

## CHEMISTRY

# Missiles Ready Soon

➤ **RELIABLE** long-range guided missiles powered by safe, easy-to-handle solid propellants will become part of America's defense system sooner than military leaders had expected, thanks to the transformation of one of the new "exotic" high-energy jet aircraft fuels into a solid form.

Other important breakthroughs are expected soon in the high-priority solid fuels program, a Defense Department guided missiles authority told *SCIENCE SERVICE*.

E. F. Sweetser, director of the tactical missile division, Office of the Director of Guided Missiles, said the new weapons will be available sooner for two reasons:

1. The entire program of solid fuels research and development has been put on a high priority basis since the launching of the first Russian artificial earth satellite; more money has been poured into the program and other major developments can be expected.

2. New solid fuels have been developed, existing solid fuels have been improved, and at least one of the new boron-based high-energy liquid jet fuels has been successfully prepared in solid form for use in solid rocket engines which means design and production of long-range missiles and

launching equipment can be simplified and speeded up.

Mr. Sweetser pointed out that military leaders have long wanted missiles offering the simplicity of design and the convenience and safety of handling and storage that is to be had with solid propellants. However, a major drawback has been that solid fuels have not been as powerful as liquids.

The picture is changed by the announcement from Callery Chemical Co., Pittsburgh, and Thiokol Chemical Corp., Trenton, N. J., that solid rocket engines are being developed to use a solidified type of HiCal, one of the exotic fuels recently developed.

Joseph W. Wiggins, assistant technical director of Thiokol's Redstone Division, Huntsville, Ala., told *SCIENCE SERVICE* that use of the new fuel will not involve any major design changes in present solid rocket engines, although some modifications will have to be made.

Admitting there is some applications development work to be done, Mr. Wiggins stressed that the new fuel-engine combination is definitely out of the research stage.

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## GENERAL SCIENCE

# Congress Learns Science

➤ **SEVEN CONGRESSMEN** are taking a postgraduate course in nuclear physics, metallurgy and chemistry and hoping their colleagues and the public join them.

The Research and Development Subcommittee of the Joint Committee on Atomic Energy has scheduled two full weeks of public hearings on basic research and its relationship to our atomic energy program which began on Feb. 3.

Invitations were sent out to 50 top-ranking scientists to come to Washington and serve as instructors for the two-week course. The scientists invited have been described as not administrators or bureaucrats, but specialists presently at work in laboratories.

The hearings are not designed to put the scientists on the spot as to why they are doing what. Rather, they are designed to present to both the Congress and the public a cram course in what is happening at the laboratory level in basic research.

Of particular interest will be the discussions on thermonuclear or H-power, the first ever held openly in Congress.

The subjects scheduled for the hearings read like the curriculum for several doctors' degrees at the nation's universities. They include, for example, the non-conservation of parity, the discovery of which last year earned two young Chinese-American physicists the Nobel Prize; nuclear properties of heavy elements; radiation chemistry; multi-bev accelerator experiments; the false neutrons, and cosmic ray research.

Before the committee got into the detailed subjects, however, there was a first day of lectures by three scientists representing metallurgy, nuclear physics and chemistry, who gave the broad perspectives of basic research currently underway in each of their respective fields.

The committee chairman Melvin Price (D-Ill.) announced the schedule of the hearings.

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## CHEMISTRY

## Plan to Use New Fuels To Produce Old Fuels

➤ **THE USE** of atomic-age sources of heat to produce traditional fuels was suggested to the Americal Institute of Chemical Engineers meeting in Chicago.

The use of nuclear reactors to supply the high temperatures needed to convert coal to gaseous and liquid fuels, was recommended by R. Carson Dalzell, chief of the branch of engineering development in the U.S. Atomic Energy Commission's Division of Reactor Development and James P. McGee, mechanical engineer in the U.S. Bureau of Mines' branch of coal gasification, Division of Solid Fuels Technology.

A drawback to commercial gasification of coal for use as fuel in other forms has been the cost of producing the necessary high temperatures. The Government engineers outlined a system that would call on nuclear

reactor heat to gasify low-grade coal at 1,800 to 2,000 degrees Fahrenheit and convert high grade coal at temperatures above 2,000 degrees. The resulting gas could be burned as fuel, or could be used to produce liquid fuels and chemicals.

The engineers pointed out experimental work by the Bureau of Mines has demonstrated the feasibility of gasifying finely powdered coal at high temperatures. They added the equipment called for in their system probably would be perfected in the course of atomic energy development.

The Bureau of Mines' Division of Solid Fuels Technology has been studying ways to convert plentiful coal into more valuable fuels to replace dwindling supplies.

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