

## ENGINEERING

# From Now On: Fuels

**Dwindling petroleum resources necessitate development of synthetic fuels. Hydrogen from water may provide the raw material for a truly synthetic liquid fuel.**

By WATSON DAVIS

*Seventeenth in a series of glances forward in science.*

► MODERN life with its automobiles, oil heat, Diesel engines and airplanes is so tied to petroleum that it is little wonder that there is a scare now and then that the earth will not be able to give forth the increasing flow of needed oil.

Actually there is little danger that the world's oil wells will not stand the strain for the next few decades, although oil from shale, synthetic petroleum from coal and even motor fuel from farm crops may come in gradually in locations where the natural oil is remote, scarce, or more costly.

The proved petroleum reserves are now larger than they were a few years ago. Proved and measured by drilling there are over 28 billion barrels of petroleum and natural gas liquids. You can not measure how long these will last by dividing this figure by the approximately two billion barrels produced annually.

For there is an excellent chance that geologists and drillers will continue to bring in new fields in unproved areas just as they have in western Texas and beneath the waters of the Gulf of Mexico in the past few years.

Even if there were no more discoveries it would take far more than 15 years to use the known reserves. The rocks underground can not be forced to accelerate their petroleum yields. There would be a gradual decline, not a sudden oil famine.

Great chemical industries are being based on the future flow of oil, such petroleum is a versatile raw material. Natural gas is more plentiful than previously imagined and it, too, can be changed into many products, including liquid fuels.

As a hedge for our future, whether it be jet-propelled or internally combusted, there is always oil shale and coal. As the Germans were forced to demonstrate by their oil shortages and as government research is confirming and improving, there is oil to be extracted from the shale rocks and synthesized from coal. In Colorado alone there are known deposits of oil shale capable of yielding 300 billion barrels of oil, over ten times the proved oil reserves.

There is almost fabulous fuel for our future, with costs, time and capital investments providing the main question marks.

For years to come, we may expect:

A. Increasing costs, longer hauls, deeper drilling and greater chemical appreciation of our natural petroleum and natural gas,

with overseas lush fields giving us a larger share of their production.

B. The beginnings of practical production of liquid fuels from oil shale, even in competition with oil from the ground.

C. The possibility that if solar energy can be captured on a large scale by "synthetic" photo-synthesis, hydrogen from water can be produced sufficiently cheaply to provide the raw material for truly synthetic liquid fuel and a whole array of chemicals.

Science News Letter, July 22, 1950

## ENGINEERING

## Bad TV Installations Are Fire-Lighting Hazards

► TELEVISION installations, unless precautions are taken, may be both a fire and a lightning hazard, the National Board of Fire Underwriters warns in a bulletin just issued. Installation suggestions are included.

High television antennas increase the possibility of damage by lightning and high winds, the bulletin states. It recommends use of approved lightning arresters. If the antenna is mounted on a metal pole or tower, pole or tower should be grounded.

Television receivers consume more current than ordinary radios, a higher voltage is used and the instruments have a greater number of heat-producing parts. They are therefore a greater fire hazard. Proper ventilation makes the danger minor. Particular care should be taken by users to see that the natural ventilation built into the receiver is not obstructed or reduced by location or blanketing.

Science News Letter, July 22, 1950

## INVENTION

## Carrier Safely Handles Radioactive Materials

► RADIOACTIVE materials will present no danger to handlers and others while enroute from U.S. Atomic Energy laboratories to research institutions if shipped in a carrier which was awarded a patent by the government.

Such carriers must be made of lead or other suitable shielding material. In this carrier the lead is encased in steel to give added strength. Its particular feature is the design which permits holding a number of radioactive slugs.

The inner part is a cylinder that can be revolved. In the cylinder are bores to hold the slugs. Each bore can be rotated under

a single opening. This assures ease and safety in loading and unloading.

Patent 2,514,909 was awarded to Gerald Strickland, Medford, N.Y., for this carrier. Rights are assigned to the U.S. Atomic Energy Commission.

Science News Letter, July 22, 1950

## METEOROLOGY

## Thunderstorms No Menace to Planes

► THUNDERSTORMS can be passed through without undue difficulty using proper aircraft and flying techniques, the Institute of the Aeronautical Sciences was told in Los Angeles by L. C. Kappil of Wright-Patterson Air Force Base, Dayton, Ohio.

He reported on "Project Thunderstorm" which originated in 1945. Field work was carried out first in Florida, where sub-tropical thunderstorms are encountered. Later work was done in Ohio, where frontal and prefrontal storms are found. Hundreds of flights were made through storms.

Participating agencies were the U.S. Air Force, Navy, U.S. Weather Bureau and the National Advisory Committee for Aeronautics.

Science News Letter, July 22, 1950



**FORMULA FOR COOLNESS—**  
*Looking smug about his ideas of beating the heat, the electric eel comes to the surface of the water to take a gulp of air. Since it breathes atmospheric air, the electric eel must have access to the surface two or three times a minute; eels have been drowned when they were accidentally submerged for only ten minutes. They can, however, withstand periods of 72 hours out of water, so long as their mouths are kept moist.*