

## MEDICINE

# Atherosclerosis Theory

**Fat particles circulating in the blood may lead to hardening of the arteries. Lipase and a detergent, Tween 80, reduced the particle count in older persons.**

► **FRESH** evidence for the theory that fat particles circulating in the blood lead to a kind of hardening of the arteries, called atherosclerosis, appears in studies by Drs. G. H. Becker, Jacob Meyer and H. Nechels of Michael Reese Hospital, Chicago.

Two chemicals, a fat-splitting ferment called lipase and the detergent, Tween 80, seem potential drugs for preventing the condition or arresting its progress, although the scientists say "it is premature to speculate" on this.

A test meal of white toast spread with oleomargarine and a cup of tea was used in the studies, reported in the scientific journal, *SCIENCE* (Nov. 18). After this meal, the number of fat particles in the blood of younger people rose to a peak within two to three hours and returned to the fasting level by the end of the fifth hour. But in the older people the number of fat particles did not reach their peak until eight or 12 hours and did not return to fasting level until 24 hours had elapsed. Also the total number

of these fat particles was consistently and considerably higher in the older persons than the younger ones.

Feeding either lipase or Tween 80 with the fat meal reduced the number of fat particles in the older people's blood to practically that of the younger age group. But the count of fat particles in the young group following the fat meal was not much affected by giving lipase.

The effect of lipase or the detergent on the number of fat particles in the blood of the older people seems to support the idea that mechanisms of fat digestion or absorption, probably both, change with aging, the scientists point out.

"Since all people eat some fat at least once a day," they state, "increased numbers of fat particles circulate in the blood of older persons practically permanently. If it is true that particulate fat, circulating in the blood, leads to atherosclerosis, the condition leading to that degenerative disease has been found."

*Science News Letter, November 26, 1949*

## ENGINEERING

# Energy Wastes from Fuels

► **TWO-THIRDS** of the energy from the coal, oil and gas consumed in the United States is wasted in stack gases or exhaust gases or radiated to the air, four scientists of Socony-Vacuum Oil Company told the American Petroleum Institute in Chicago.

The remedy lies in better usage and they explained how this can be accomplished, particularly in the automotive and entire transportation field. The presentation was a joint paper by W. M. Holaday, R. E. Albright, T. L. Apjohn and L. R. Steffens, all of the Socony-Vacuum Laboratories, New York.

According to these authorities, energy is derived in this country principally from coal, petroleum and natural gas, with water power and wood supplying about 10%. Petroleum and natural gas together account for about 50%, coal supplying the largest portion for industrial power and heat.

Transportation requirements, amounting to 36% of the country's net energy needs, appear to be subject to the greatest reduction through improvements in utilization efficiency. Automotive equipment offers the most fertile field in this area, they stated. Present weighted overall efficiency under normal operating conditions is only six percent.

One manner of increasing automotive efficiency is by raising compression ratio in engines. An alternate to increasing compression ratio is the application of supercharging. One means for improving economy is the use of a smaller engine which would operate without supercharging most of the time but would use this power-boosting device when high power is required.

A more recent proposal is based on the use of a small continuously supercharged engine and recovery of the exhaust-gas energy in a gas turbine geared to the engine. In effect, this would give the higher efficiencies obtainable at high compression ratios, but without the higher octane-number associated with increase in compression ratio.

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## ENGINEERING

## Glass Fiber Is Key To Fire-Protection Suit

► **GLASS** fiber is the key to a protective suit that will enable a man to work in safety in a raging fire. It was developed at the Wright-Patterson Air Force Base, Day-

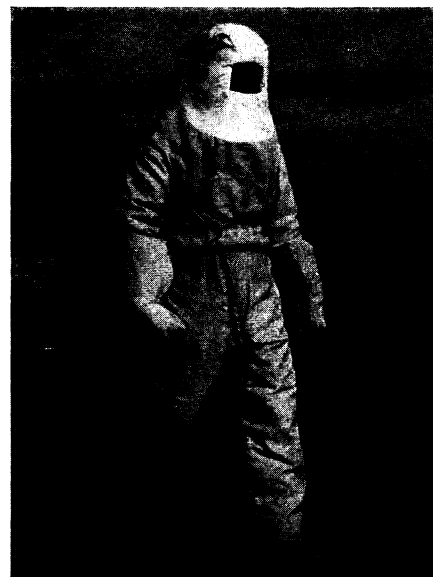
ton, Ohio, and is designed particularly to keep aircraft firemen safe when working in a fire of gasoline and oil.

The suit is made up of 18 layers of glass fiber, glass fiber batt, glass fiber net, neoprene-coated glass fiber, honeycombed cotton cloth, silver foil, aluminum foil and nylon, Air Force officials state. These materials are arranged so that they provide the best possible protection yet devised against both the conductive and radioactive heat experienced in aircraft fires.

In all, the suit is about one-half inch thick, and gives the lowest possible bulk and weight consistent with its insulating function. The material is able to withstand abrupt and extensive changes in temperatures without loss of physical characteristics. It is not injured by water, oil, common solvents, fuels, lubricants or fire-fighting agents.

The suit, complete with asbestos-soled shoes, head covering and mitten-type gauntlets, weighs 29 pounds. Under tests, a man wearing this protective suit remained a minute and a half in a wall of flame at 2400 degrees Fahrenheit without experiencing bodily discomforts.

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**FIREPROOF SUIT**—This gleaming white suit made of 18 layers of various glass fiber materials and aluminum foil arranged to provide the best possible protection against both conductive and radioactive heat is the first ever designed by the Air Force to permit actual entry into flames. It will be worn by four members of 20-man aircraft crash fire-fighting teams recently organized by the U. S. A. F.