settlements. Returning caravans brought back valuable furs, exchanged for frontier needs.

As the colonial population grew, it became more eager to tap the wealth and opportunities of the new continent. Pack-horses alone could no longer fulfill growing needs for shipping freight and produce. Widened paths accommodating clumsy wooden-wheeled ox-carts relieved transportation bottlenecks for a time, but such primitive vehicles had only limited usefulness.

Conestoga Wagons Introduced

Early in the eighteenth century, while horses were still plodding over the mountains, Pennsylvania's Conestoga Valley traders introduced the covered wagon. Thousands of these sturdy red and blue transports hauled more than 500,000 settlers and millions of pounds of freight under their white canvas tops during the next 150 years of western migration. Drawn by a team of ten horses or mules, and measuring 60 feet from lead animal to tail gate, a single Conestoga wagon carried up to four tons.

On the southwestern route, they rumbled four



Motor Express

abreast behind armed outriders, carrying a continuous flow of goods. They lurched and swayed from New Orleans, St. Louis and other cities to New Mexico, where manufactured articles were scarce but silver was apparently unlimited.

These caravans carried up to a quarter of a million dollars in cargo between 1823 and the outbreak of the Civil War. By 1860, nearly 17 million pounds of freight had passed over the Santa Fe Trail, ranging from vintage claret and whiskey to velvet and furniture.

While traders were heading toward boisterous mining country, a swelling army of settlers began migrating into the lush wilderness of the Pacific northwest. The first pioneers, starting in 1843, blazed the 2,000-mile Oregon Trail, the nation's longest emigrant route. Ten years later, a chronicler of the times told of seeing an unbroken line of wagons stretching westward for 500 miles over this historic trail.

The Conestoga's success inspired a St. Louis entrepreneur named Murphy to design and build a similar wagon for the long transcontinental haul. Murphy wagons were soon swaying beside Conestogas along the Santa Fe run, toting cargoes of guns, ammunition, pots and pans.

When gold was discovered in California in 1849

and the wild rush for it began, demands for better transportation exploded overnight. News, mail and prospectors were soon speeding over the tortuous Ox-Bow route from St. Louis to San Francisco, but the need for a freight run to the gold fields became crucial.

Camels Didn't Work

In 1857, President Buchanan's government decided to remedy this frustrating situation with an experiment unique in American transportation history. Seventy-four camels were imported from the Middle East. They were put to work hauling freight over stretches of desert in Arizona and California.

The "Lightning Dromedary Express" collapsed after only a few runs. The camels—perhaps resenting the strange country—seemed to delight in charging passing mule trains, and then loping off across



FROM PONY EXPRESS TO MOTOR EXPRESS

the arid land, cargoes and all, stranding drivers.

A far more successful venture was the freight business started during the 1850's by Russell, Majors and Wadell, the same firm which became famous later for its Pony Express riders. Its overland route carried supplies from Fort Leavenworth, near Kansas City, to isolated army posts in the mountains. The company grew to a concern of 3,500 wagons, 1,000 mules and 40,000 oxen. In 1858 alone, it shipped 16 million pounds of government freight.

Another kind of express service was born about this time—fast overland stages which delivered gold dust from the west to eastern banks. The Wells Fargo Company, organized in 1852, soon dominated the field. Its intrepid drivers, straddling gold-filled strongboxes, became famous for racing safely through bandit country.

With the advent of the iron horse, belching smoke from its funnel-shaped stack, most freight traveled over expanding railroad networks until after the turn of the century. Then the first delivery trucks made their debuts—most of them converted auto-

mobiles—bumping and coughing uncertainly over city streets and between a few urban centers.

A need to augment the nation's overburdened rails during World War I stimulated national interest in moving freight by other means. President Wilson appointed a Highway Transport Committee, with Roy Chapin, Detroit automobile executive, as chairman. The committee's efforts became responsible for streams of trucks carrying guns, ammunition, food, petroleum products and other military supplies to Atlantic ports for shipment overseas.

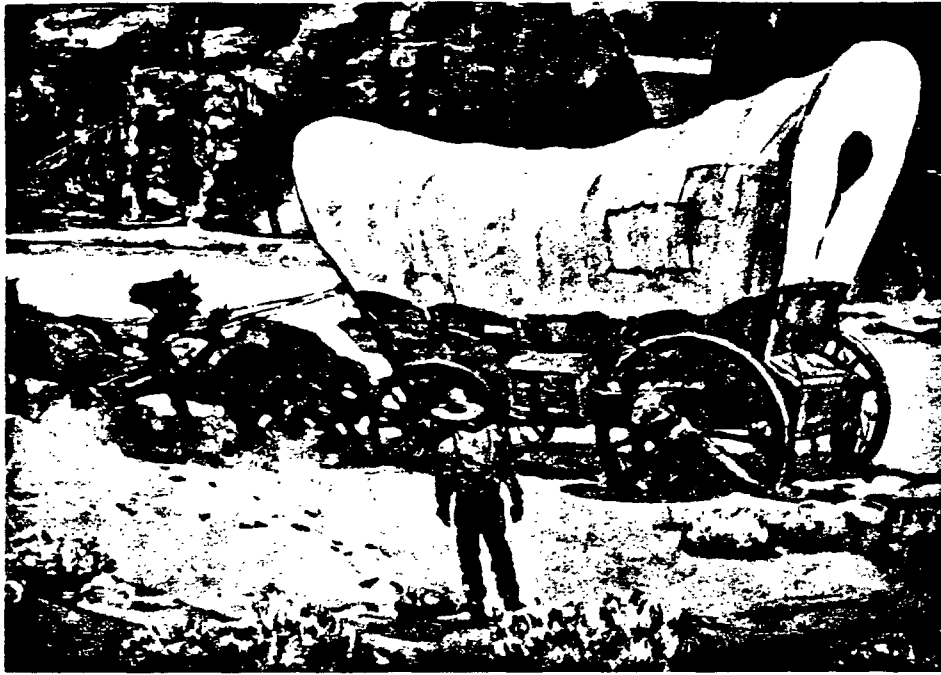
In 1915 there were only 136,000 trucks in the entire United States. Five years later, more than a million were on the road. Soon the figure doubled and redoubled, with efficient, powerful and diversified models operating over more extensive routes. The cooperative efforts of the oil and automotive industries have since been responsible for even greater advances in truck transportation.

Virtually everything the country needs and uses now moves by truck at some time between its origin and application or consumption. No job is too small or too large. Hard-bitten mule-skinners of covered wagon days would rub their eyes in disbelief if they could see the cargoes trucks now carry. #



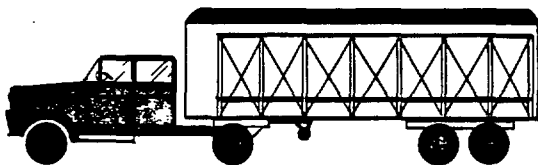
Following their yeoman service in World War I, trucks fast became more and more popular and dependable for a variety of jobs.





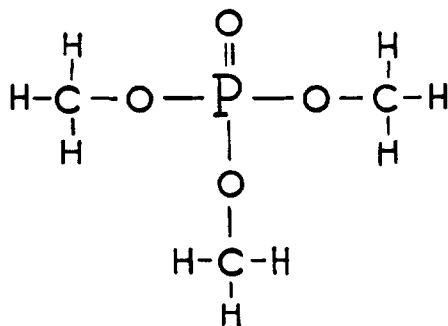
Conestoga wagons and Murphy wagons—the latter were often called "prairie schooners"—carried thousands of settlers and tons of supplies in western migrations.

The camels' uncooperative attitude doomed the "Lightning Dromedary Express" to failure in Southwestern deserts.



WHAT'S NEW in '61

TMP, a Gasoline Additive, Has Other Potential Uses



AFTER WINNING SPURS as a gasoline additive, trimethyl phosphate, one of Ethyl Corporation's newer chemicals, is generating interest among industrial chemists for other potential uses. Exploratory studies indicate that it may have a variety of important applications.

The product was introduced commercially more than a year ago as "Ethyl" Ignition Control Compound 4, or ICC 4. As that name implies, it is the fourth of the Company's ignition control additives. ICC 4 is being used in gasoline by refiners for the effective and economical control of preignition, spark plug fouling and engine rumble. It increases spark plug life and does not cause increased wear on piston rings, valves and other engine parts.

In its potential new applications, the compound is known as TMP. Most of its possibilities stem from its high concentration of active phosphorus, and from its other chemical characteristics.

TMP shows particular promise as a methylating agent, a chemical intermediate, a flame-resistant solvent for paints and polymers, a catalyst, and as an agent to increase the effectiveness of certain insecticides.

As a methylating agent, TMP has excellent potentials for such purposes as converting acyclic hydroxy compounds into corresponding methyl ethers. TMP methylation can also convert aniline and methylamine to corresponding dimethyl derivatives, with high yields resulting.

Complex phosphorus compounds can be produced effectively when TMP is used as a chemical intermediate. The activity of insecticides containing fluoro-phosphine oxide increases when TMP is added to them. As a catalyst, TMP accelerates the hardening of urea-formaldehyde resins. The heat stability of other resins improves after thin coatings of TMP are applied.

TMP can be used as a solvent in preparing solutions of polyvinylidene cyanide for spinning synthetic fibers in a water immersion bath. Copolymers of polyvinylidene cyanide can be handled similarly. Such applications may be useful in the manufacture of plastics, synthetic rubber and adhesives, as well as in flame-resistant solvents for paints.

TMP is useful in such other ways as stripping hydrogen cyanide from gas mixtures and in suppressing electrostatic charges that arise when carbon dioxide is released from metallic containers.

Ethyl's trimethyl phosphate is manufactured at the Company's plant at Baton Rouge, La., in multi-million-pound-per-year facilities, and is available in tank cars and drums—or in smaller quantities for experimental and evaluation purposes. #

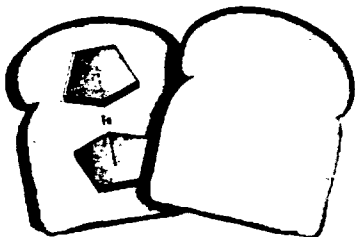
Methyl Chloride Production Unit Built at Baton Rouge Plant

AMETHYL CHLORIDE PLANT has recently been built at Ethyl Corporation's manufacturing center at Baton Rouge, La. The new unit has a rated annual capacity of approximately 25 million pounds of methyl chloride, but this capacity can be substantially increased.

Ethyl uses part of the plant's methyl chloride output as an intermediate in the manufacture of tetramethyl lead and other lead alkyl antiknock compounds. Other uses of methyl chloride are as a catalyst solvent in the manufacture of butyl rubber, as a reagent in the manufacture of silicones, as a refrigerant, and as a basis for methyl cellulose plastics. #

"Ethyl" Chemicals

Ferrocene, a "Sandwich" Compound, Now Available



"ETHYL" FERROCENE, a compound with a growing number of applications, is now available from Ethyl Corporation. Chemically described as dicyclopentadienyl iron, the product is used as a combustion control additive, as a high temperature lubricant, as an intermediate for thermally stable polymers and radiation resistant polymers, and also as an ultraviolet absorber.

Ferrocene was discovered in 1951. Since then, it has attracted increasing attention; first, because of its unique chemical and physical properties, and second, because it has led to broad new research and development work in the whole field of organometallics. It is a so-called "sandwich" compound in which an iron atom is sandwiched between two cyclopentadienyl rings lying in parallel planes. Its discovery has led to the synthesis of many other organometallic sandwich compounds.

The reactions of ferrocene are in many ways similar to aromatics. Ease of oxidation is the greatest difference between this compound and aromatic compounds. Ferrocene has a low degree of toxicity, is thermally stable, is highly soluble in hydrocarbons but insoluble in water.

Now being produced at Ethyl's plant in Orangeburg, S. C., the compound is available through the Company's New York offices. A technical staff is ready to assist industry with applications. #

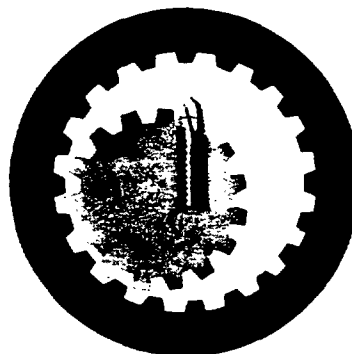
Second Extreme Pressure Additive Joins Product List

A SECOND Extreme Pressure Additive, EPA 2, has been added to Ethyl Corporation's expanding list of products. Like EPA 1, which was introduced last fall, the new additive is designed for use in transaxle fluids, gear lubricants and cutting fluids.

In hypoid gear oils and transaxle fluids, both EPA 1 and 2 impart load-carrying capacity for protection against wear under high speed and high shock-loading conditions. In cutting fluids, the additives perform outstandingly in drilling and tapping titanium and other difficult-to-machine metals. They improve surface finish and lengthen tool life.

As high activity additives, EPA 1 and EPA 2 work efficiently in low concentrations. They are composed of mixed chlorinated phosphorus compounds. EPA 1 is relatively high in chlorine by

weight, while EPA 2 is relatively high in phosphorus. Both additives are colorless, free of any unpleasant odor and both permit transparent formulations. Neither promotes oxidation. #





Scientific information about space comes from meteorites. They are . . .

Down-to-Earth Missiles

By Frank L. Remington

WHILE THE UNITED STATES and Russia are pouring billions into the race to probe the limitless reaches of interplanetary space, huge quantities of free—yet highly informative—cosmic materials are reversing the pattern and coming to earth every day.

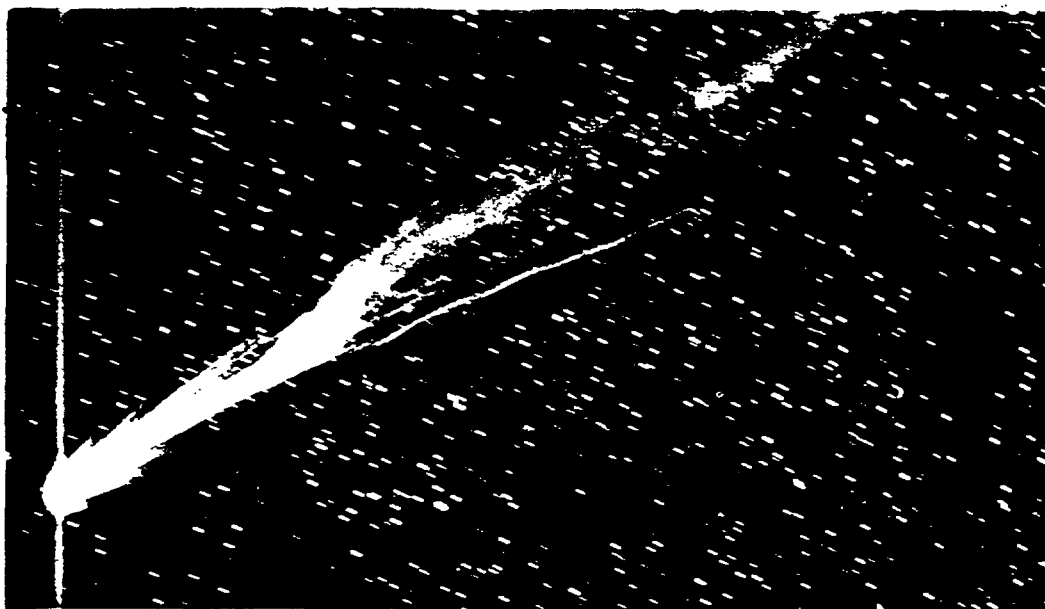
These materials are the meteors, meteorites and meteoritic dust that continually fall on our planet. Because they provide tangible clues to the nature of things beyond the earth, their study has been dubbed “poor man’s space exploration.”

But it is poor only in comparison to the high cost of rocket launching and satellite orbitings. It is quite rich in information.

By studying meteorites, “man is learning to reconstruct events that took place before the origin of life, long before the origin of the earth, and possibly even before the origin of the sun,” according to Professor Edward Anders of the University of Chicago.

University of California scientists have found indications of remarkably complex organic molecules in some meteorites—molecules that show a close similarity to the building blocks in living matter. The meteorites from which these compounds were isolated are at least four and a half billion years old—nearly two billion years older than the earth’s oldest fossils.

Recent analysis of the Orgueil meteorite, which



fell near Orgueil, France, in 1864, has revealed chemical compounds closely allied with those found in plants and animals on earth. Some form of life existed wherever the celestial object originated, say Dr. Bartholomew Nagy and Dr. Douglas Hennessy of Fordham University and Dr. Warren G. Meinschein of Esso Research and Engineering, the researchers who studied it.

Just what form this extraterrestrial life might take is anyone's guess. But, as Dr. Meinschein says, "... those who explore space may expect to find living things when they get there."

How big a source of scientific information about space are meteoritic objects?

750 Billion a Day

It has been estimated that 750 billion of them approach the earth's atmosphere every 24 hours. Most are too tiny to be seen by the naked eye. But some, when they enter the atmosphere, are heated by friction to a brilliant incandescence that makes them visible at night as so-called fireballs and shooting stars.

Most meteors burn out and disappear about five to ten miles up. The meteoritic dust comes down, however, adding five tons to the planet's weight every day. This is no cause for alarm, though, since, at the present rate of fall, the earth's mass won't be doubled for another four quadrillion years.

The large meteors that withstand the fiery plunge

through the atmosphere and reach the earth's surface are called meteorites. It is these scarred and burned souvenirs from space that scientists investigate.

The earth's meteorites are scarce; only about 1,500 have been discovered. In the United States, eight to ten a year are found and recorded.

The most famous meteorite in this country is the massive chunk of iron that smashed into what is now Arizona somewhere between 700 and 70,000 years ago. Estimated to weigh more than 10 million tons, it blasted a huge hole known as the Barringer meteorite crater. The crater is four-fifths of a mile in diameter, nearly 600 feet deep, and its rim rises 150 feet above surrounding plains.

Spectacular as the Barringer crater is, it is dwarfed by Chubb crater in northern Quebec, the world's largest. That giant pockmark—now a lake—has a maximum depth of 1,325 feet and an average diameter of more than two miles.

It has been only in the last century and a half that scientists have recognized the nature and importance of meteorites. In 1807, a huge fireball passed over New England and exploded near Weston, Conn. Two Yale professors immediately set out to investigate.

They found many fragments, one weighing nearly 200 pounds, and identified the material as meteoritic, or as coming from an unearthly source. When their report reached President Thomas Jefferson, he skeptically declared: "It is easier to believe that



Above, an estimated 200,000 shooting stars were seen in the spectacular meteor shower of 1833.



DOWN-TO-EARTH MISSILES

two Yankee professors would lie than to admit that stones could fall from the heavens."

Doubting Thomases such as Jefferson remained dubious for only a few more years. Then, on November 13, 1833, an estimated 200,000 shooting stars were seen in eastern North America, between midnight and dawn, in one of the most spectacular meteor showers on record. Many left streaks of flame behind them, but apparently none reached the earth. The spectacle convinced savants throughout the western world that shooting stars originate somewhere outside the earth.

Source a Mystery

Just where remains an enigma. There is some evidence that not all meteorites come from the same source. Some apparently circle the sun as part of our solar system; others are encountered as the solar system moves through interstellar space. By using isotopes of lead and uranium, science has determined that most meteorites are about 4.7 billion years old.

In general, meteorites are divided into three groups: siderites, aerolites and siderolites. Siderites are composed almost entirely of metal, mostly nickel-iron. Aerolites are primarily stone, or silicates. Siderolites are a transitional group between the two—partly metal and partly stone.

Meteorites contain about 20 familiar elements, including lead, iron, tin, copper, nickel, cobalt, magnesium, oxygen, sulphur and phosphorus. The elements, however, are compounded in ways not found on earth. Rare metals also are present, and in some instances, exceedingly hard black diamonds.

Meteoriticists and other scientists are eager to find, study and catalog more meteorites in the hope of gaining further knowledge about the solar system and the universe. In man's exploration of the limitless beyond, the space-born souvenirs found on earth are playing an increasingly important role. #

Meteorites are investigated in different ways: Above left, Dr. Douglas J. Hennessy, Fordham University; Dr. Warren G. Meinschein, Esso Research and Engineering, and Dr. Bartholomew Nagy, Fordham, analyze materials from France's Orgueil meteorite. . . . Left, Dr. Victor Ben Meen, Royal Ontario museum, and Dr. I. W. Jones, Quebec Department of Mines, study the huge lake-filled Chubb crater in northern Quebec.



Natchez, Miss., with its beautiful ante-bellum homes, is featured in one of Ethyl Corporation's Magic Circle market expansion advertisements in national magazines this summer. The advertisement points out that the Natchez Magic Circle also includes the Civil War battlefield at Vicksburg, the French Quarter in New Orleans, and many other attractions. All Magic Circle advertisements feature places prominent in American history and urge parents to take their children—by car—to see such places.

ETC 29295

This Magic Circle

is in Ohio. Other points of interest you can enjoy in this area are the Perry Memorial in Sandusky and Fort Recovery. Or your service station dealer will be glad to help you map out a Magic Circle trip in your own area.



"But why did we fly French planes in that war, Dad?"

GOOD question. And he can learn an important lesson from the answer. The best way to teach him is to drive him to the Air Force Museum at Wright Patterson Field in Dayton. Show him the cockpit of a French Spad where, you might say, the American Air Force was born. Tell him about men like Raoul Lufberry, Eddie Rickenbacker and Frank Luke, who sat in the cockpits of those crates and stitched enemy shrouds with bursts from Vickers guns.

Your children can see just about every important plane from the first Wright Pusher to the experimental XBI there. They'll learn a lot.

They might learn that the American Air Force fought in French Spads because we didn't have a fighter that could stay in the same sky with the Fokkers and Albatrosses. The vital need for preparedness is just one lesson children can learn from history. And the most exciting way to learn is to take them to the places where history was made. Museums, battlefields, historic sites, are just a pleasant drive from your home.

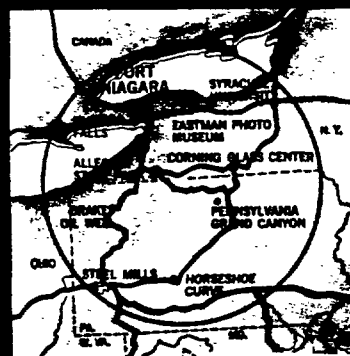
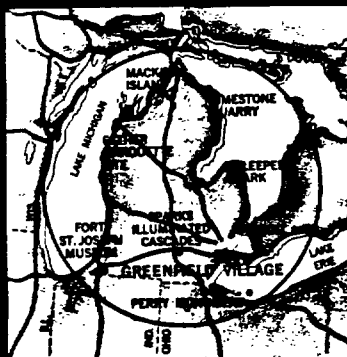
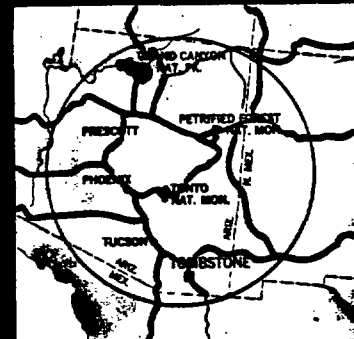
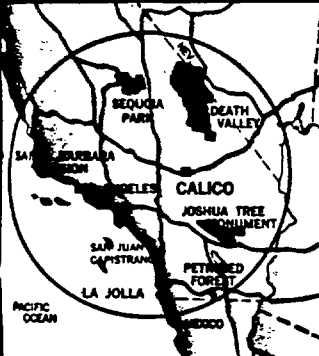
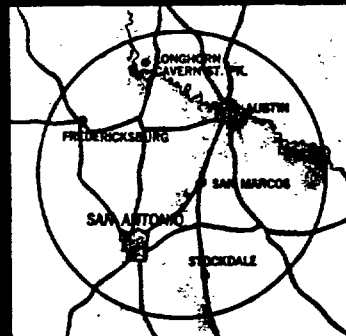
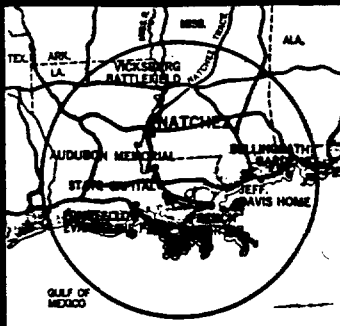
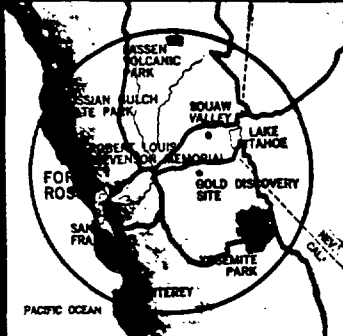
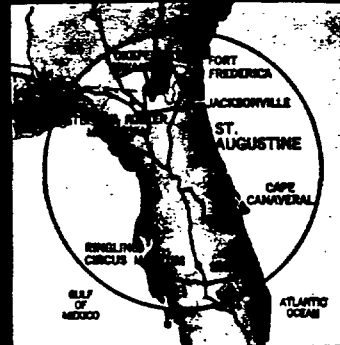
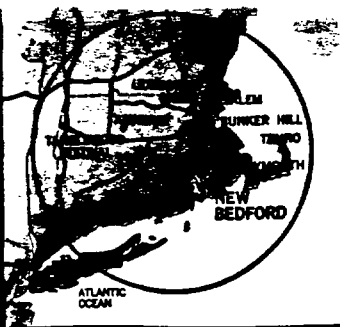
Ethyl calls this fascinating world that surrounds you a Magic Circle. Start exploring your Magic Circle this week end.

Ethyl Corporation, New York 17, N. Y. • Ethyl Corporation of Canada Limited, Toronto.

These Magic Circle advertisements are published by Ethyl Corporation, to help you get more enjoyment out of your car. Ethyl makes additives used by oil companies everywhere, to improve their gasoline and your driving pleasure.

ETHYL NEWS

SEPTEMBER
OCTOBER
1961



ETHYL NEWS

SEPTEMBER-OCTOBER 1961

Published by

Ethyl Corporation

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

manufacturer of "Ethyl" antiknock compounds and other additives used by oil companies to improve the quality of petroleum products.

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ON THE COVER are some of the maps that have appeared in Ethyl's Magic Circle market expansion advertisements in national magazines this year. For details of the program and its coverage, see "The Message of the Magic Circle" on pages 1-4.

PHOTO CREDITS: page 5, Chrysler Corp.; page 6 (top), Shell Aviation Corp.; pages 6 (bottom) and 7 (top), Frederick Lewis; pages 8 and 9, Ford Motor Co., General Motors Corp., Chrysler Corp., and Standard Oil Co. (N. J.); page 10 and inside back cover, Cities Service Co.; page 12, New Jersey Turnpike Authority; pages 14-16, Eric Sanford; page 17, A. Devaney; pages 20-23, Trailer Coach Assn.; page 25 (top right), American Gas Assn. and (bottom) United Press International.

Printed in U.S.A.

THE MESSAGE OF THE MAGIC CIRCLE

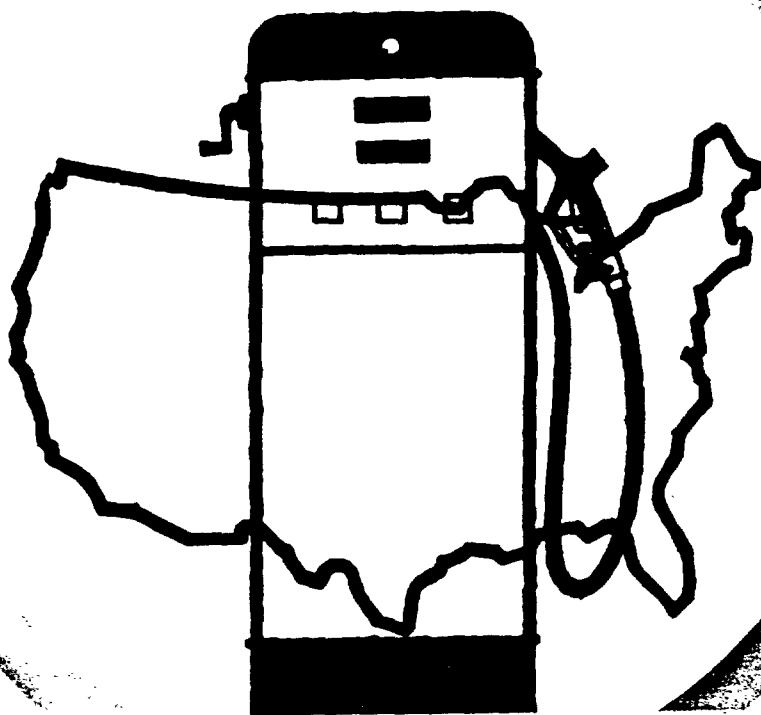
Published widely again
this year, it's designed
to stimulate automobile
travel and increase
service station sales

ETC 29298

FROM COAST TO COAST, from border to border, in magazines and newspapers, on radio and television, and in women's clubs, the message has been told and retold again this year. It has appeared in colorful advertisements, appealing articles, and in attractive motion pictures, scripts and special presentations.

It's the message of the Magic Circle: A message that almost everywhere there's a fascinating area to be explored—and enjoyed—by adults and youngsters alike. It's a message of the profitable pleasure and enjoyable education there is in going places and doing things—*by car*. It's a message that the family automobile is a magic carpet, transforming one-day excursions, week-end trips and longer vacations into unforgettable experiences.

For oil refiners and marketers, it's a message designed to increase automobile travel and expand the demand for gasoline and other service station products. For Ethyl Corporation, it's a message of continuing service and support for the oil industry in achieving one of its major goals—market expansion.



This has been Ethyl's seventh consecutive year of market expansion advertising and promotion for the oil industry. The unique, diversified program has been effectively reaching millions of car-owning families across the country — particularly during the peak driving months.

Ethyl's 1961 market expansion efforts have been keyed to the results of the Company's nationwide survey of motorists—that people enjoy driving and can be motivated to drive more. The Magic Circle program has been based on two survey findings: (1) Motorists feel that trips by car to historic and scenic places help their children appreciate the great heritage that is theirs in the United States, and (2) Short trips, for a day or a weekend, are generally preferred.

Here are some of the highlights of the Magic Circle program:



"Why did the cadets choose a falcon for a mascot, Dad?"

The silver plane asleep in the hangar. The pine trees tickling the sky. The chapel an imaginative architect dreamed into being. All these things blur in a young boy's eyes. He sees a falcon and he asks why. And an Air Force Cadet, not much older, gives the answer. "The falcon is brave and alert, keen of eye, fearless in attack, dignified in repose. What better mascot for an airman?"

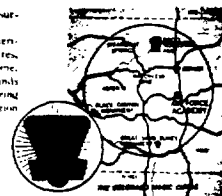
Someday, you must drive your children here. Here, just north of Colorado Springs, where a range of mountains has the United States Air Force Academy at its feet. Here, where shipwrecks give you men who dare to reach out for the heavens. Watch them parade. And study. And struggle for tomorrow. Peek at the

stars in their planetarium. And don't be too bit surprised if you see a few in your children's eyes.

There are many places in America where our heritage can live for a child. Battlefields, historic areas, museums are just a pleasant drive from your home.

Ethyl calls this fascinating world that surrounds all of us a Magic Circle. Why not start exploring yours this coming week end? Your service station attendant will be glad to help you.

Ethyl Corporation New York 17, N. Y.
Ethyl Corporation of Canada Limited, Toronto
These Magic Circle advertisements are paid for as a help in the more enjoyment of our country. Ethyl makes a donation of companies to support these programs and your driving pleasure.



Colorful Magic Circle ▲

advertisements featuring historic and scenic spots throughout the United States, have appeared in *Reader's Digest*, *Life*, *The Saturday Evening Post*, and *Sunset* from May through October. These magazines have a combined circulation of more than 26 million and reach over 72 percent of all motoring families. Since the circulation of *Life*, *The Saturday Evening Post* and *Reader's Digest* is broken down into four major geographic areas, completely different ads have been placed in the East, Midwest, South and West, each appealing to motorists in those sections of the country.

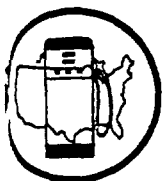
there's no vacation lil

**nothing else offers
so much fun at
such low cost for
the entire family!**

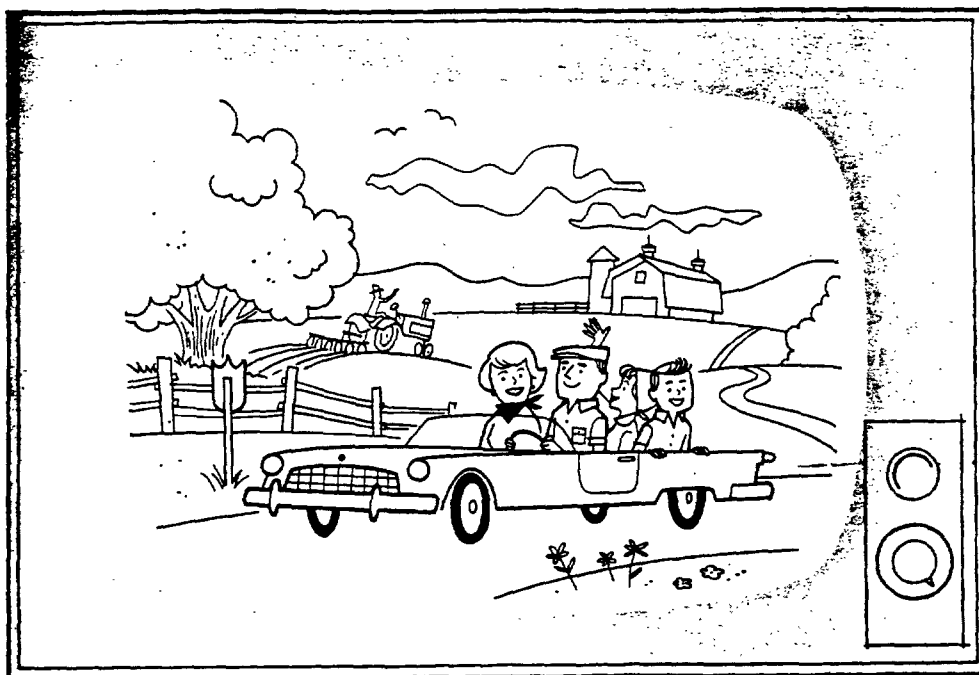
More and more American families are discovering the unsurpassed joys of a morning vacation. The outdoor living—the freedom of movement—the fresh air—the exciting and educational opportunities it offers to children—these are a few of the reasons why camping trips are fast becoming the nation's Number One vacation activity. Why not take your family camping this year? You can make it so easy.

And to help you get started, Ethyl Corporation is distributing at cost **THE CAMPING ALL-YEAR BOOK**, an easy-to-read, pocket-sized handbook on how to camp and where to camp.

ETHYL CORPORATION, New York 17, New York
Ethyl Corporation of Canada Limited, Toronto



THE MESSAGE OF THE MAGIC CIRCLE



On television a motion picture, "Magic Circle, U.S.A.," produced in Hollywood, has been shown on 300 stations during the spring, summer and fall. The picture depicts a family having an exciting week-end automobile trip in the country around their own home.

like a camping vacation!



The Camping Blue Book includes a Directory of the 3,500 best camping grounds in the U.S. and Canada—plus dozens of camping tips. Here is a book every camping family will enjoy. It is packed with dozens of ideas and hints that will make your camping trip more fun.

Whether you're a first-time camper or a confirmed camping addict, you'll find guidance on everything from the proper way to load your car to picking a camp site.

Here's a partial list of the book's contents:
• How to select a camp site
• Tips on making up the outdoors
• How to avoid being uncomfortable in bad weather
• How to choose a camp site
• Tips from the experts on making camp

to get more fun
out of your camping trip,
send for
THE CAMPING BLUE BOOK

ONLY 50¢
(16 pages, 7" x 9", illustrated)

Send no money now. We'll send you a copy of THE CAMPING BLUE BOOK, for which I enclose \$1.00.

Name _____

Address _____

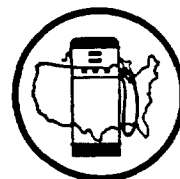
City _____

State _____

A special camping promotion in *Sports Afield*, *Outdoor Life* and *Field and Stream* was sponsored by Ethyl Corporation. This was directed to large families with a modest income who have been deterred from going on vacations by the non-automobile costs, but who are interested in camping because of its economy. To further stimulate interest in camping, a booklet on where and how to camp was offered at cost. So far, almost 20,000 copies of the booklet have been requested by potential camping motorists across the country.



Persuasive publicity in the form of Magic Circle travel articles has been used more broadly than ever this year. These editorial features, describing one-day and week-end trips in all parts of the United States, are now appearing in more than 200 major newspapers from coast to coast. Similar publicity is being run in 532 smaller city dailies and county seat weeklies.



**THE MESSAGE
OF THE
MAGIC CIRCLE**

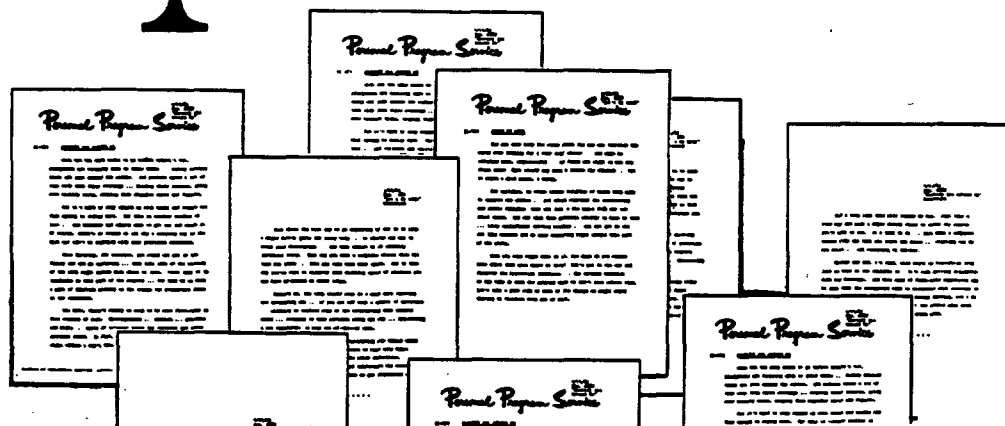


For the ladies there is a woman's club program and scripts for radio program commentators. These promotions are based on the Ethyl survey finding that women enjoy driving even more than men and on the fact that the lady of the house often makes the final decision as to whether or not the family will go on a trip.

The Magic Circle woman's club program is designed to stimulate greater use of the family car by encouraging club members to explore their own areas with their families and with other club members. More than 5,000 woman's clubs throughout the country are using materials supplied by Ethyl,

which show how to plan and take interesting educational trips and how to report and publicize them.

In the second phase of the woman's program, ten scripts have been distributed to women radio commentators in the April-September period. These scripts, which have been used on radio programs throughout the country, include tips and trip-planning ideas—visiting historic places, sleep-at-home vacations, mapping the trip before starting, etc.—all prepared for daytime radio audiences—mostly women.



OIL'S OUTLOOK for 1962

By Malcolm P. Murdock
Vice President—Sales, Ethyl Corporation

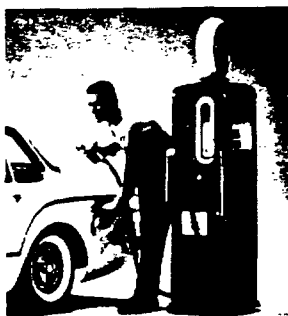
Because of Ethyl Corporation's unique objective position in the oil industry, Mr. Murdock was invited to discuss petroleum's prospects for 1962 at the Ninth Annual Marketing Conference of the National Industrial Conference Board in mid-September. The accompanying article is adapted from Mr. Murdock's talk which was based on information supplied by the oil companies throughout the country.—The Editors

THE QUICKENING INDUSTRIAL TEMPO of the nation spells good news for the oil industry. It's expected to raise petroleum consumption to a record high next year—10,168,000 barrels a day. This is a substantial 3.2 percent increase over 1961's estimated consumption and more than one-third better than this year's anticipated gain over 1960.

This optimistic outlook for petroleum in 1962 is based on discussions with oil companies that represent more than 75 percent of the refining capacity in the United States. Everyone is not in complete agreement in estimating demand in 1962, of course, but a good cross section of oil company opinion is represented by this forecast.

Overall, increases ranging from two to almost seven and a half percent are expected in five principal petroleum product categories—gasoline, kerosene, distillate, residual, and other products—resulting in the estimated weighted average increase of 3.2 percent.

Here's how anticipated oil consumption looks product by product and category by category for 1962:



GASOLINE—4,305,000 b/d, up 2.8%

Gasoline is oil's largest volume product. It accounts for nearly one half of the industry's total sales and for more than half its revenue. Eighty-seven percent of U.S. gasoline is used in automobiles, trucks, buses, airplanes and other motor vehicles. The remaining 13 per-

OIL'S OUTLOOK FOR 1962

cent powers a variety of non-highway engines—farm tractors, lawn mowers, motor boats, and stationary engines.

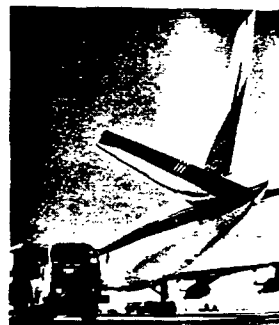
The better business and industrial activity that is expected next year means that there should be more people with more cars and more money to spend on gasoline. This should raise gasoline demand to 4,305,000 barrels a day—an increase of about 2.8 percent over 1961's consumption.

This is almost three times greater than the anticipated one percent increase in gasoline consumption in 1961 over 1960. This year's small increase, the lowest in five years, can be attributed to several things—the increasing popularity of small cars, the change to jets by commercial airlines, and the general low business activity.

KEROSENE—435,000 b/d, up 7.4%

Once widely used for illumination, kerosene has more recently been used mostly as a fuel on farms and for space heating in homes. During the last couple of years, however, there has been a tremendous growth in demand for kerosene as fuel for commercial jet airplane engines. Today, commercial airplanes consume about one-third of the kerosene used in the United States. (Fuel for military jet aircraft is not included here; it appears in another category.)

Kerosene consumption in 1962 is expected to reach 435,000 barrels a day—an increase of 7.4 percent over estimated 1961 usage. This is lower than the anticipated 11.9 percent increase this year over last, but still is a sizeable increase of 30,000 barrels a day. The switch from piston to jet engine planes was primarily responsible for sharply higher demand in 1961, but the change-over is not yet complete. With improved business conditions, airplanes probably will carry more passengers and use more fuel next year.



DISTILLATES—1,938,000 b/d, up 2.0%

These somewhat heavier fuels resembling kerosene are widely used in home, school, apartment house and office building oil burners and in diesel engines in railroad locomotives, trucks, buses and other heavy-duty installations.

Distillate demand in 1962 is anticipated at a rate of 1,938,000 barrels a day—up 2.0 percent from this year's estimated consumption. This is in comparison to an approximate 1.4 percent increase in 1961 over 1960.

This year's low rate of increase reflects increased competition from gas as a home heating fuel. The projected greater use of distillates in 1962 is based partly on improved business which will mean more diesel fuel consumption by railroads, trucks and buses.

RESIDUALS—1,555,000 b/d, up 2.4%

These are the heavy oils used by steel mills and other industrial plants for fuel and by many public utility companies to generate electricity. The category also includes so-called bunker oil used to fuel steamships.

The estimated sales of 1,555,000 barrels a day of residuals in 1962—an anticipated increase of 2.4 percent—is a direct reflection of improved industrial activity. This year, a drop in residual consumption below that of 1960 resulted from lower industrial activity, restrictions on imports of heavy oils and increased competition from gas and coal.



OTHER PRODUCTS—1,935,000 b/d, up 5.2%

Included here are the rest of the more than 2,000 products made from petroleum. Some of these are military jet fuel, liquefied petroleum gas (LPG), lubricants of all kinds, asphalt, and a variety of products used in the manufacture of petrochemicals. The latter are transformed into many end products—plastics, synthetic fibers, fertilizers, insecticides, rubber and others. Petrochemicals now account for about five percent of total petroleum use in the United States and there is every indication that this figure will grow larger.

Next year's estimated demand for other petroleum products—1,935,000 barrels a day—means an approximate increase of 5.2 percent in this category. This is higher than the anticipated 4.3 percent increase in 1961, which is based on larger consumption of LPG, military jet fuels and feed stocks for petrochemicals. Even higher demand for 1962 is expected to result from better business generally and particularly in the petrochemical field where many new manufacturing plants are expected to go into production.



The petroleum industry has faced some serious problems in 1961: (1) an over-supply of crude petroleum both in the United States and in the rest of the world; (2) over-built refining capacity; (3) a slow-down in the rate of consumption of petroleum products—especially gasoline and industrial fuels; and (4) increased competition from natural gas, coal and low-cost, foreign-produced oil. The result has been an estimated increase in overall consumption of petroleum products of only 1.8 percent over 1960.

In general, 1962 is expected to be a better year. The industry still has problems, to be sure, but a total demand of more than 10 million barrels a day—an increase of 3.2 percent—means that the outlook definitely is brighter. #

Gasoline octane quality to reflect renewed public interest in automobile performance

WITH THE VANGUARD of 1962 model cars appearing in dealer showrooms and on streets and highways, automobile design, performance and requirements once again are topics of widespread interest and conversation. What do the new cars look like? What new features do they offer? What products and services do they require?

Oil refiners and marketers, of course, keep up with automobile requirements—especially for petroleum products and servicing—the year 'round. To provide fuels, lubricants and TBA items that will satisfy cars now on the road and those to come in years ahead, oilmen study carefully the demands of current and future models.

In making these studies, many refiners look to Ethyl Corporation, the leading supplier of anti-knock compounds, for helpful information. Because of its unique objective position in the oil and automotive industries, Ethyl can supply invaluable data about fuels, lubricants and engines.

When it comes to gasoline sales and quality, for example, refiners rely extensively on Ethyl's comprehensive monthly reports. They also are guided in their analyses of future automobile requirements by Ethyl's annual preview presentation on Detroit's forthcoming models.

In planning refinery operations and marketing efforts, refiners also are interested in Ethyl's forecasts of future gasoline octane quality. These forecasts, based on information obtained from automobile manufacturers, from oilmen and from Ethyl's own extensive research studies, are revised periodically as new developments or trends unfold.

Octane Forecast Revised

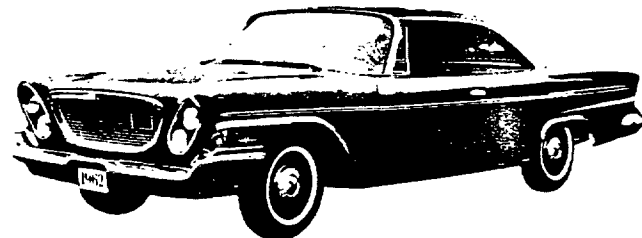
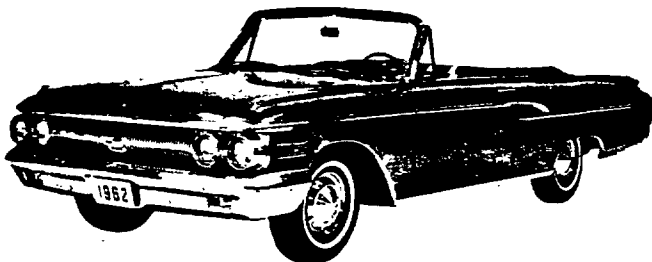
One such revision has recently been made in Ethyl's octane forecast for these very reasons.

In contrast to previous forecasts, Ethyl now looks for an average increase of about one-half of a Research octane number a year in premium gasoline, and a total increase of about 2.5 RON by the end of 1966. Such increases would bring the octane quality of premium close to 102 in the next five years.

Using another yardstick—projecting the rate of increase of the 1957-1960 period into the future—gives an increase of almost 3 RON, or an octane level of about 102 at year-end 1966.

During the same period, the sensitivity (difference between Motor and Research octane number) of premium is expected to decrease because of the increasing availability of alkylate diverted from

FUEL FOR THE



aviation gasoline manufacture. On the average, this will mean a gradual decrease of approximately one-half unit in premium sensitivity to about 9 units in 1966.

The previous Ethyl forecast for an increase in regular grade gasoline octane quality of about one-half of a RON a year remains unchanged. This increase would result in an average of almost 95 RON for regular by the end of 1966.

Such an increase rate for regular may be conservative since it provides for satisfying a decreasing percentage of all cars each year. To satisfy the percentage operating satisfactorily on regular at the present time probably would require a regular grade gasoline research octane number of about 95.5 in 1966.

Ethyl anticipates that the sensitivity of regular will increase to about 8.5 units in the same period and then level off. The projected increase results from diverting higher sensitivity reformat or cat-cracked stocks to regular gasoline blending since they will be replaced by alkylate in premium.

The revised forecast of future gasoline octane quality is based on several considerations. There are indications that the trend toward a decrease in the weighted average compression ratio of new cars has run its course and may soon be reversed. This trend was not caused by a reduction in the compression ratio of any car engines but by a shift to economy models.

Now, it seems, there is more public preference

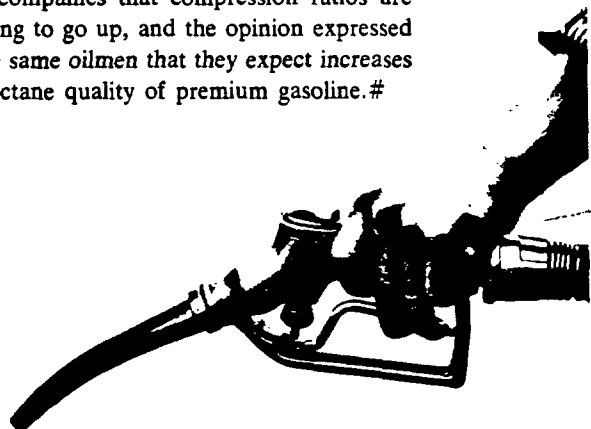
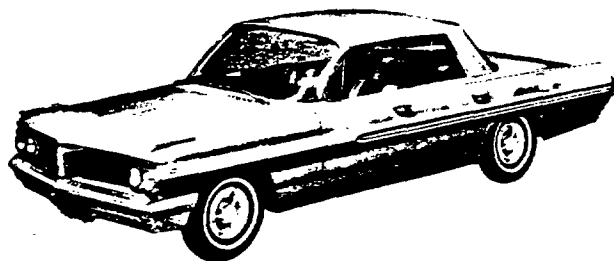
for performance and increased interest in more powerful engines in so-called economy cars. Further, stock car racing of high performance (high compression) cars has reached an all-time high in popularity. Such popularity historically reflects public taste for high performance cars.

Revision Substantiated

The validity of the revised octane forecast is substantiated, too, by these developments:

- The high percentage (80 percent) of premium requirement cars sold by the largest volume producer of such cars.
- The popularity of premium fuel engine models offered by the second largest producer of such cars, and an increase in compression ratio from 9.5 to 10.5 in this manufacturer's 1962 premium fuel engines.
- A surprising interest in higher performance engines in compact cars and widespread indications that motorists like smaller cars for their size but still prefer performance to economy.
- Increases in compression ratio, horsepower and spark advance in engines in several popular makes of cars.
- Renewed interest in octane quality by oil companies, reports from oilmen who contact automobile companies that compression ratios are continuing to go up, and the opinion expressed by these same oilmen that they expect increases in the octane quality of premium gasoline. #

FUTURE



Economical oil product stretches road-building dollars as it is used on more new highways

EASY GRADES AND GENTLE CURVES . . . overpasses eliminating hazardous intersections . . . tunnels under mountains and bridges over rivers . . . routes by-passing congested areas . . . mile after zestful mile of the smoothest, safest and most durable roads ever built.

These vignettes apply unmistakably to one of the most monumental projects ever undertaken—building more and better highways to meet the expanding needs of the country's booming automotive population.

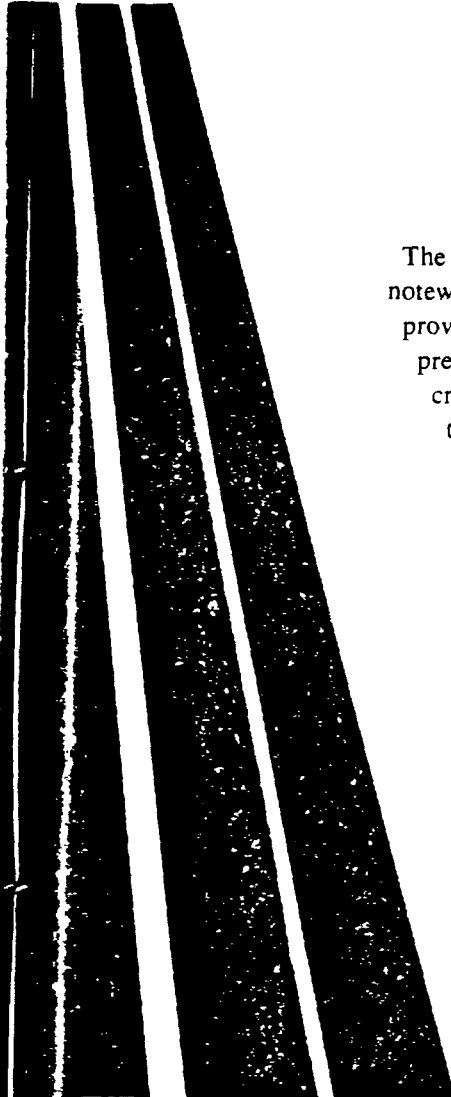
By this summer, some 11,000 miles—or 27 percent—of the projected 41,000-mile Interstate and Defense Highway System were in use. Engineering, right-of-way acquisition or construction was underway on another 15,000 miles.

During the last five years, another 120,000 miles of primary and secondary highways have been built, and work is progressing on an additional 47,000 miles.

In all these far-reaching road-building programs, the oil industry is an increasingly large participant. It is supplying all the asphalt materials being used—and rugged asphalt now accounts for 90 percent of all paving on new thoroughfares. The result is that refiners today are literally supporting more wheels than ever—as well as keeping them running with fuels and lubricants.



Among asphalt's advantages are the speed and ease with which it can be laid.



The trend to more and more asphalt use on highways has been especially noteworthy since post-World War II days, with the petroleum product proving itself on many of the new heavily traveled turnpikes and expressways. Asphalt pavement on state highway systems alone has increased nearly four times—from 65,198 miles to 246,000 miles in the last 15 years.

At the same time, existing mileage of cement slab surfacing has shrunk from 94,245 to 66,677, in spite of the fact that 24,559 miles of new concrete pavement were laid. In other words, some 52,000 miles of broken slab have either been abandoned or salvaged with asphalt overlays.

Engineers and other officials concerned with providing the best highways for current and future traffic loads are impressed by asphalt's advantages—superior adaptability to various conditions, speed and ease of construction, low initial and maintenance costs, smooth riding qualities and durable serviceability. They also like its safety features—skid resistance, freedom from glare, visibility of white-line markings, acceleration of ice and snow melting, and resistance to de-icing salts.

Lower cost, however, is the primary motivator

ASPHALT is the **ANSWER**

By Stanton P. Nickerson

11

ETC 29309

ASPHALT is the ANSWER

of asphalt's popularity. Road-paving dollars go up to twice as far when asphalt is specified. At the same time, top quality is assured.

A recent survey, "Economics of Asphalt for Highway Construction," by the Stanford Research Institute, points out that there is "an average [cost] differential of from \$20,000 to \$33,000 per mile in favor of asphalt" in building today's heavy duty highways. The survey covers the 21 states with the largest car populations, highway budgets, interstate mileage, and road building activities.

Stanford researchers found that the average cost of a two-lane mile of portland cement highway is \$80,000, compared to an average cost of only \$47,-



Asphalt's popularity zoomed when it proved so successful on heavily traveled turnpikes and expressways built soon after World War II.

000 for the same distance with asphalt. Extra heavy asphalt pavement runs to \$60,000, but even this more expensive construction is from \$6,000 to \$40,000 less costly per two-lane mile than extra heavy concrete slabs.

When it comes to maintenance, yearly expenditures average about the same for both types of pavement—approximately \$250 per mile throughout their service lifetimes. However, asphalt maintenance begins at an estimated \$50 per mile annually, while the initial cost of keeping a mile of portland cement concrete in good condition is around \$75 a year.

In addition, asphalt paving has a built-in maintenance bonus, according to The Asphalt Institute. The Institute points out that an asphalt pavement can be given a thin asphalt overlay out of original construction savings—and the result is a brand new surface, stronger and more durable than when the road was first completed.

One of the most challenging aspects of comparative costs is found in potential savings on highways yet to be built. If all remaining parts of the Interstate System not yet contracted for were paved with asphalt instead of cement concrete, for example, total initial savings would approach \$1.1 billion.

It is estimated, however, that about 10 percent of the system's incomplete portions will require portland cement for elevated and depressed mileages and for bridges. Therefore, the potential construction savings from using asphalt range from \$440 million to \$990 million.

The use of asphalt on the thousands of miles of other roads planned or under construction by state, county and local governments throughout the country can save millions more. #

To make asphalt even better, the 49 United States and Canadian oil companies that belong to The Asphalt Institute are spending well over \$4.5 million on research this year—12 percent more than in 1960. These companies produce about 75 percent of the two countries' asphalt.

In addition, eight foreign suppliers are allocating an estimated \$500,000 for current research programs, and The Asphalt Institute itself has a research budget for 1961 of over \$250,000.

The refiners in this country and Canada employ 249 scientists, engineers and technicians in asphalt study, investigating everything from molecular structure to new and improved applications of the finished product.

and now

ACT II

*of "The Miracle on
Crotched Mountain"*

Adults as well as children are now being treated at this human reclamation center



THE CURTAIN has gone up on Act II of "The Miracle on Crotched Mountain."

The scene of this moving, real-life drama is the new adult center at the unique and still-growing Crotched Mountain Rehabilitation Center, spreading out on the picturesque plateau of a wooded mountainside in Greenfield, New Hampshire. Here, where the strength of the mountains is an everlasting inspiration, the outlook is as bright and limitless as the breathtakingly beautiful vistas—even for the physically handicapped.

And, indeed, the principal performers in Act II of "The Miracle on Crotched Mountain" are physically handicapped. They are men and women who have come to be treated at this human reclamation center. In supporting roles in the same performance are the hundreds of boys and girls who have had their lives transformed at Crotched Mountain, in the eight-year-old and still continuing Act I of the drama.

"The Miracle on Crotched Mountain" is staged

and now ACT II of
"The Miracle on Crotched Mountain"

and directed by a dedicated and talented staff of doctors, nurses, therapists, social workers and administrators—experts in physical medicine, rehabilitation and related problems. The drama looks to business firms, foundations, trusts and individuals for financial support.

Already, it's easy to predict the story that will unfold in Act II of "The Miracle on Crotched Mountain."

Men and women whose bodies have been bent and broken by crippling diseases and accidents will be effectively treated. They will learn how to overcome many of their handicaps and how to cope with others. They will be fitted with the most modern and scientific braces and crutches. They will be taught how to perform the essential activities of daily living. They will learn useful trades and occupations. They will be placed in jobs where they can provide for themselves and their families. They will be transformed from dependent, tax-consuming burdens to tax-paying, self-sufficient citizens.

Most important, these handicapped men and women will know the dignity of becoming contributing members of society.

Why is it easy to anticipate a bright, productive future for the handicapped men and women participating in Act II of "The Miracle on Crotched Mountain"? It's because of the wonders that have been worked in the bodies and in the lives of so many boys and girls since the children's center opened its doors, its arms and its heart to them eight years ago.

Youngsters from 26 states, Canada, South America and Israel have been treated—the victims of



"When current plans are fully implemented, Crotched Mountain will be t

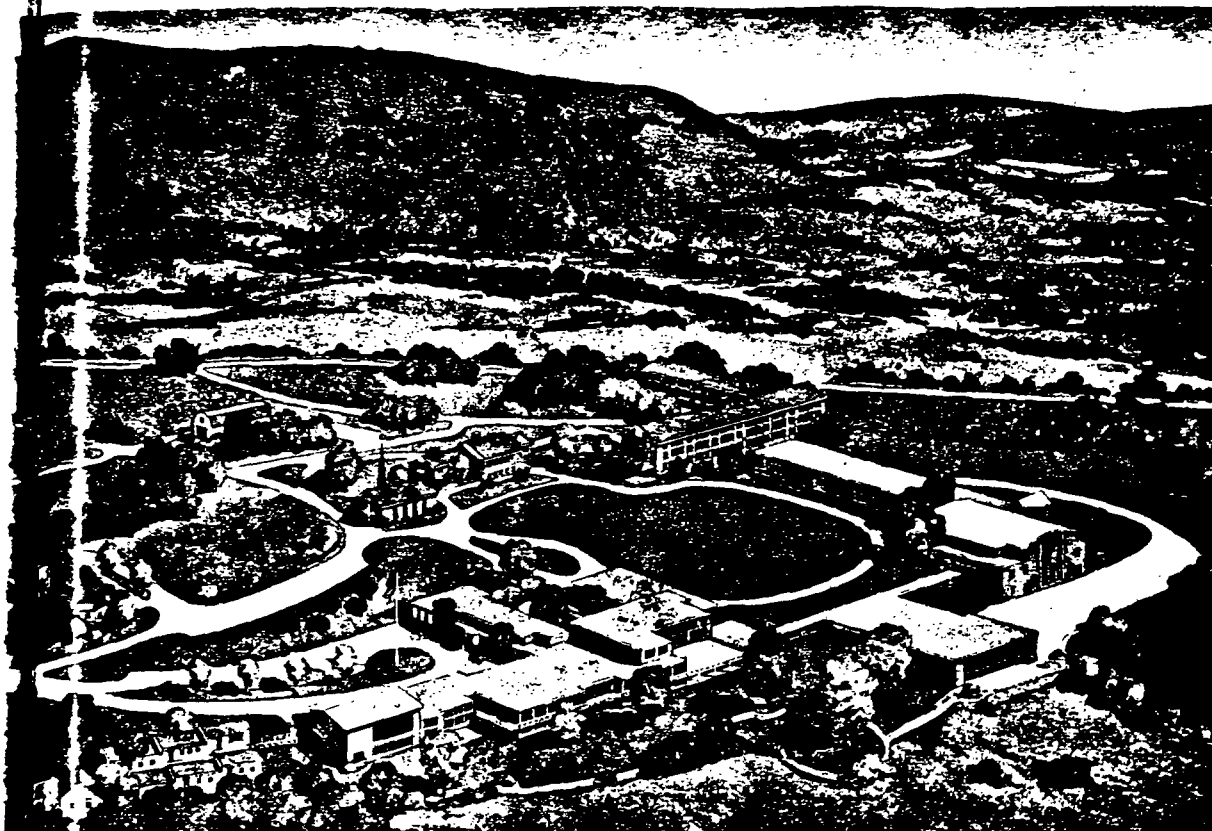
cerebral palsy, muscular dystrophy, arthritis, rheumatic fever, multiple sclerosis, amputations and congenital neurological, orthopedic, polio and speech defects. It is the rewarding record of Crotched Mountain that while 80 percent of those admitted have arrived in wheel chairs or on stretchers, 90 percent of those discharged have gone forth to face life under their own power. Many go on braces and crutches, of course, but they go out walking nevertheless.

Crotched Mountain's heart-warming rebuilding



14





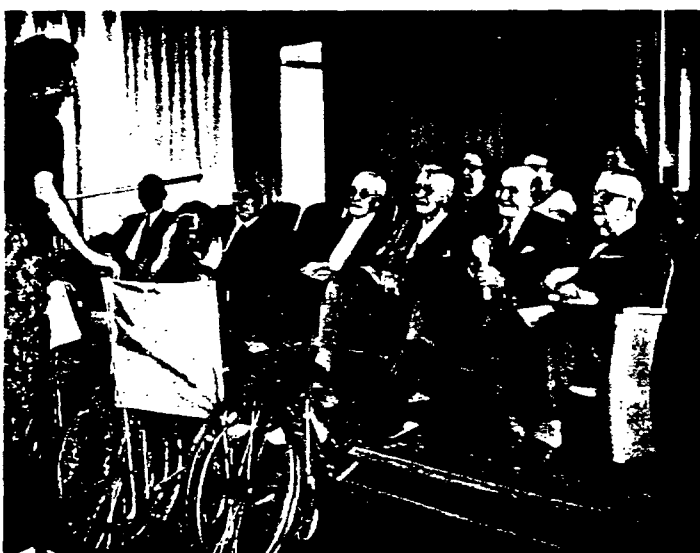
...will be the most complete rehabilitation center, not only in the United States, but probably in the world."

of bodies—and lives—has been accomplished through a remarkable combination of discerning diagnosis and skilled sympathetic treatment. The knowledge, ability and patience of the dedicated staff, plus the use of advanced methods of therapy, massage, exercises and mechanical devices, stimulate circulation and aid in the repair of tissues and the return of muscle functions.

In a special school, education and training for deaf youngsters and others with hearing and speech defects is provided.

While young bodies are undergoing repair, accredited schooling is conducted. Specially trained teachers, following a certified curriculum, guide pupils through the elementary grades. At the same time, there is continuing training in the activities of daily living—dressing, eating, hygiene and other necessities for self-sufficiency.

The adult center at Crotched Mountain provides the same type of diagnosis, treatment, training and care that has worked wonders with the children. The great addition is the broad program of voca-



In this photo are some of the outstanding businessmen who are vitally interested in the treatment and progress of patients at Crotched Mountain. They are: James Chandler, president, Indian Head National Bank, Nashua, N. H.; Edward L. Shea, retired chairman, Ethyl Corporation; Harry A. Gregg, Crotched Mountain's founder; Harry H. Beckwith, president, Beckwith-Arden, Inc.; H. B. Higgins, retired chairman, Pittsburgh Plate Glass Co.; and Sceva Speare, New Hampshire banker and philanthropist.

and now ACT II of "The Miracle on Crotched Mountain"

tional evaluation, training and job placement.

Men and women are treated in a sparkling new, 300-foot-long, three-story building of steel, brick, tile and glass. Like the rehabilitation center's other buildings—all of which are connected by an enclosed passageway—it has been built on the outer edge of the Crotched Mountain plateau with an inspiring view of woods, lakes and pin-peat New England villages. Inside are reception and registration areas, treatment rooms, doctors and staff members' offices, therapy installations, and occupational testing and training areas.

Adults undergoing treatment and training live in an adjoining modern dormitory, with staff members in constant attendance. They enjoy the center's recreational facilities, including the spacious, gleaming gymnasium and large all-season swimming pool.

Crotched Mountain appeals to industry for financial support for three big reasons: (1) It is making an immeasurable human and economic contribution in the restoration of lives; (2) Its unique integrated facilities and programs make it a pilot plant after which other vitally needed rehabilitation centers can be patterned; and (3) It is providing professional training for rehabilitation personnel who are in critically short supply.

The need for Crotched Mountain itself, for professionally trained rehabilitation personnel and for other centers patterned after Crotched Mountain is underscored by some surprising statistics: The ranks of the nation's physically handicapped are growing at a rate of about 250,000 a year and now total 17 million. Of this staggering number, only about 80,000 receive any kind of rehabilitation, the President's Committee on the Physically Handicapped reported earlier this year. And only a handful have the benefit of any kind of a comprehensive program. This means, of course, that millions of people who have the potential to be independent and productive continue as burdens to themselves, their families and to taxpayers.

The opening of the adult center is a milestone in the long-range development of Crotched Mountain. Seven years ago, Dr. Howard A. Rusk, director of the Rehabilitation Institute at New York's NYU-Bellevue Medical Center and a top authority on the subject, predicted that "When current plans are fully

implemented, Crotched Mountain will be the most complete rehabilitation center, not only in the United States, but probably in the world." Every day that prediction becomes more of a reality.

Besides doubling as an integrated rehabilitation center and a pilot plant for other such centers, Crotched Mountain conducts a broad program of professional education, helping overcome the critical shortage of professional rehabilitation personnel. It is affiliated with 15 colleges, universities and schools of nursing. These institutions have sent more than 170 students for training in rehabilitation as part of their total professional education in the last year.

Further, Crotched Mountain is pioneering in rehabilitation research studies, with a new research coordinator joining the staff this fall. Representatives of Harvard University, New York University College of Medicine, Massachusetts Institute of Technology and the Payne Whitney Clinic in New York already have cooperated with Crotched Mountain in rehabilitation research and other work is continuing.

While 80 percent of those admitted have arrived in wheel chairs or on stretchers, 90 per cent of those discharged have gone forth to face life under their own power.



Crotched Mountain today, with its remarkable record of accomplishments, its imposing array of modern, functional buildings, its dedicated and able staff, its successful diversified program and its continuing growth, means that the dream of 78-year-old Harry A. Gregg, New Hampshire banker and industrialist, is moving toward realization. In the late 1940s, Mr. Gregg started with nothing more tangible than a few simple sketches and 650 acres on Crotched Mountain. (Subsequent gifts of additional land have increased acreage to 1,300.) But he had his dream and plenty of native Yankee determination.

At an age when most men are considering retirement, Mr. Gregg set out to raise money and build a *complete* rehabilitation center. From his work with crippled children's charities and discussions with doctors, he had learned of the crying need for such a center—where not just the infirmity but the whole individual could be treated 24 hours a day and prepared for a happy useful life.

Since then, Mr. Gregg has devoted himself to Crotched Mountain. He works incessantly—at the rehabilitation center and in traveling thousands of miles a year seeking urgently needed funds to finance current operations and pay for present and future buildings and facilities. Such funds can as-

sure the uninterrupted performance of the human drama that is "The Miracle on Crotched Mountain." They can make it possible for handicapped men, women and children to emerge from the darkness of dependency and despair into the sunlight of self-sufficiency, self-respect and a bright hopeful tomorrow.#



WORLDWIDE GASOLINE QUALITY is on the rise—and its improvement is contributing to greater automotive efficiency and transportation progress.

As in the United States, advances in fuel quality abroad have come from research, process improvements, new and enlarged refineries, successful utilization of antiknock compounds and other additives, and better shipping and marketing facilities.

Automobile manufacturers here and abroad are benefiting from the more universal availability of quality fuels. Instead of modifying the engines of practically all exported cars, American companies now have to modify those going to a decreasing number of countries. At the same time, foreign manufacturers can design more efficient high compression engines to take advantage of higher octane quality.

Global gasoline quality reports show that North America still produces gasolines of the highest research octane number in all grades, but its margin of leadership is narrowing. The Caribbean is in second place on the quality front, with Europe a close third.

Next are Central America, Australia, New Zealand and the islands of the Pacific, all of which market automotive fuels of the same average quality. Then come Asia's eastern nations, Africa, South America, and finally the Middle and Near East.

Little information about gasoline characteristics is available from Russia, other Iron Curtain countries or Red China, but in Cuba quality is known to have lagged under Castro.

Of all parts of the Free World where pronounced quality advancements have taken place, Europe's progress is particularly noteworthy, primarily because of the continent's comparatively large automobile population. A decade ago, the best gasolines in 15 European countries averaged 79 octane number (Research). By 1956, the figure had jumped to 91. Seven more numbers have been added since that time, bringing the average for European premium to 97 RON early this year.

Regular gasolines in Europe show even more pronounced advances. In the same 15 countries, 21 octane numbers have been added to regular fuels in the last 10 years.

A LOOK AT GLOBAL GASOLINE PROGRESS

Improving fuel quality contributes to auto

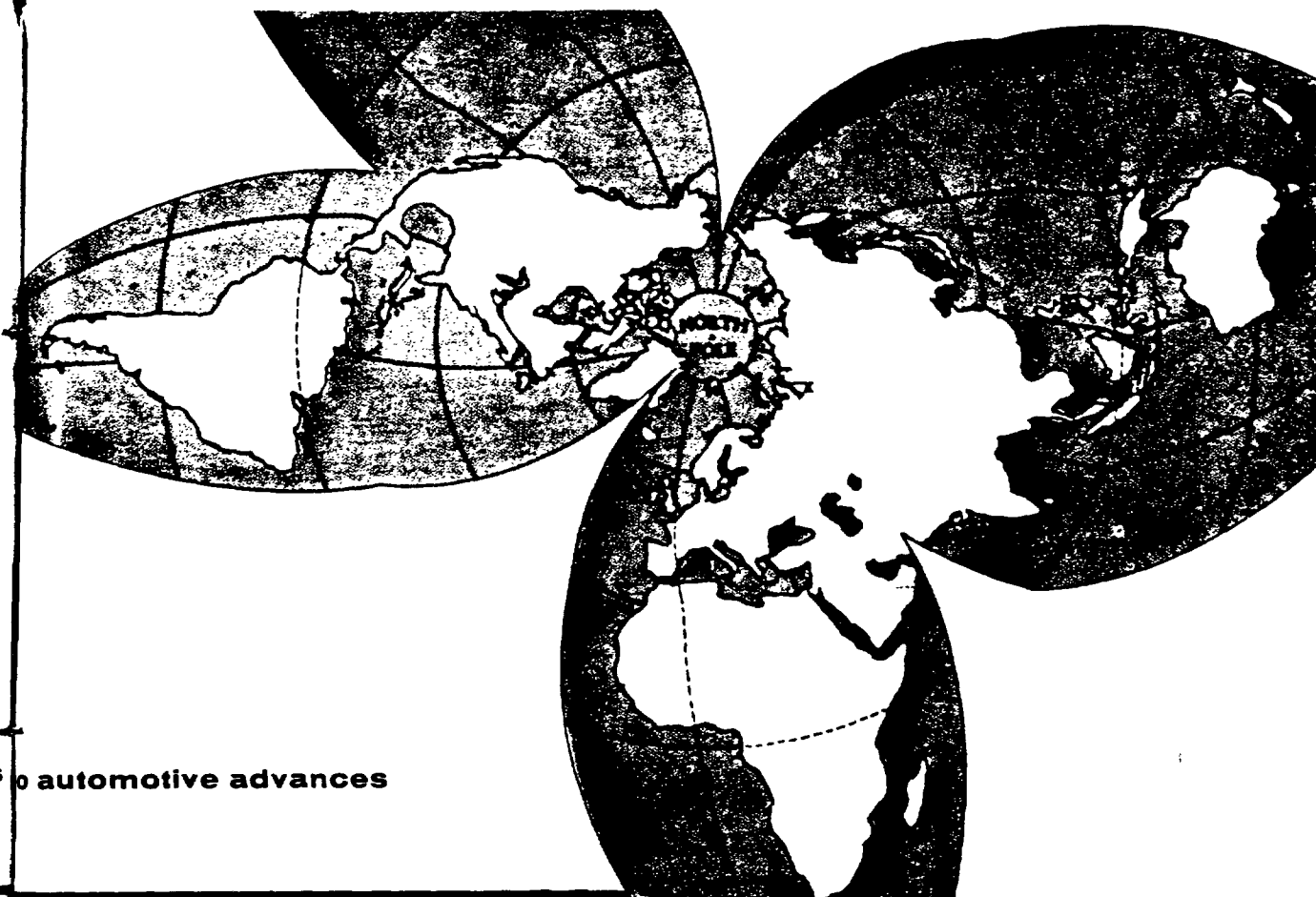
In Great Britain, super premium is now up to 101 octane number and premium grades of 95 to 100 are increasingly common.

Across the Atlantic, in Central and South American and Caribbean countries, the premium average hit 96 RON this year and regular was up to 84.

Around the world, in the Far East, gasoline quality has been moving ahead in spite of military and political crises. Premium and regular grades average 87 octane number as compared with 73 a decade ago. Japan, with 97 octane premium, is high in Free Asia, followed by Hong Kong, Laos, the Philippines, Netherlands New Guinea and Thailand with 95 octane number fuels.

In Australia, New Zealand and some of the Pacific Islands, gasoline pool averages are up 15 numbers in 10 years, while in emerging Africa the

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S o automotive advances

best premium and regulars are in the 94-95 and 86-87 ranges respectively.

In the Near and Middle East, motor fuel reached an average of 83 octane this year, an increase of a dozen numbers in the last decade. The region's best grades range from 90 to 93 octane number.

All around the world, antiknock compounds and other fuel additives have played a big part in advancing gasoline quality. Their importance is partly reflected by an 82 percent increase in American antiknock compound sales abroad in the last two years.

International petroleum analysts predict that the quality of gasolines abroad will continue to improve in the years ahead. These better fuels will make even more contributions to automotive efficiency and transportation progress. #

OF PRICES AND TAXES

While gasoline quality in many countries is rapidly approaching that in the United States, gasoline taxes abroad already have far outstripped those in this country—as burdensome as ours have become. State and federal taxes here now average about 50 percent of the retail price of the motor fuel itself. But in West Germany they total 60 percent, in Japan 106 percent, in the United Kingdom 141 percent, in Denmark 155 percent, in Italy 245 percent, and in France an overwhelming 333 percent.

In general, service station prices in Europe (including taxes) range from 10 to 30 cents more a gallon than they do in the United States. The American Automobile Association reports that 36 cents a gallon in Turkey is the continent's lowest price, while the highest—75 cents for regular and 80 cents for premium—prevail in France and Monaco.

You Car

By Thomas A. Hoge



Established parks for mobile homes provide utility outlets, water and sewage connections, paved streets and even congenial neighbors.

Since they have outgrown back-of-the-car trailers, many mobile homes must be towed by truckers with special licenses and know-how for long distance hauling.

MORE THAN FOUR MILLION AMERICANS now live in handsome, streamlined homes that boast a unique feature—they can accompany the owner wherever he wants to go.

These mobile homes are big brothers to travel trailers and sleek offspring of cabins-on-wheels of the 1930s. They are full-size houses that can migrate with owners to new job locations or go south with them on winter vacations—yet they provide all the comforts of conventional homes, including built-in hi-fi, air-conditioning and wood-burning fireplaces.

Nearly one and a half million mobile homes are in use today, most of them set on landscaped lots in trailer parks.

Ambulant domiciles range from compact 30 x 8-foot models that cost as little as \$3,500, to \$20,000,



Take It with You



Mobile homes, big brothers to trailers,

shelter more than four million Americans

in style, comfort and convenience

60-foot behemoths with a 10-foot beam, three bedrooms and two baths.

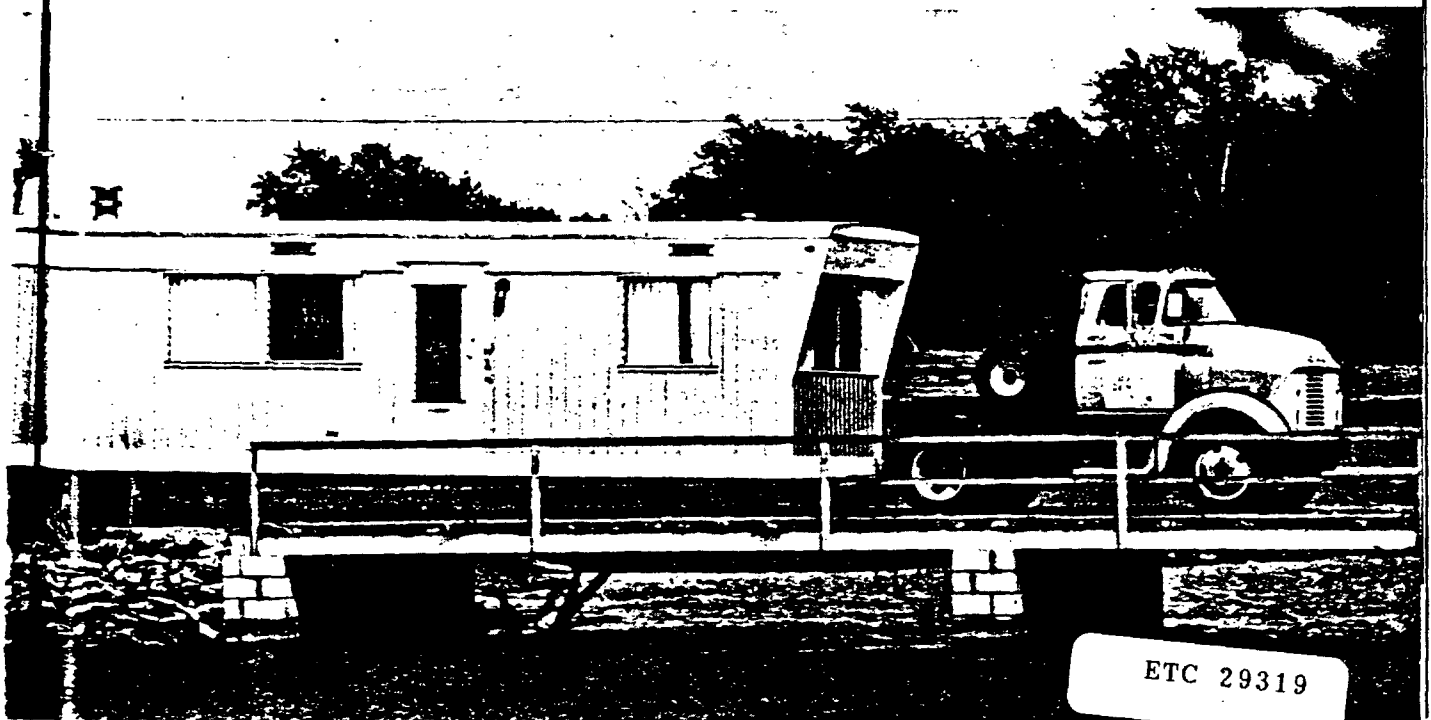
Owners can hitch smaller models to the back of the car when the family moves, but big ones must be towed by professional truckers. A number of tow companies carry special licenses for this type of freighting and will haul mobile homes anywhere. They travel during light-traffic hours and follow charts that show which highways can accommodate the leviathans.

For years, highway codes that limited maximum trailer width to 10 feet posed a frustrating problem for designers. More recently, however, an ingenious telescope technique has been devised by which the house-on-wheels can be cranked out to a width of 15 to 20 feet once it is off the road and set down on a lot.

The mobile home was born of necessity during World War II. The vast movement of armed forces and defense workers caused acute housing shortages in many areas and the government called on the trailer industry for help. Plans were hastily drawn up to enlarge and equip trailers with stoves and rudimentary plumbing. The government purchased them in bulk lots for defense worker colonies and off-base housing for military personnel.

After the war and the return of thousands of servicemen to civilian life, many couldn't find housing or couldn't afford what they found. But this time the trailer manufacturers were ready. The trailer coach was rechristened the mobile home and units began rolling off assembly lines, equipped with bathrooms, kitchens and other conveniences.

They caught on quickly. Mobile homes were



You Can Take It with You

financed like automobiles, and sales soared. By 1950, they were selling at a rate of 60,000 a year, compared to 1,300 little tent trailers annually 20 years earlier. By 1955, the annual sales volume had leaped to 95,000, and four years later the figure reached 120,000. Some economists predict that in another five years the number will double.

Unlike small trailers designed for vacation jaunts, mobile homes accent appearance and living comfort. The government has played an important part by setting up rigid construction standards comparable to those established for permanent houses.

Expandable models are equipped with almost every convenience of fixed dwellings—heating systems, dish-washers, washing machines, dryers, air-conditioning, built-in ovens and garbage disposal units. Bathrooms feature tubs, showers and flush toilets to connect to trailer park sewage systems.

Once ensconced in a park, living space can be increased by adding awning-covered patios or enclosed cabanas, depending on the climate of the location.

Nowadays, more than half of the dwellers in mobile homes are skilled workers and engineers who move around frequently.

Members of the armed forces and their families who also move periodically—often to underdeveloped areas—make up almost a quarter of the mobile population. Retired people account for another 10 percent, and this number is growing.

Oldsters like the lighter housekeeping that mobile homes afford and the congenial surroundings in colonies inhabited by others of their age group. Above all, the elderly—many living on Social Security payments or pensions—like the economy.

Students, married and single, are included in much of the remainder of the mobile home population, along with a sprinkling of writers, photographers, artists and other roving professionals who have tired of living out of suitcases.

On the average, mobile homes are moved only about once every two years, but some travel semi-annually, following the sun summer and winter.

Where are they parked besides remote construction sites and isolated military bases? Most are in the 16,000 trailer parks in the United States, 196 in Canada and 80 in Mexico. These parks already represent a \$600 million investment and new ones



are being built at the rate of almost 1,000 a year.

The parks cost up to \$750,000 to build, accommodate an average of 100 homes, and rent lots for from \$25 to \$100 a month. Some elegant colonies along Florida's gold coast are said to command as high as \$450 for waterfront footage.

Many parks provide luxury conveniences and recreational facilities, including swimming pools, tennis courts, shopping centers and chapels. The Safari in El Cajon, California, has a library and film studio. The Bahia in California's Garden Grove includes a greenhouse for amateur horticulturists, and Trailer Estates on the shore of Florida's Sarasota Bay sports an 18-hole golf course.

Boat dockage is even provided at some waterfront colonies where affluent residents can moor their yachts practically at their own front doors.

It has been said that if the more than four million mobile home dwellers in America gathered in one spot they would make a city smaller only than New York and Chicago. If present growth rates continue, it may even some day rank first. #

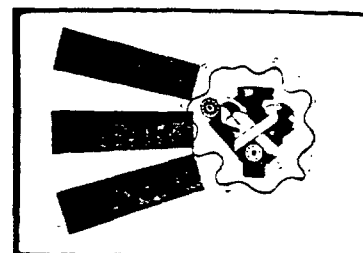
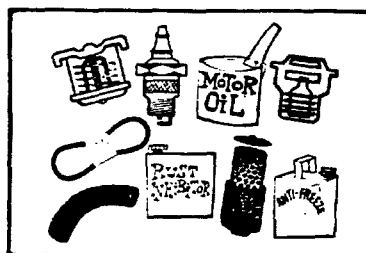
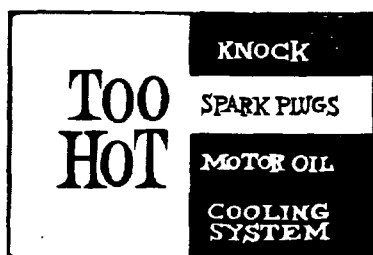


By using an ingenious telescoping technique, mobile homes can be extended to a width of 15 to 20 feet once they are off the road. This provides plenty of space for completely equipped, full size kitchens, living rooms and bedrooms.



ETC 29321

ETHYL IN THE NEWS



New Training Presentation is "TOO HOT!"

Water hoses in good condition? Good tight fan belt? Thermostat operating properly? Effective radiator cap? Cooling system flushed periodically? Inhibitor added to radiator water? Antifreeze added as needed? Spark plugs of proper type? Clean oil filter element? Motor oil changed regularly? Gasoline of appropriate octane number, containing a phosphorus additive to prevent deposit glow?

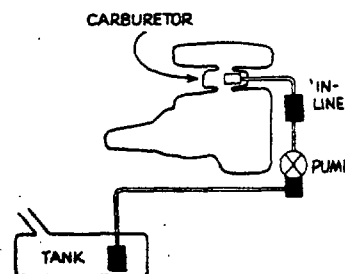
By checking these points, service station attendants can help prevent motorists' cars from overheating, eliminate breakdowns, build customer confidence and increase sales. That's the story of "TOO HOT!", a new Ethyl Corporation training presentation. The presentation consists of 59 color slides and an informative script. In just 15 minutes, it can show dealer and marketing groups how to help promote proper car servicing through sales of many TBA items—and good quality gasoline and motor oil.

The words and colorful slides of "TOO HOT!" tell how various parts of the cooling system—and gasoline, motor oil and engine adjustment—affect operating temperatures. They relate the importance of motor fuel, oil, oil filters, spark plugs, fan belts, radiator caps and hoses, thermostats, antifreeze, and rust inhibitor to engine temperature, and tell how the sale of these products benefits motorists and service station dealers, too.

Clear the Way for Filters

Since clogged gasoline filters are responsible for an increasing number of automobile breakdowns, technical, marketing and research oilmen will be interested in another new Ethyl presentation—"Gasoline Filter Clogging." Put on by automotive engineers, this chart presentation explains the various types of gasoline filters, shows where they are located in automobile fuel systems, tells what affects their operation and points out causes of clogging. Most important, it explains what can be done by motorists, fuel suppliers and automobile manufacturers to eliminate filter difficulties and assure smooth, efficient fuel system operation. The presentation has been assembled by Ethyl Corporation engineers after intensive study of the problems of gasoline filter clogging and after consulting with filter manufacturers and the engineering departments of automobile companies.

SCHEMATIC FUEL SYSTEM





Solving the Combustion Mystery

Almost three-quarters of the nation's energy supply comes from combustion of petroleum and natural gas—a process that scientists do not fully understand and have not yet fully explored. So said Wheeler G. Lovell, Ethyl Corporation research consultant, to the Division of Petroleum Chemistry of the American Chemical Society late this summer in a report on "A Decade of Progress in Petroleum Combustion."

Some of the newer uses for petroleum and natural gas—fueling space rockets and directly generating electricity in fuel cells—are still quite glamorous. Others, such as powering supersonic jet aircraft, have already become commonplace, Mr. Lovell pointed out. Improvements in gasolines and furnace oils were of greatest direct benefit to the average citizen, he reported. In gasoline, new refining processes, antiknock agents and additives to combat pre-ignition and spark plug fouling were developed. These and other additives that keep fuel systems free of gum and ice have made motoring more trouble-free and have helped the fuel provide more power and mileage.

Soot deposits that lower the heating efficiency of furnaces have been reduced by improved refining of furnace oils. And just recently it has been discovered that certain manganese compounds are effective anti-soot additives.

"However, combustion science must be regarded as still in its infancy," Mr.

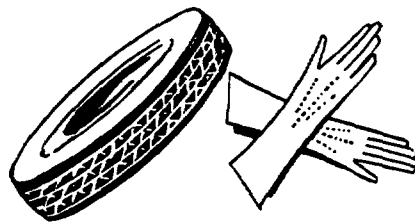
Lovell said. "What petroleum and natural gas fuels do in the future will be determined as greater insight is gained in the chemical reactions involved in releasing their energy."

Antioxidant for Rubber

"Ethyl" Antioxidant 702, widely used in automotive, aircraft, railroad, marine and industrial engine oils, can also be used in natural and synthetic rubbers and plastics.

Application tests have shown that the versatile antioxidant is a highly effective stabilizer, helping prevent cracking and other forms of deterioration and preserving desirable qualities of a number of synthetic and natural rubbers. It stabilizes oil-extended polymers and synthetic polymers of the stereospecific, SBR and butyl types, and is an effective antioxidant for natural and SBR vulcanizates.

Since it is relatively non-staining, "Ethyl" 702

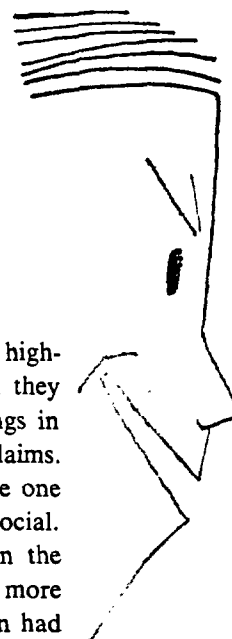


can be used in white and carbon-black vulcanizates in a variety of products—white sidewall tires, floor tile, coated fabrics, shoe soles and household goods.

Use of the versatile antioxidant offers substantial savings to rubber manufacturers and compounders, since it is equally or more effective, on a unit basis, than competing products.

"Ethyl" Antioxidant 702's non-toxic quality makes it of considerable value to rubber producers concerned with food packaging and food handling applications.

The product is made by the ortho-alkylation process discovered in Ethyl Corporation laboratories a few years ago. Capacity for the manufacture of 702 and other "Ethyl" antioxidants was doubled earlier this year and is now in the multi-million pound class.



MANY OF THE MOTORISTS who whiz along state highway 11 in northeastern Texas blink in amazement when they see a town name sign near a small group of weatherbeaten buildings in Fannin County. "This is Bugtussle," the sign proclaims. Now a community of 50 to 75 inhabitants, Bugtussle acquired its name one summer night back in the 1890's in the midst of an ice cream social. Great swarms of candlebugs, attracted by lantern lights, descended on the gathering and crawled all over everything—even the ice cream freezers. "Looks more like a bug tussle than an ice cream social," a wag observed, and, presto, the town had a new name.

Bugtussle is only one of scores of offbeat town, city and river names sprinkled on maps of the United States. There are Scalp Level, Wynot, Zigzag, King of Prussia, Igo and Ono and lots of others. The story of the origin of many is humorous and entertaining—though not always accurate.

Local lore says that citizens of Azusa, California, for example, call their town by that name because "it's the best town from A to Z in the USA." Actually, the place simply retained the name of old Azusa Rancho, former occupant of the town site.

When asked why Igo and Ono, California are so called, residents like to repeat the legend of a gold prospector and his son. When the miner left home each morning to work his claim, he is reputed to have answered the youngster's eager question of "I go?" with a firm "Oh no." One village now allegedly marks the site of the miner's cabin and the other the scene of his diggings.

Scalp Level, Pennsylvania, is supposed to have acquired its name from the words of a pioneer directing land-clearing operations. "Boys," he instructed "scalp them bushes level."

Wynot, Nebraska, was unwittingly christened by a German settler who had trouble understanding English and answered most questions with "Why not?" The expression became so popular locally that when time came to choose a name for the community, the settlers asked themselves, "Why not 'Wynot'?" And Wynot it was.

The irregular shapes of the mountain peaks among which it nestles accounts for the dubbing of Zigzag, Oregon. And when a homesick immigrant from Prussia called his tavern "King of Prussia," the Pennsylvania town that grew up around the inn retained the name.

Directions followed too carefully account for the name of an Arkansas village. When residents voted on a name for the local post office, instructions beneath the blanks in which they were to write their choice said "Please write in ink." Taking the instructions literally, many of the voters wrote "Ink," and so the town took that name.

WHAT'S

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BAKEOVEN



IN A NAME?

By Frank L. Remington

Novi, Michigan, is one of a number of towns that had a peculiar historical beginning. In the old days a stagecoach ran from Detroit to Lansing, and signs with Roman numerals indicated stopping places. When a town sprang up around Stop No. VI, the period was dropped and the place became simply Novi.

Penn Yan, New York, was so named to stop wrangling between early settlers, some of whom came from Pennsylvania and others from New England. Both of the partisan groups wanted a town name that would reflect their places of origin, so they decided on Penn Yan—Penn for the Pennsylvanians and Yan for the Yankees from New England.

Another dispute was responsible for the naming of Hearne, Texas. It seems that a man and his wife were having domestic difficulties and decided to separate, but each wanted to retain possession of the family ranch. The husband declared it was "his'n" and the wife said it was "her'n." Finally, a judge decided that it was to be "her'n" and with a slight modification in spelling, it has been ever since.

Cawker City and Morrowville, Kansas, were both named after



FLAGSTAFF

WHAT'S IN A NAME?

early settlers—but under odd circumstances. Residents of the former place couldn't agree on a name, so they played poker until a Mr. Cawker had raked in most of the chips. Whereupon he proclaimed the name to be Cawker City.

Morrowville originally was called simply Morrow after a state senator. But the railroads soon added the "ville" because when passengers asked for tickets "to Morrow" it confused their agents.

Itmann, West Virginia, combines the initials and name of I. T. Mann, a local bigwig, and T. B., Maryland, is not so called because of the disease, but after Thomas Brooke, once a wealthy local landowner.

Other places such as Maharg and Rolyat, Texas, have resorted to backward spelling. They are Graham and Taylor in reverse.

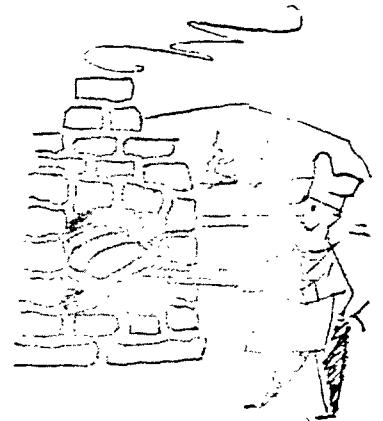
When commissioners of a Missouri county met at the local tavern to pick the name for a new settlement, they so enjoyed their dinner that they honored the cook, Mrs. Kirk, and called the place Kirksville.



"A ticket to Morrow?"

Often, of course, name givers take a cue from the obvious. Haystack, Oregon, acquired its name from the most prominent object on the landscape. Flagstaff, Arizona, took its title from a trimmed tree, at the top of which a party of explorers hung a flag to celebrate the Fourth of July.

The name for Bakeoven, Oregon, resulted from the ingenuity of a French trader who was marooned with a supply of flour after hostile Indians made off with his mules. The enterprising merchant built a stone oven on the spot, baked his flour into



Warsaw, Kentucky, to name a few. And in one part of Maine, there are seven towns named after foreign countries and two after cities.

Berlin, Oregon, however, isn't named for the divided German city, but for Burrell's Inn, the town's first building. Over the years, it was shortened to Burl Inn, and eventually to Berlin, so the story goes.

And speaking of word corruptions, a North Carolinian's drawl was responsible for Rolla, Missouri. He actually was suggesting Raleigh, after his old home town, but it was written just as it sounded to the recorder and it's been Rolla ever since.

Many place names, of course, fall into a wide variety of categories. In the political field, there are Stevenson, Alabama; Nixon, Texas; Taft, California; Dewey, Arizona; and Campaign and White House, both in Tennessee. Hungry travelers might visit Two Egg, Florida; Rice, Kansas; Toast, North Carolina; Pie, West Virginia; Jelly, California; or Soda, Texas.

And for family life, there are Parent, Minnesota; Brothers, Oregon; Family, Montana; Three Brothers, Arkansas; Sisters, Oregon; and Twin Sisters, Texas. #

AMERICAN NAMES

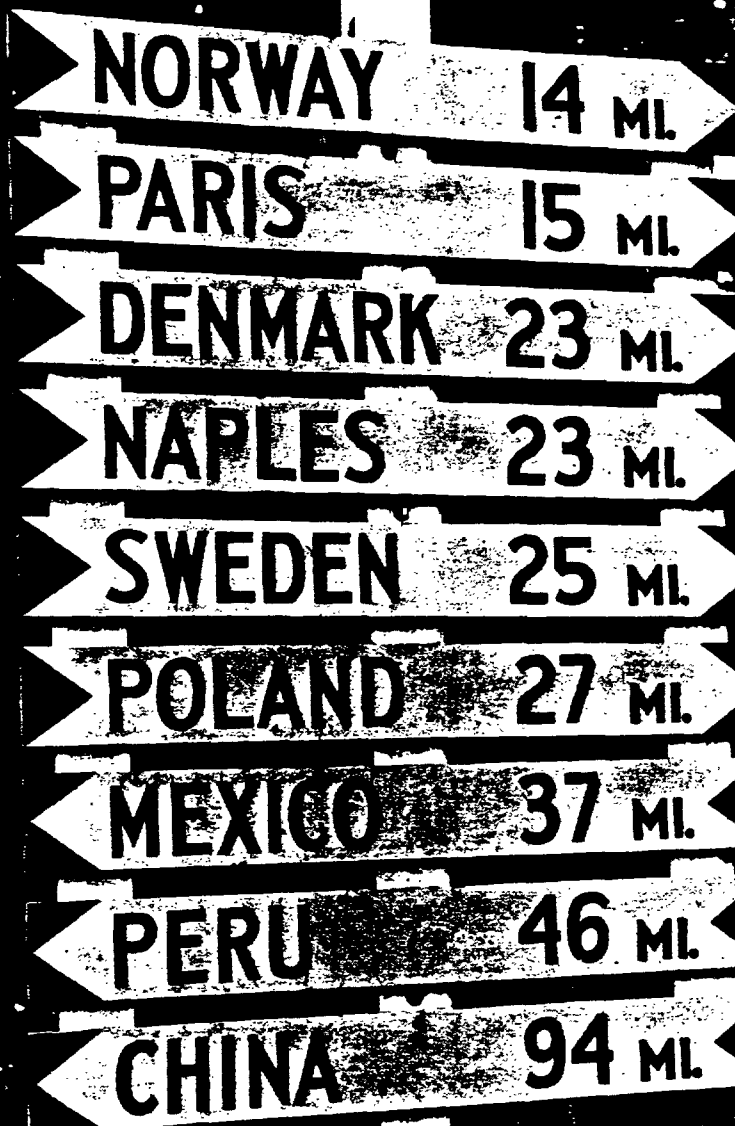
I have fallen in love with American names.
The sharp names that never get fat,
The snakeskin titles of mining claims,
The plumed war-bonnet of Medicine Hat,
Tucson and Deadwood and Lost Mule Flat.

—Stephen Vincent Benet

bread, and sold it to passing trappers and travelers.

Coined words are frequently used to name towns on or near state borders. Witness Texas and Arkansas' Texarkana; California and Nevada's Calneva and Calvada; West Virginia and Kentucky's Kenova; Oklahoma and Texas' Texhoma; and Oklahoma and New Mexico's Mexhoma. And then there's the Delmarva peninsula, made up of Delaware and parts of Maryland and Virginia.

Travelers in the United States can visit major European capitals without ever leaving this country. There are Rome, New York; Moscow, Idaho; Paris, Illinois; London, Ohio; Athens, Georgia; Vienna, Virginia; and



“But what were the Russians doing in California?”

MOST parents would have to scratch their heads and weakly reply, "Look it up in your history books."

But Fort Ross (or "Rus") still stands, a short drive north from San Francisco. And a fascinating bit of American history can come to life for you *and* your children as you roam inside its wooden ramparts, visit the Russian Orthodox chapel and see the historical exhibits in the original commander's house.

The Russian-American Fur Company was operating in Alaska when a shortage of food and of sea otters necessitated the establishment of a post in Spanish California in 1812. The attempt of the Czar to close Northern California ports to non-Russian ships in 1821 was responsible for part of the wording of the famous Monroe Doctrine.

Fort Ross is one example of the fascinating history of America. Restorations and historic sites can be found just a pleasant drive away from your home. And what a wonderful gift to give your children . . . the realization that being an American is a precious inheritance.

Ethyl calls this interesting world that surrounds you a Magic Circle. Why not start exploring your Magic Circle this week end?

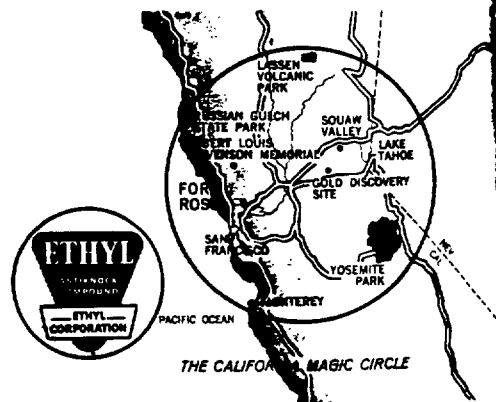


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ETHYL NEWS



ETC 29329

ETHYL NEWS

NOVEMBER-DECEMBER 1961

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manufacturer of "Ethyl" antiknock compounds and other additives used by oil companies to improve the quality of petroleum products.

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THE COVER photo of the Lincoln panel of the Henry Varnum Poor mural in Old Main at Pennsylvania State University depicts the founding of land-grant colleges in 1862. For more on such schools, see "Education for Everyman," pages 1-5.

PHOTO CREDITS: Cover, Pennsylvania State Univ.; pages 1 and 2-3 (bottom center), Louisiana State Univ.; pages 2-3 (top) American Association of Land-Grant Colleges and State Universities; pages 3 (bottom) and 5, A. Devaney; page 4, Univ. of California; pages 6-7, Baker Johnson; pages 8-9, United Press International; pages 12-13, Standard Oil Company of California; pages 14-17, Eric Carlson of Ellerton and Associates through Camera Associates; pages 27-28, Skywriting Corporation of America and Frederic Lewis; page 29, Camera Associates.

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Education for



Louisiana State University, one of the country's leading land-grant institutions, offers almost 2,200 different courses in 95 undergraduate curricula, leading to 55 undergraduate and 29 graduate and professional degrees.



ETC 29330

land-grant colleges have done
in providing . . .

for Everyman

By Thom Yates



ON A JULY DAY almost a century ago, in the midst of the Civil War, Abraham Lincoln signed into law legislation that put higher education within reach of millions of Americans.

Only the day before, July 1, 1862, Lee's Confederate army had severed McClellan's communications lines and Northern forces had lost a major battle. Inflation was rampant. The Treasury Department was so hard pressed for revenue it ordered a levy on every article, product, trade and profession not already taxed.

Still, through the darkness, Lincoln could see a bright future for America. But that future, the president knew, could sooner be realized by a more educated people. So he endorsed an Act of Congress authorizing the establishment of land-grant colleges.

Introduced by Senator Justin S. Morrill of Vermont, the act provided for the United States government to convey to the states more than 11 million acres of federally-owned land. This land was to be sold by the states and the income used to establish colleges to "promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

Each state participating was to endow, support and maintain "at least one college, where the leading object shall be, without excluding

Education for Everyman

other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts." The provision for instruction in "military tactics" was prompted by the lack of trained leaders for Union forces in the Civil War.

There wasn't time for it to help in that war, but 75 years later the Reserve Officers' Training Corps (ROTC) program was credited with speeding up mobilization for World War II by at least six months and land-grant colleges provided more than half of the reserve officers.

Under provisions of the Morrill Act, each participating state received 30,000 acres of non-mineral public land for each member of Congress from that state. Proceeds from the sale of the land—the going price was about \$1.25 an acre—provided endowment funds and incidentally the designation "land-grant" colleges.

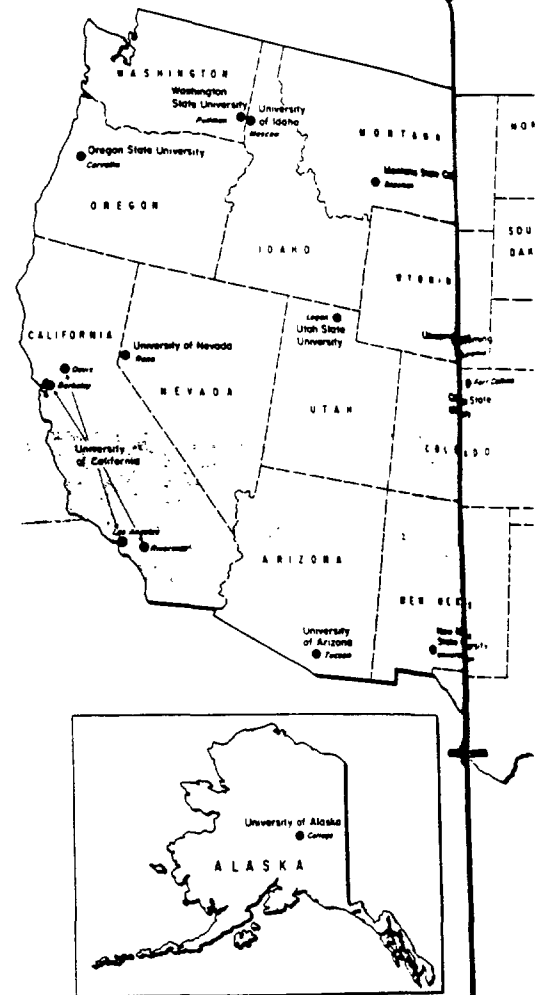
Income for Instruction

Income from the land sale was solely for instruction. It was up to the states to provide the buildings and other physical facilities.

The smallest amount of money realized was the \$50,000 that established the University of Rhode Island. The largest was the near-\$1 million that endowed Michigan State University.

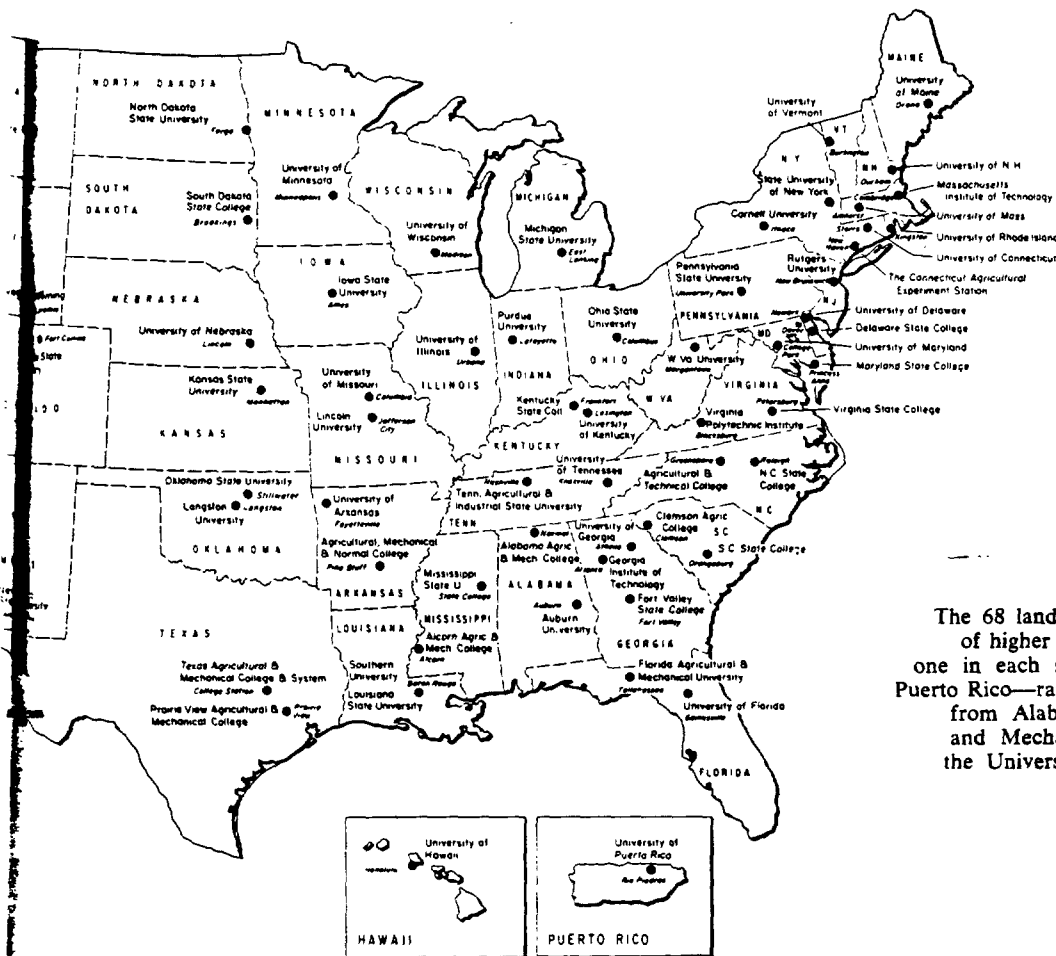
First to accept the conditions of the Act, within months after President Lincoln signed it into law, was the legislature of Iowa. Kansas State University was the first institution designated as a land-grant college by a state legislature. But Michigan State was the first to be designated and also to give instruction at the college level.

By 1870, 36 states had moved to establish such colleges. Today, there are 68 land-grant



Land-grant colleges enroll about 20 percent of the country's undergraduate students and train almost half of all regular and reserve officers for the armed forces.





Education for Everyman

institutions of higher learning—at least one in each of the 50 states and one in Puerto Rico. They range alphabetically from Alabama Agricultural and Mechanical College to the University of Wyoming.

Land-grant colleges and universities are completely accepted today, but their establishment was a revolutionary step 100 years ago. Then, most colleges were, as one chronicler has put it, "pretty much frozen into a traditional mold of curriculum designed for the members of the traditional professions and leisure classes." They offered practically no instruction in science and

technology, and more students were admitted on the basis of social background and affluence than because of any readiness to learn.

The program of present-day land-grant colleges and universities has been described by Edward D. Eddy, Jr., president of Chatham College and an historian of the movement, as a "trilogy of American ingenuity." The three parts of the trilogy are: (1) campus courses for undergraduate and graduate students; (2) basic and applied research programs in agricultural and engineering experiment stations maintained by the colleges; and (3) two types of extension work to spread knowledge and the fruits of knowledge among the people.

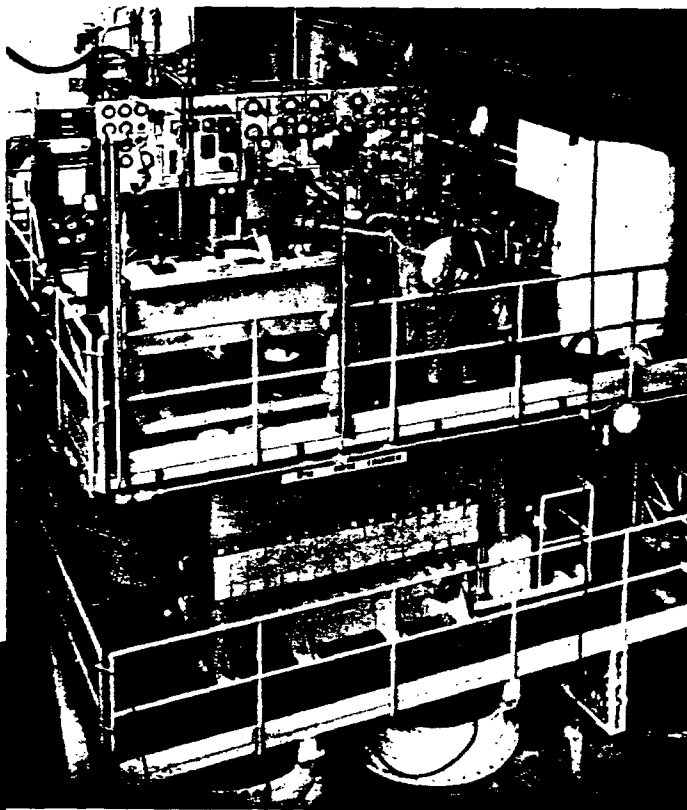
One type of extension work is conducted in agricultural and home economics in association with the U. S. Department of Agriculture, which coincidentally, also marks its 100th anniversary in 1962. Land-grant colleges have agents in each county in their states to bring new developments of research to the farm, the home and the consumer. A second type of off-campus instruction educates adults through correspondence courses, conferences and institutes.

Countless Contributions

Critics of land-grant institutions have often referred to them as "cow colleges," "degree factories" and "trade schools." These unenlightened descriptions completely overlook the contribution that the state colleges and universities—and their faculties and graduates—have made in so many fields.

Here are just a few of these contributions:

- Land-grant colleges and universities number less than four percent of the country's institutions of higher learning, yet they enroll about 20 percent of the undergraduate students and grant nearly 40 percent of the doctoral degrees.
- Of the 40 living United States citizens who have won Nobel prizes and who have attended college in this country, 24 received



Outstanding among the scientific studies performed at land-grant institutions is the atomic research conducted at the University of California.

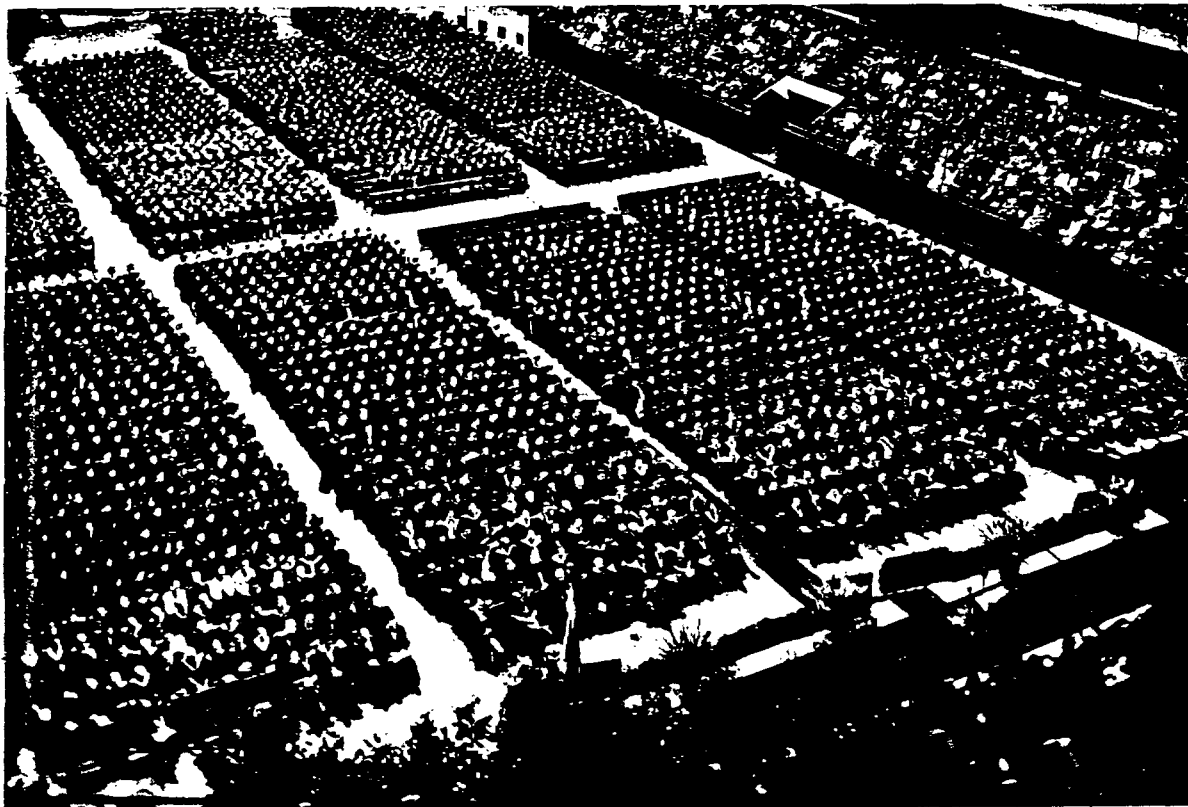
their degrees from land-grant colleges or universities.

- Through ROTC programs, land-grant colleges train almost half of all regular and reserve officers for the armed forces.
- Streptomycin and open-heart surgery are two of the medical developments of land-grant college research. In other fields, the institutions have been responsible for the first cyclotron, pioneering research in television and transistors, the separation of helium from natural gas, and basic research in satellite tracking, rockets and

rocket fuels, development of atomic energy and in special foods for spacemen.

- Land-grant colleges—both their faculty members and students—are a principal source of technical personnel for government and privately financed projects in foreign countries.

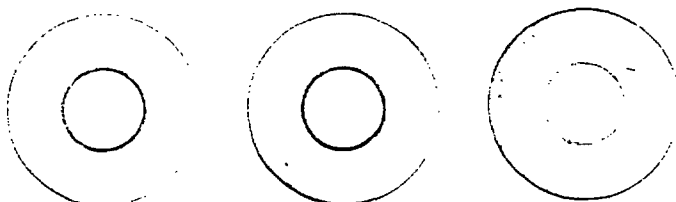
As they prepare for their second century, the country's land-grant institutions can look back on a proud record of accomplishment and forward to a promising future in fulfilling their mission of making higher education available to millions of Americans.#



In graduating thousands of students, land-grant colleges and state universities have succeeded admirably in their assigned mission "to promote the liberal and practical education of the industrial classes."



Two of the diminutive members of the traveling zoo that get special attention from young admirers.



Animals on View

A mobile menagerie tours Chicago parks to entertain and enlighten children

AUTOMOTIVE TRANSPORTATION, which takes so many people to see the sights and wonders of the world, also brings many of these sights and wonders to the people. In Chicago, for example, a panel body truck tows a trailer full of small animals to the city's parks for the entertainment and enlightenment of vacationing school children.

For six weeks every summer, the traveling menagerie moves out from home base at Lincoln Park Zoo and visits two Chicago parks a day, five days a week. Preceded by special police escort, the truck-trailer combination moves gingerly through the city's busy streets to avoid disturbing the 16 animal-passengers.

When the mobile zoo pulls into a park, a record player and public address system are switched on. The strains of calliope music bring children running from park playgrounds and surrounding city neighborhoods.

During the two-hour stops, a zoologist gives simple but informative and amusing lectures about the snakes, lizards, parrots, kinkajous, monkeys, tortoises, woodchucks and his other diminutive charges and displays them to the attentive juvenile audiences. To the delight of the youngsters, the animals snuggle up to the zoologist and mischievously probe his pockets for snacks. After the lecture, the children crowd forward for a close look at the little beasts and for a chance to photograph and pet them.

The truck-towed trailer that is home for the animals while they are on tour is air-conditioned and scrupulously clean. Each inmate enjoys his own private quarters and eats food kept fresh in a refrigerator and carefully prepared according to posted menus.

These first-class accommodations maintain the animals' good health and good humor and encourage them to perform well for their audiences. =



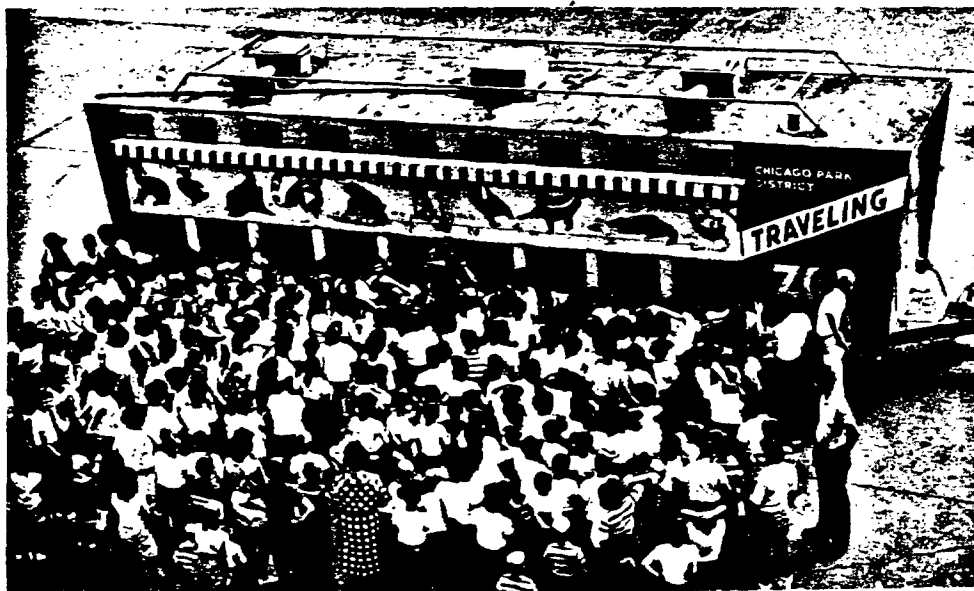
Admirers are, far left, a cuddly owl-faced monkey and, right, an acrobatic, tail-hanging kinkajou.

Wheels

Right, Topy, a sleek indigo snake, holds his head high in a proud pose as a youthful photographer snaps his picture.



Below, minutes after the truck-towed menagerie pulls into a Chicago park, crowds of youngsters, attracted by amplified calliope music, gather to see the animals perform.





Oil for the Wheels

NEWSTORIES out of Washington in a single week this summer reported these significant but seemingly unrelated developments:

- There's a new vaccine that will cut down the childhood death toll from measles.
- Research on space travel has been so stepped up that officials now believe the United States may beat the Russians in landing a man on the moon.
- Machines that can "read" names and addresses on letters and packages, and sort them automatically by destination, are helping speed mail deliveries in our larger cities.

- Low cost conversion of sea water to fresh water is being pushed to provide arid areas with enough cheap water to attract new farms, industries and larger populations.

While newspaper readers didn't realize it, these developments had one thing in common: They were publicized at hearings of Congressional committees and highlight the important role of such committees in our national life.

Lawmaking is done by Congress as a whole only in theory. In practice, legislating is carried out by some 300 regular and special committees and their subcommittees—covering almost every subject imaginable. As one veteran Senator put it, "Committees oil the wheels of this coun-



**Despite shortcomings, committees
of the Senate and House play a vital role
in the legislative process**

s of Congress

try's whole ponderous legislative machine."

Requests for money to carry on the work of government agencies and departments must clear through the powerful House Appropriations committee. This means that reports of Appropriations committee hearings—among others—often provide fascinating news stories as officials describe projects their groups are working on.

Medical authorities from the National Institutes of Health told the Appropriations committee about the new measles vaccine—as well as about new methods to treat serious "staph" infection, cure deafness, treat heart ailments, and cut down the mortality rate from cancer.

Up-to-date word on space research was pre-



Congressional committees discuss everything from space travel to measles vaccine. Here, Sen. Philip A. Hart of Michigan, chairman of a Senate judiciary group investigating deceptive packaging, describes box labels.

Oil for the Wheels of Congress

sented to the Appropriations committee and to the Senate committee on Aeronautical and Space Sciences.

The Post Office and Civil Service committees of the House and Senate were briefed on automation in the mail service, and the two bodies' committees on Interior and Insular Affairs were given details of the saline water conversion program.

There are so many committees that Senator John L. McClellan of Arkansas told the Senate recently that the system is getting out of hand. Something needs to be done, he declared, to telescope some of that body's 127 committees. In addition, there are 152 House committees and 24 joint committees of the House and Senate.

Screen and Sift Bills

Despite the problems of the committee system, members of Congress are quick to point out that only through a large number of "little legislatures" can the real work of the House and Senate be handled.

Committees are the workhorse groups that screen and sift the mass of legislation. Since 10,000 to 30,000 bills and up to 100,000 presidential nominations are proposed every two years, they all can't possibly be given full consideration on the floor of the House and Senate. By deciding which matters are most important and getting the spadework done in small work groups, committees save time and tempers of national legislators.

Oddly enough, the Constitution says nothing about the committee system. It sprang up as the nation grew and people demanded more and more functions from government. By the end of George Washington's first term, 350 special committees had been formed, though all were temporary and were later dissolved.

In the third Congress, 1793-1795, the House adopted a system of permanent committees. The Senate followed suit in 1816, and the system grew by leaps and bounds.

By 1920, when the Senate and House had 74 and 60 regular committees respectively, the number was cut back to 33 in the Senate and 48 in the House.

Again in 1946, the Legislative Reorganization Act attempted to control committee growth by reducing the total to 15 in the Senate and 19 in the House.

But both groups were left to create additional committees. Recent increases, culminating in Senator McClellan's call for another paring down, show the difficulty of keeping them in check.

In addition to standing committees for taxes and finance, banking, agriculture, national defense, foreign affairs, and other key subjects, special or "select" committees are established from time to time to study particular problems.

The present House committee to study the problems of small businesses is typical of a "select" committee. It has seven subcommittees covering such areas as advertising, government procurement, foreign trade, taxes, and growth opportunities.

Committees that often make the headlines are the investigating bodies set up to probe specific national problems. These committees have propelled legislators into national prominence—even into the White House. Former President Truman's service on a Senate committee studying preparedness for World War II and President Kennedy's role on a Senate committee investigating labor rackets are two examples.

Investigations Bring Reforms

Many special committee investigations have brought needed reforms. In 1905, a study headed by Charles Evans Hughes revealed shortcomings in the regulation of life insurance companies. Investigation of public utilities by the Black committee in 1935 led to legislation controlling utility holding companies.

The most important and interesting committee work is done in "executive session"—behind closed doors. Only staff members and a few guest officials of executive agencies normally attend. Privacy encourages the free exchange of ideas and a disposition to compromise that would be difficult in an open meeting. Meeting proceedings rarely remain confidential, however, since leaks to the press, to lobbyists and to other legislators are often arranged to gain various goals.

There are often hundreds of bills pending before committees, and only a small fraction are acted on. It was this situation that prompted Woodrow Wilson to refer to committee rooms as "dim dungeons of silence."

The chairman—usually chosen by seniority—can choose the order in which legislation is considered by his group. As a result, he has virtual life-and-death power over bills. He can kill them simply by not calling meetings of his committee, by scheduling meetings at times when a quorum can't be obtained, or by arranging for someone to object when a meeting requires unanimous consent.

Policeman for Legislation

In the House, the Rules Committee is the traffic policeman for the great mass of pending legislation. Under a special rule that permits bills to be taken up out of their regular order, this powerful group can decide which ones shall reach the floor.

If the Rules Committee is controlled by party

leaders friendly to the administration, it can block legislation which might embarrass the White House and clear the track for the President's legislative program. If a majority of the Rules Committee's members are unsympathetic to a presidential program, the effect can be just the opposite.

"Writing legislation on the floor"—considering matters not previously studied by a Congressional committee—is frowned on in both houses, but legislation prepared in committee often is changed and differences between House and Senate versions are reconciled—usually by joint committees.

Despite occasional shortcomings, committees play a vital though often overlooked role in the legislative process, and legislators take committee assignments seriously. It is there that senators' and representatives' reputations are made with their colleagues—and often with their constituents. Members of both houses know committees are important to them as individuals, to the Congress as a whole, and to the people of the United States. #

BILLS TO INCREASE THE HOUSE KILLED

Panel Shelves All 20 Plans to Raise Membership

WASHINGTON, Sept. 6 (AP).—Twenty bills aimed at increasing the membership of the House of Representatives were killed today by the Judiciary Committee.

Plan to Tighten Antitrust Laws Is Backed

Senate Panel Heeds Support for Stiffer Penalties

Justice Department Delivers Testimony

Bang! House Boost Dies

Washington, Sept. 6 (AP).—Twenty bills aimed at increasing the House membership were killed.

The House will be effect by gains in states which showed large population increases in the 1960 census. The House membership, fixed at 435 in 1911, will revert to that figure after next year's elections. It was increased temporarily to 437 to admit members from the new states of Hawaii and Alaska. The 20 bills killed proposed increases ranging up to 34.

McNamara Tells Senate Inquiry:

Would Halt Military Censoring

WASHINGTON, Sept. 7. — Sen. Robert S. McNamara told the Senate today that censorship by military "is a real problem."

Today in Washington

Broadcasters Get Teen Betting Blame

(From dispatches of United Press International and Associated Press.)

Tighten String On Money Bills

Washington, Sept. 12 (UPI).—The House Appropriations Committee today took what it called the "first long step" toward wiping out back-door financing by the Administration. It approved a \$446,771,447 catch-all supplemental appropriations bill which specifically...

HOUSE UNIT VOTES 1-CENT MAIL RISE

5c First-Class Postage and 8c Airmail Are Cleared

By RUSSELL BAKER (Special to The New York Times) WASHINGTON, Sept. 7.—It

Extra \$30 Million Voted for Tests

Washington, Sept. 6 (UPI).—The House Appropriations Committee today responded quickly to President Kennedy's order for nuclear tests by voting an extra \$30 million to finance fallout underground blast. Less than 24 hours after President issued his order, funds were provided in a \$45,500 bill carrying a title for the Atomic Energy Commission and government.

House Unit Approves Export Risks Measure

WASHINGTON, Sept. 6 (AP).—Legislation designed to increase United States exports

HOUSE UNIT VOTES WATER PROJECTS

Works Bill Includes Extra Funds for Weapon Tests

The findings and actions of Senate and House committees affect practically every phase of American life.

A photomural and display of old pipe tongs attract these employees.



History comes to life



Two attractive Socal misses pose on the driver's seat of a horsedrawn tankwagon.



Oil production relics on display include cable drilling tools from the 1890s.

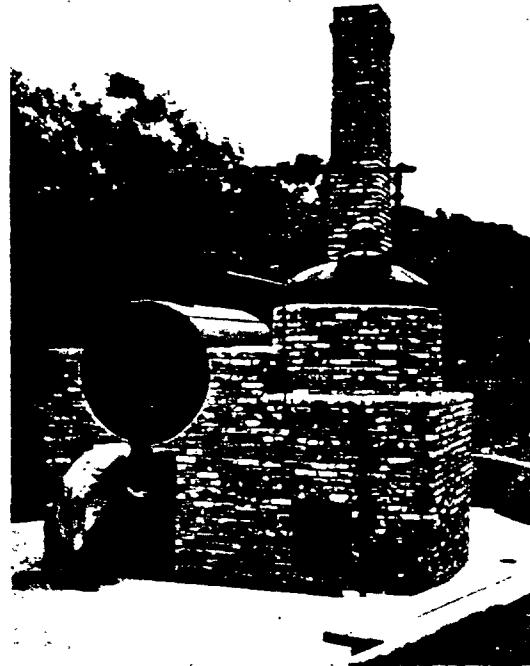
AT THE BIG Standard Oil Company of California refinery at Richmond, Calif., history isn't something employees learn from books and lectures—not company and industry history anyway. It's something they see, feel, touch and appreciate by browsing through attractive exhibits that show how oil was found, produced, transported, refined, marketed and used in Standard of California's earlier days.

Displayed mementoes from petroleum's past range all the way from early drill bits, product labels and photographs to the company's first automobile, a 1903 Ford, and a replica of its first service station, circa 1907. They include a reproduction—complete with original hardware—of California's first commercial well.

A reconstructed old-fashioned kitchen displays oil-consuming household appliances of the late 1800's, while other presentations include collections of surveying instruments, tools, lanterns, lamps, wagons, and even cans, pails and jars in which products were once marketed.

Exhibits are invitingly arranged in and around a historical museum built on refinery property and "dedicated to the men and women whose minds and muscles made the Standard Oil Company of California our heritage."

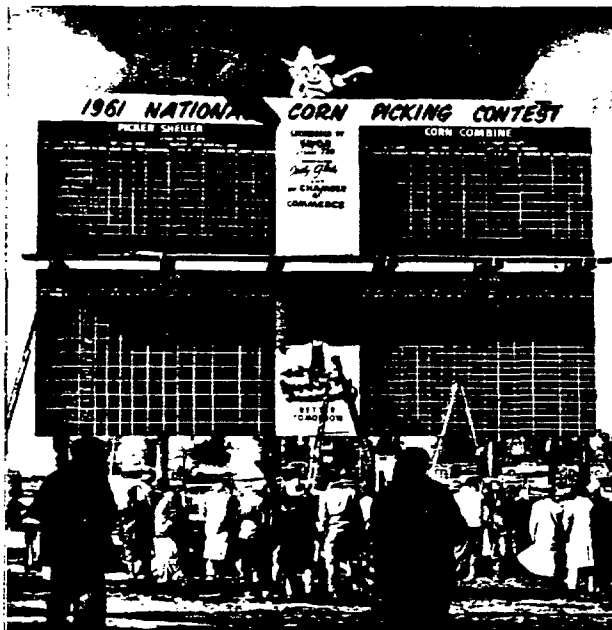
The sharp contrast between the meager tools and equipment of yesteryear and the huge modern refinery towers and storage tanks that loom over the hill from the museum is a constant reminder to employees of the tremendous progress that a company and an industry have scored in a relatively few decades. It also demonstrates once again how the past made possible the present and how it points the way to the future. #



Moved from its original site near Newhall in Los Angeles County, California's first refinery has been restored and rebuilt near the museum.



Active and retired Standard Oil Company of California employees gathered in front of the museum when it was presented to them by T. S. Petersen, then company president, last June. The 36-by-140-foot redwood and glass building is on the grounds of the Richmond refinery's Rod and Gun Club on the shore of San Pablo Bay.



The towering scoreboard was eagerly watched for contest results . . . Below, national winners Cleo Hurt, Missouri (two-row picker); Warren Friessen, South Dakota (one-row picker); Bernard Hay, Iowa (combine); and Donald Ridge, Minnesota (picker-sheller).



Besides fueling equipment directly, Champlin salesmen filled fuel cans for contestants.

The Pick of the Crop

Once again Champlin supplies fuels and
lubricants as men and machines compete
in the National Corn Picking contest

Marshals' mounts were the only horses in evidence as modern
petroleum-powered equipment lined up for two-row picking.



THE "Turkey Capital of the World" was also the corn capital for two brisk days early this fall. Worthington, in the heart of southwestern Minnesota's broad rich farmland, was host to State and National Corn Picking contests.

In the sprawling fields of Robert Crosby's Evergreen Farm on the edge of town, row after thick row of tall dry corn nodded in the mid-October breezes, beckoning contestants to harvest the big golden ears. The invitation was eagerly accepted. Brightly painted tractors, one- and two-row pickers, picker-shellers and combines surged forward, splashing blobs of green, red, yellow and orange in the drab fields.

Exclusive supplier of fuels and lubricants for contestants' equipment and for display and transport vehicles at the National Corn Picking Contest was Champlin Oil & Refining Company. This was the fifth consecutive year that Champlin, "A Great Name in the Great Plains," had been selected to provide petroleum products for the competition.

Champlin maintained and

The Pick of the Crop

operated a centrally-located, fully-staffed service center. Throughout the two-day contest, neatly uniformed salesmen dispensed fuel directly from striking red, white and blue Champlin tank trucks into corn picking machinery as contestants drove up to the center. The tank trucks also served as mobile service stations, moving into the fields for on-location fueling and lubrication.

For the winners in each of the national contest's four categories, there were rewarding cash prizes, glistening gold trophies and the distinction of excelling in safe and efficient corn picking. For the tens of thousands of spectators who jammed the grounds, the elaborate exhibits of farm machinery and the field competitions were convincing demonstrations of how skilled men and modern petroleum powered equipment contribute to the productivity of American agriculture. #

Something for the girls—and boys too — were balloons telling of Champlin's petroleum supply role.



After men and machines had done their work, judges moved into fields to check for overlooked ears and kernels.

Into the service center the corn-picking equipment came to fill up with fuel for the exacting field competitions.





Before the start of events, all equipment was carefully checked for safety.



Wagon loads of corn were towed directly from contest fields to weigh scales.



R. Sargent Shriver, Peace Corps director, told Corn Picking contest audience that American agricultural know-how is needed abroad.

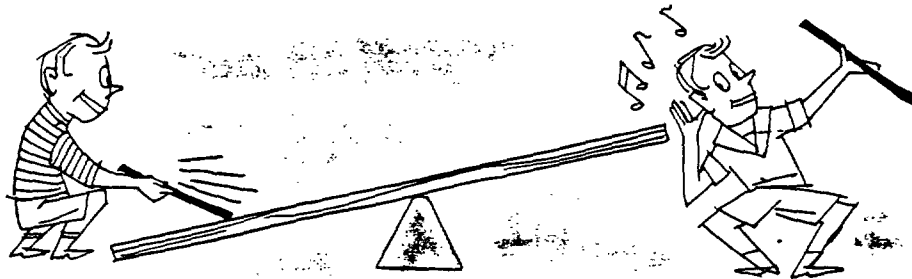
Golden kernels of corn, picked and shelled safely and efficiently, was contest's objective.

No sooner was fuel in equipment tanks than signs confirming the fact were attached.



It pays to be on the lookout for unexpected opportunities that may present themselves, since, as these anecdotes dramatically demonstrate . . .

SERENDIPITY



WHEN, IN 1816, a French doctor saw boys at play signal each other by tapping the end of a plank, he had an idea. Why not use the same system to "hear" inside a patient? The twelve-inch wooden tube which he devised, flanged at the ends, was the first stethoscope.

Fifty years later, financier Jay Gould, dining at a fashionable hotel in Saratoga Springs, N. Y., sent his fried potatoes back to the kitchen three times because they weren't thin enough. Furious, the chef finally sliced the spuds with a razor before frying them for the hard-to-please gourmet. "Saratoga" potato chips made such a hit they have been a crunchy standby ever since.

A hairpin, twisted by a preoccupied man, stayed in place better than straight ones, his wife reported. He invented the bobbie pin and made a fortune.

On a hot day in 1904 at the St. Louis World's Fair, the demand for ice cream was so heavy a vendor ran out of plates. The sugar waffle man at the next booth rolled him some thin waffles as holders. Ice cream cones turned out to be just what the crowd wanted.

An uncommon word describes these events—*serendipity*. Unfamiliar to many people, serendipity is "the faculty of happening upon or making fortunate discoveries when not in search of them."

Serendip, the word's root, is the name of a place in Ceylon. After Horace Walpole wrote "The Three Princes of Serendip" two centuries ago, the word was coined to describe the heroes' talents for wander-



SERENDIPITY does it!

By Duane Valentry

ing on the unexpected. In modern times, serendipity has played a stellar role in everything from baby food to textiles, medicine, chemistry and atomic energy.

Daniel Gerber had no idea what he was starting when his wife suggested he process vegetables for the baby with machinery used to puree tomatoes. This homey serendipity led to easier feeding of all infants and a business that last year had sales of nearly \$100 million. In 1947, a food research chemist was working with concentrated solutions

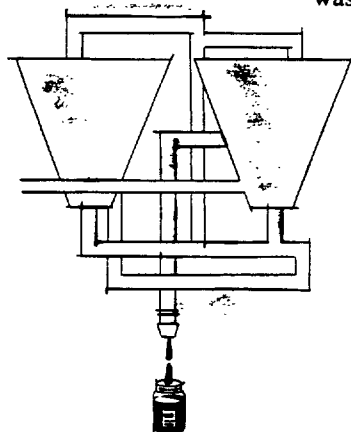
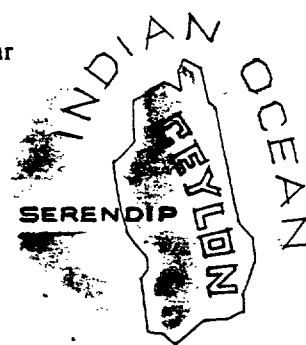
of beta-aminopropionates (amino acids), looking for an improved emulsifier

for shortening. When a beaker fell to the floor and he attempted to wipe it up, it annoyed him by continuing to foam. The more water he added, the more foam he created. Serendipity had presented him with an emulsifier that would enter family washtubs, shampoos, cleaners and cosmetics.

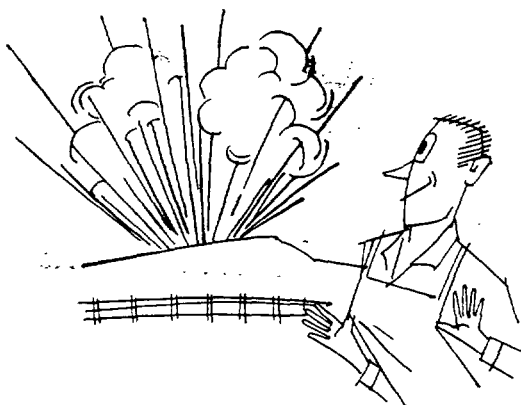
Developed from soybean and coconut oil bases, the product is now called Deriphat and is used in fuel oils to prevent sedimentation and oxidation; on oil wells and drilling equipment to check corrosion; and as a flotation reagent in the recovery of rare ores.

There's no telling where or what serendipity will turn up. Chemist Ira Remsen, doing routine investigations of toluene derivatives, forgot to wash his hands before lunch one day and wondered at the strangely sweet taste of his sandwich. Rushing back to his laboratory, he found that the organo-sulfur compound he had unwittingly prepared and which was on his hands was saccharine, a white crystalline powder 350 times sweeter than sugar. It has since become, of course, a medical and dietary boon.

Dynamite is a product of serendipity too. Before it "happened" on the scene, the most commonly used explosive was nitroglycerin, but that detonated too easily. Because of this problem, manufacturers packed it in sand.



SERENDIPITY DOES IT!



In 1866, when Alfred Nobel was about to experiment with a bottle of the explosive in his workshop, it cracked and the contents oozed into the sand. From this chance incident he found the sand-nitroglycerin mixture exploded well. With dirt or clay, results were even better. Tests proved that the new product was more stable and far less dangerously sensitive.

William Henry Perkins, young Scottish chemist, sought a way to make synthetic quinine out of coal-tar derivatives. All he got was a black and sticky mess in his test tubes. Using alcohol to clean them one day in 1856, he found a purple color in one.

Perkins had stumbled on the first important artificial dye in history. Widely used in fashionable dress and decor, it gave a name to the "Mauve Decade," and he was knighted by Queen Victoria.

The chemist never dreamed his discovery was only a beginning. The accidentally-discovered dye was of immeasurable value to Louis Pasteur, who stained bacteria with it to prove his germ theory—one of the great milestones in the history of mankind.

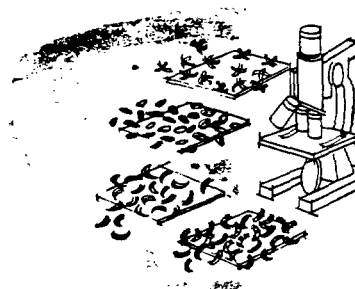
Nylon, the product with so many uses, was the unexpected bonus of a basic research program set up some 25 years ago to explore polymerization. The synthetic fiber was born after chemists happened on a

new polymer which could be drawn out into a strong

thread. In addition to nylon's own usefulness, it has been a springboard for several other synthetic fabrics.

Durable enamels and paints, like those for automobiles, also are the result of serendipity.

A steel drum containing a nitro-cellulose base formulation, intended for experiments on film, was accidentally left in the sun for three days. When opened, the contents had become a thin syrup instead of the anticipated jelly. It was just what chemists had been working for years to find. The new lacquer not only gave film greater thickness with fewer coats, but it had still greater usefulness in creating better paints.

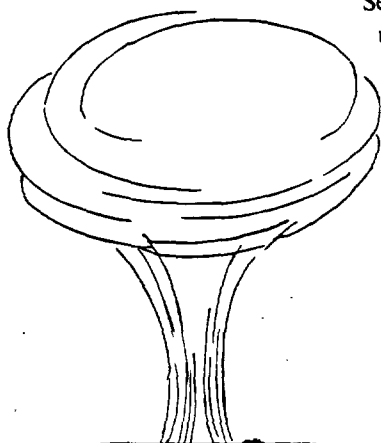


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Skin tanning lotions, introduced commercially in 1959, also were born more or less accidentally. Clear and colorless, their effect depends upon dihydroxyacetone, or DHA, long a familiar agent in preserving wool, making pharmaceuticals and treating leather.

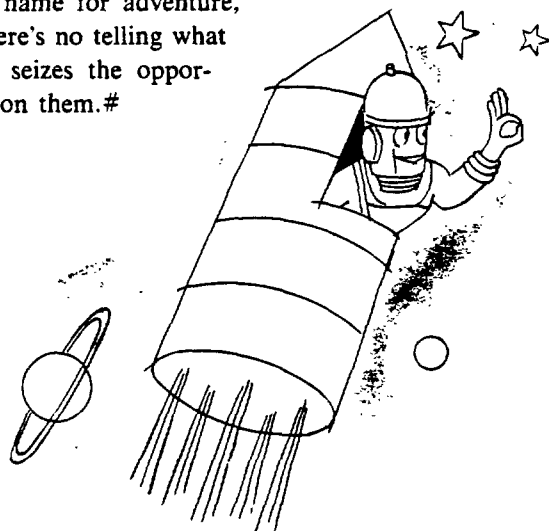
As useful as it was, the chemical annoyingly turned laboratory workers' fingers brown. Then drug manufacturers realized its skin-staining ability was an asset, not a liability. Today tanning lotion sales are in the multi-million-dollar range annually.



Serendipity has even contributed to the nation's security and scientific progress. Experiments with uranium for electric lamp filaments, conducted by Westinghouse shortly after World War I, contributed significantly later on to atomic bomb development and to the peacetime applications of nuclear power.

Looking to the future, "Serendipity can be expected to enter the conquest of space," says Dr. Lee A. DuBridge, president of California Institute of Technology. "Columbus did not know what he would encounter. He set out to find a western route to India, but America got in the way. So it will be in space. We will start out on one mission and find something else."

Serendipity, another name for adventure, may be just around the corner. There's no telling what new rewards it will bring if man seizes the opportunities it provides and capitalizes on them. #



By Theodore J. Carron
Manager of Employee Relations
Ethyl Corporation Research Laboratories
Detroit, Michigan

TEACHING TECHNICAL MEN how to write, read, listen and speak more effectively is paying substantial dividends at the Ethyl Corporation Research Laboratories in Detroit. At the same time, better leadership qualities are being developed among personnel in managerial positions.

These abilities are so basic that most of the Laboratories' training program is built around them. Integrated and coordinated to a large extent, the program includes four specific training courses: (1) Clear Writing, (2) Reading Development, (3) Group Personal Relations, and (4) Leadership Development.

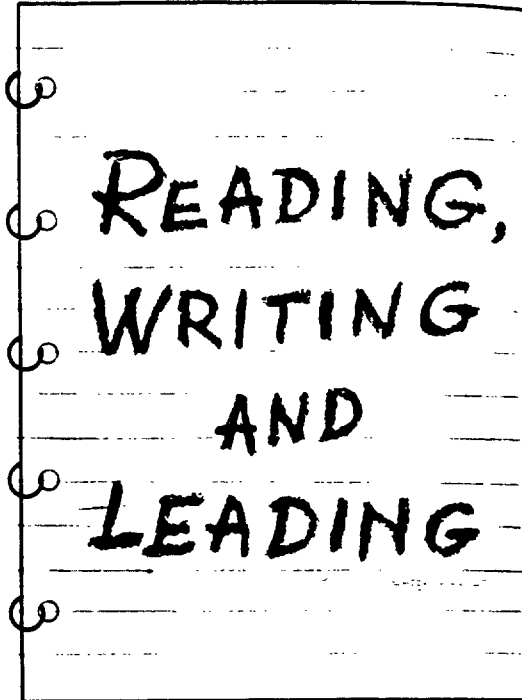
The common purpose of all these courses is to help laboratory chemists, engineers and others add to their professional statures.

The Clear Writing course, as its name implies, teaches technical men how to express themselves more clearly and concisely. Skills they acquire are particularly useful in making reports about their work increasingly useful. Robert Gunning, a professional readability consultant and advisor to leading publications, has been in charge.

Simple Sentences Preferred

In a recent series of six 1½-hour seminars, 232 of our men were taught to write simple, direct sentences rather than random, involved ones; to avoid unnecessary words and clumsy phrases which discourage or derail readers; and to use active verbs for greater effectiveness. Most important of all, they were shown how to write the way people talk—briefly and with vigor, putting major points first.

Homework and individual counseling helped "students" measure their progress. Before taking the course, much of the chemists' and en-



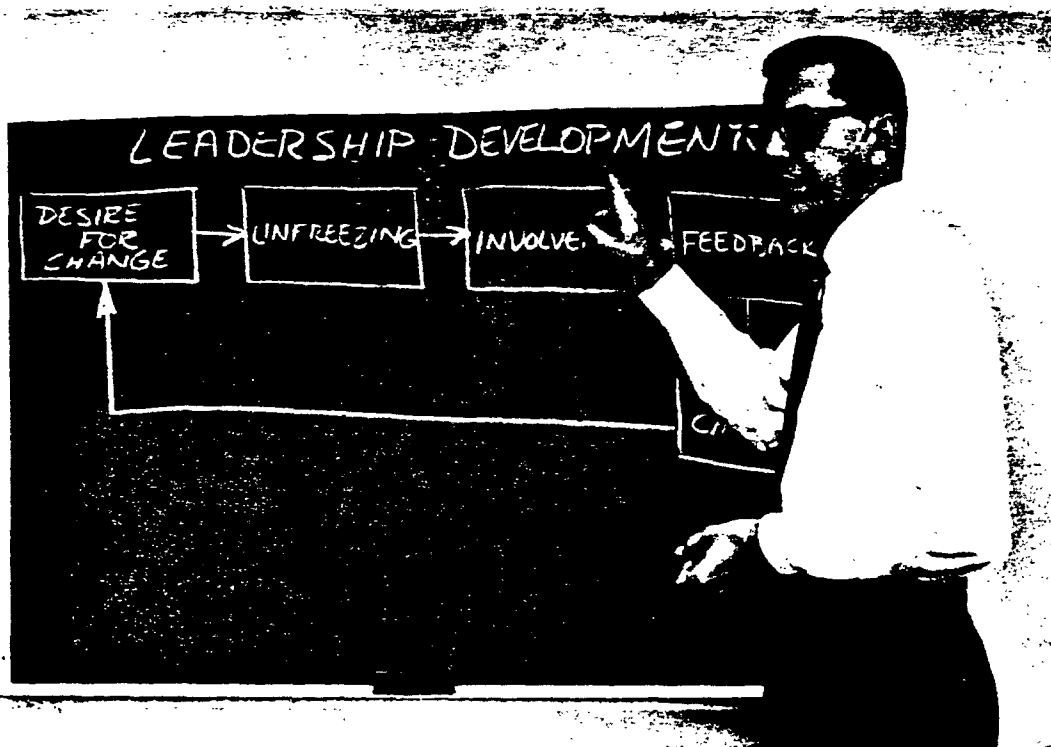
READING,
WRITING
AND
LEADING

Self-improvement training program

gineers' writing was difficult even for college-level readers to understand—as measured by Mr. Gunning's "Fog Index" of complexity. Afterward, and with practice, the same men were able to simplify and improve their writing so that its meaning was clear to high school students. (See "Taking the Fog Out of Writing," ETHYL NEWS, July-August 1960).

Advantages to be gained by providing laboratory personnel with better reading ability prompted the introduction of Reading Development, an eight-week training course with emphasis on speed and comprehension.

Conducted by a Ph.D. psychologist, the course was organized into groups of 12 participants who met twice weekly for 1½-hour sessions. After preliminaries covering general orientation, testing and individual counseling, training concentrated on creating new patterns of eye movement, particularly to widen perception and to reduce the number of stops per line of reading material. In addition, efforts



Learning about behavior is a basic part of the course on leadership for supervisors.

ram Ethyl Research Laboratories extends abilities of professional men

were made to improve vocabulary, eliminate lip movement and cut down the practice of going back for second or third looks.

Testing was continued at frequent intervals, with each man keeping his own chart of accomplishment. Here is what happened to 114 participants who took the course:

Prior to training, their mean reading speed was 293 words per minute. After shooting up to almost three times that rate immediately

afterward, it tapered off within 16 to 20 months to a final tempo of 652 wpm.

Average comprehension before training was 75 percent, as measured by a multiple-choice test. It rose to 77 percent immediately afterward. Sixteen to 20 months later, tests showed a further growth in comprehension to 82 percent.

In other words, it was found that the common fear of inaccurate understanding from rapid

Technical men tackle their individual and group problems at informal shirtsleeve sessions.



READING, WRITING AND LEADING



In Personal Relations training, participants gain poise, more self-assurance and verbal dexterity as they practice public speaking.

reading is baseless. Laboratory men not only read more quickly today, but they grasp and retain much more subject matter. As measured by a reading efficiency index, participants usually double their reading proficiency after taking the course.

Another problem to which special attention has been paid is the public speaking ability of technical men. They need poise, self-assurance and verbal dexterity at conferences and review sessions, and on other occasions when they must stand up and explain facets of their work.

Ethyl's Personal Relations course has speaking proficiency as its fulcrum. Instruction and attention to individual needs follows somewhat the same pattern as the familiar Dale Carnegie training. Our approach, however, is a bit more streamlined and is tailored to fit the personalities, speaking requirements and working associations of participants.

Conducted by a professor of communications with extensive experience, the course is tailored for groups of 15 participants over a 10-week period. During two-hour sessions, all those taking part are called upon to make frequent, short talks on a variety of subjects with which they are familiar. A policy of never criticizing anyone in front of his colleagues helps encourage participants.

Although there are no quantitative measures for evaluating the impact of the Personal Relations course, laboratory management is convinced that there has been marked improvement in presentations by most personnel who have taken it. Furthermore, increasing numbers of favorable comments

have been received about the quality of presentations by Ethyl chemists and engineers at technical society meetings.

Our fourth program, the Leadership Development course, is the most penetrating. While fewer people are eligible for it, no other training does so much to promote better working associations and a more harmonious environment for employees.

Leadership Development helps men in managerial positions improve their sensitivity and insight into behavior patterns—the motivations, sentiments, beliefs, attitudes and feelings of people. Then they learn about communications, counseling relationships, performance analyses and employment interviews. Still later they take up the leadership of groups and explore the skills involved in cooperative enterprise.

Realistic understanding and practical application is continued throughout the course's 40 weeks of two-hour meetings. Sessions are spread over about a year, because it takes that long before results can be meaningful.

Problems Solved Collectively

A group-centered approach is the basis of the Laboratories' Leadership Development efforts. New ways to deal with problems in human relations are tried, especially methods involving the use of collective solutions.

Neutral observers and subordinates working with supervisors who have completed the course help in evaluating results. Only volunteers subject themselves to employee ratings: participants with a sincere interest in managerial self-development. At the same time, employees submitting opinions are assured of anonymity, so that they will express themselves fully and frankly.

Here are typical employee comments:

"(My supervisor) is more patient in listening to my problems . . . apparently more interested in me as a human being . . . Now he is more considerate of others. Does a better job of keeping the group informed . . . I think that his new attitude has made things pleasanter for the men under him."

One valuable byproduct of any worthwhile training program is what it teaches those concerned with creating and implementing it. The extent and degree of response by Ethyl technical men to courses offered at the Laboratories indicates a continuing interest in self-improvement. #

ETHYL IN THE NEWS

In New Sales Position

James H. Main, eastern sales division manager for Ethyl Corporation of Canada Limited, has been appointed to the newly created position of assistant sales manager for the Company, effective December 1.

While continuing his divisional responsibilities, Mr. Main will report to H. J. Philp, sales vice president, at Ethyl's executive offices in Toronto. The new assistant manager is contributing to the administration and supervision of sales activities throughout Canada.

Mr. Main has been associated with antiknock compound marketing and customer services for the past 12 years, after beginning his career with the Company at Winnipeg in 1949. He was a senior sales representative in Montreal before his 1959 promotion to sales division manager.



James H. Main

A Gift for the Governor

A framed picture from Ethyl Corporation's Minnesota Magic Circle advertisement is presented to Elmer L. Andersen (center), the state's governor, by Harold R. Berg (left), Ethyl field representative, and Arthur W. Winter, vice president of Great Northern Oil Company.

The picture shows the Hull-Rust-Mahoning iron mine at Hibbing, while a map in the ad points out some of the many other worthwhile sights there are to see in the Gopher state.



By Stanton P. Nickerson

New methods of skywriting enhance the widespread popularity of air

LOTS OF SPECTATORS at football games this fall missed some of the season's most exciting plays. Their attention was diverted by airplanes writing in billowy white smoke across the sky.

Such distraction is understandable. Sports enthusiasts, like practically everyone else, can't resist watching skywriters—whether they are spelling out the name of an automobile, a brand of gasoline, a soft drink, or a political candidate.

Public fascination with airborne advertisements sells skywriting to a host of clients—among them Humble Oil & Refining, Sun Oil, Pepsi-Cola, Chrysler, Oldsmobile, Buick, Chevrolet and Union Carbide (Prestone).

Pilot-penmen inscribe their messages over densely populated areas at altitudes of 10,000 to 15,000 feet. On good days—clear, cloudless and with relatively stable upper air currents—the mile-wide letters can be seen for 15 miles or more, assuring high readership. Assignments are considered successful when commercials or slogans stay in place 10 to 20 minutes with only minor fuzzing or drifting.

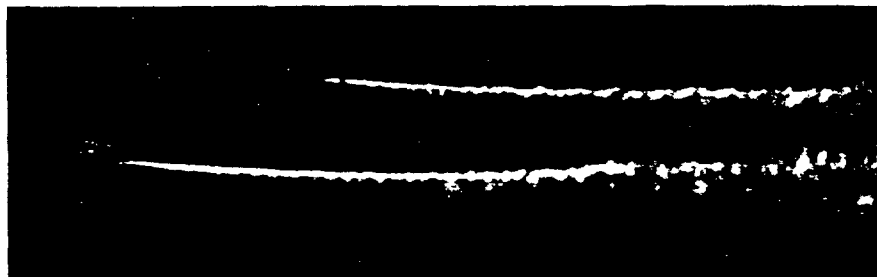
Petroleum, essential for so many uses, plays a key role in skywriting. The "ink" for billboards in the blue is usually a special blend of light oil, paraffin and carbon tetrachloride. Piped under pressure from a storage tank behind the cockpit, the mixture is fed into a plane's hot exhaust line to emerge as a white stream.

Skilled Pilots Needed

Spreading a commercial across a dozen or more miles of sky requires all the skill and experience veteran skywriting pilots can muster. Writing must be done at 150 miles an hour and in reverse to the pilot, so that it will read correctly to earthbound audiences. This puts the pilot in much the same position as the sign painter lettering on the inside of a window for exterior reading.

Nowadays, the script style of skywriting that once was popular has been replaced by printed capital letters. This method calls for two or more planes working as a team. While one is spurring smoke for the straight side of a "B", for example, another can inscribe the letter's lobes.

y of airborne advertising



A more recent innovation is skytyping—a system for overcoming the whimsies of the weather by getting the message out faster. Efficient and economical, the technique involves five planes which fly parallel courses in tight formation and puff out staccato smoke bursts electronically.

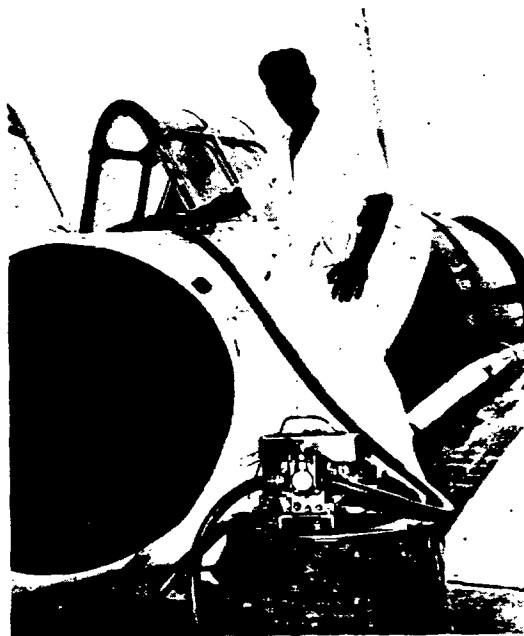
A central control pilot operates a radio transmitter which sends impulses to receivers in the other planes. These signals trigger smoke valves on each aircraft, opening and closing them precisely.

Skytyping took eight years and a half-million dollars to develop and is the patented invention of Major S. Sidney Pike, president of Sky-Writing Corporation of America.

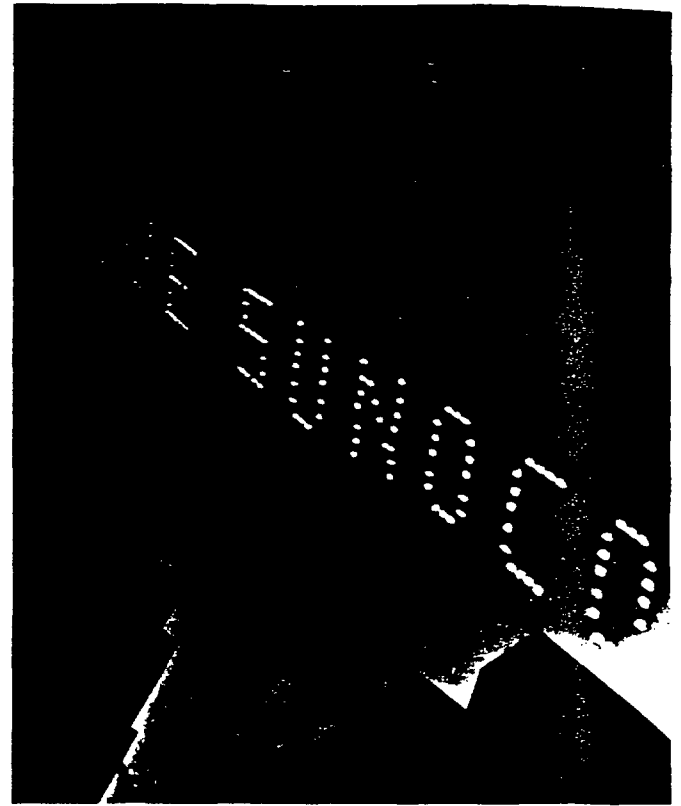
A squadron of skytypists can punch out a 10-letter word in about a minute and a half, compared with 15 minutes for a single plane. And it can hang 100 commercials at the rate of about \$5 a letter, compared with an average rate of \$15 a letter when one or two planes are used in the conventional manner.

Skywriting burst upon the blue for the first

Billowy white "ink" for most skywriting is a patented blend of light oil, paraffin and carbon tetrachloride, which spurts from planes through special exhaust lines . . . Below, the mixture is pumped into a supply tank before taking off. It takes a gallon to write one letter.



BILLBOARDS IN THE BLUE



Spectacular maneuvers by a single flier, left, are giving way to faster and more efficient skytyping, with a squadron of planes puffing letters electronically.

time in this country during the 1922 baseball season in New York. Spectators were invited in feathery white letters to telephone the hotel headquarters of the then infant Sky-Writing Corporation.

The response was instantaneous and overwhelming. The hotel's switchboard was swamped for five hours and it quickly became evident that there was indeed "a gold mine in the sky." Within a few months, the new company had \$1 million worth of diversified contracts, followed by a whopping \$2 million commitment by American Tobacco to emblazon "Lucky Strike" across the country's skies.

Pepsi-Cola, the biggest investor in sky signs just before World War II, once gave instructions to advertise the beverage "wherever and whenever the weather was right." Some 18,000 aerial commercials over 5,000 cities and towns resulted.

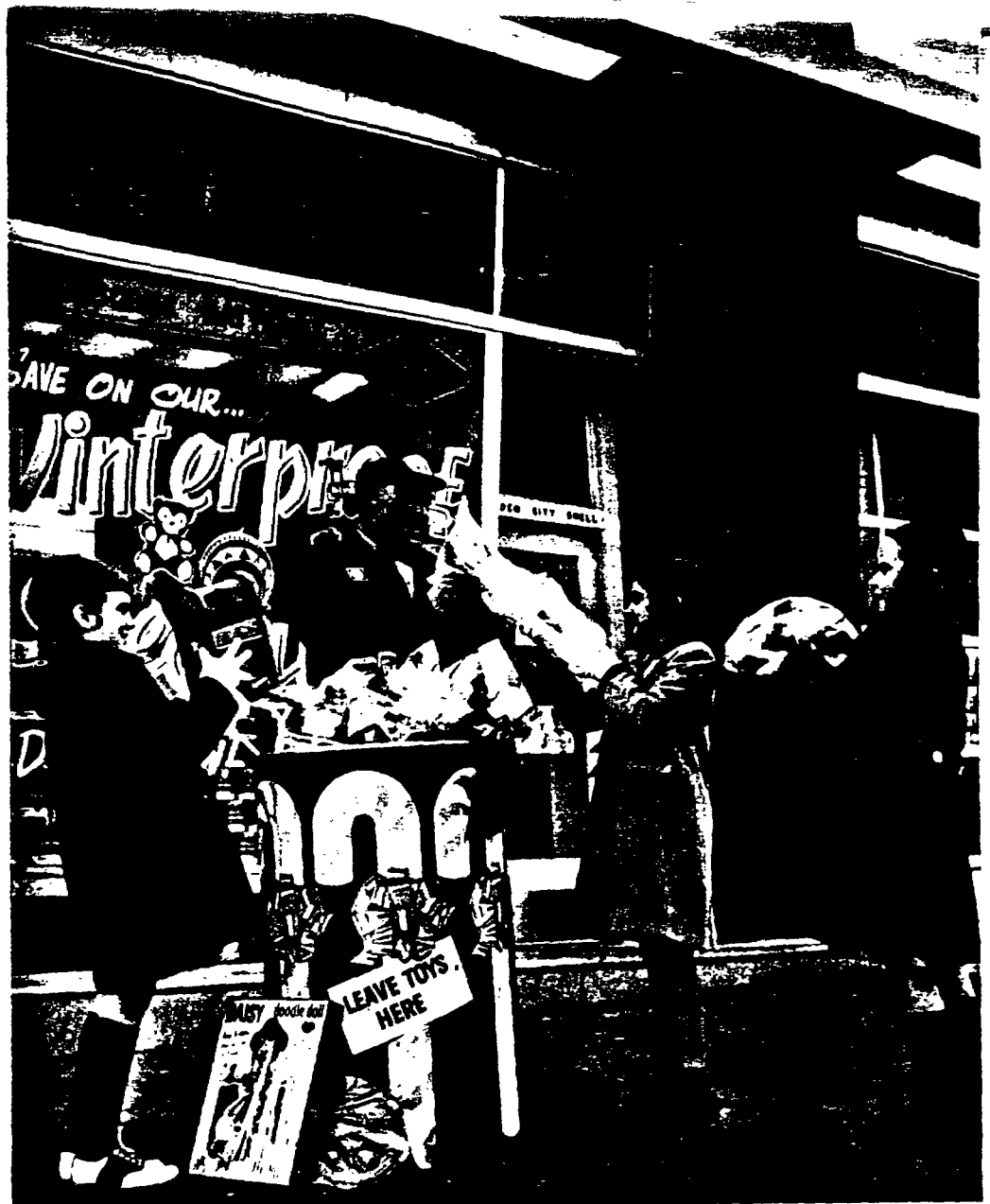
Skywriters take on a variety of novel assignments between major bookings. They write in French over parts of Canada, in Spanish over Latin America and even paint Oriental symbols over San Francisco

and New York Chinatowns. In 1940, a Wendell Wilkie backer paid to have an anti-Roosevelt "No third term" slogan spread across the New York sky. When Russia's atheistic Khrushchev came to Manhattan, a huge white cross was drawn overhead.

Despite technological advances in skywriting, weather continues to limit advertising aloft. Aerial posters can be hung to best advantage between May and October, which is fortunate since that's when more people are outdoors. Still, there is an average of only about 10 suitable days a month, and in the changeable weather of the northeast, only about 25 good days in a season can be expected.

On at least one occasion, though, a skywriting pilot was thankful for bad weather—it bailed him out of a tough assignment. Instructed to write the name of the winner of a Boston walkathon in the sky, the advertising airman shuddered when a contestant named Michelavinski strutted across the finish line first. Luckily, ominous clouds piled up and the job was cancelled.#

HELPING SANTA'S HELPERS



Not all of Santa Claus' helpers wear bright red and white costumes. Some wear the snappy brown uniforms of Shell Oil Company service station dealers. These dealers help Santa for a month before Christmas by having their stations serve as collecting points for toys for needy children as part of the Marine Corps Reserve "Toys for Tots" program.

Pat Longarelli, at Garden City Shell Service, Garden City, New York, is one of Santa's many brown-uniformed Shell dealer-helpers. His enthusiasm for the program is seen in this picture where he is happily receiving toys and games from Denise Giannasio, Eleanor Monaco and Karen Rusher, three members of Brownie Troop 400, Garden City, who collected gifts as a troop project.

"What are those
men's faces doing
up there, Daddy?"

Look into the sky and you'll see them. George Washington. Thomas Jefferson. Theodore Roosevelt. Abraham Lincoln. Giant faces growing from the granite of Mount Rushmore. Giant men gazing, still, on the land they guided to greatness.

All the portraits you've seen and all the words you've read suddenly seem inadequate. Honest tribute is here in the Black Hills of South Dakota. And you will be part of it the day you drive up with your children.

The fortitude of our first president will be more than a descriptive noun. It will live in every furrow of his face. The vision of Jefferson. The vigor of Roosevelt. The faith of Lincoln. All these phrases will find new meaning. And reality. And bigness. A bigness more memorable, even than the monument carved from a mountain.

This is the gift you can give your children: a personal involvement in their country's past, the discovery that learning can be an adventure.

And it's so easy. Within a pleasant drive from your home are museums, historic sites, restorations that can make history come to life for your children.

Ethyl calls this fascinating world that surrounds you a Magic Circle. Why not start exploring your Magic Circle this week end? Your service station dealer will be glad to help.



ETHYL CORPORATION,
New York 17, New York
Ethyl Corp. of Canada Ltd., Toronto.

Magic Circle advertisements are published by Ethyl to help you get more enjoyment out of your car. Ethyl Corporation makes additives used by oil companies everywhere to improve their gasolines and your driving pleasure.

