

GENERAL SCIENCE

Space Race Held Up

National Research Council blames lag in basic materials research for snag in national security program. Council urges government support in search for new materials.

IMPORTANT national security programs are being held up by a lag in the development of new metals, ceramics and plastics, a committee of the National Academy of Sciences-National Research Council, Washington, D.C., has charged.

After a year's study of the materials research program pursued by Government, universities and industry, the committee filed its report. It listed the worst problems and proposed potential solutions.

Pointing a finger at inadequacies all along the line, the committee stated that nuclear propulsion systems, space vehicles, better missiles, rocket motors, naval vessels and electronic devices have all been designed and put down on paper. But construction can not proceed because available materials are not tough enough. They will not stand up under the severe pressures,

heats, colds, corrosion, stress and radiation exposure conditions.

Basic materials research is not being done by enough people; consequently, the necessary work is not being done fast enough. There is a considerable time lag in reporting new finds and an even bigger delay in getting a new material out of the experimental laboratory and into large-scale production and use, the committee declares.

In the armed forces alone, the Air Force has four major groups working on materials problems; the Army has six, and the Navy seven. There are other groups in Government, private industry and universities, but efforts are not fully coordinated. Research may overlap, communication is not always good and facilities are not used to full advantage.

Each separate group is plagued by ex-

pense. Pilot plants, or testing rooms which must be capable of taking a terrific beating, are so expensive that very few have been built. Some of the essential metals, such as tellurium, rhenium and tantalum, are difficult to get, and costly.

"There are no magic administrative or technical solutions to the materials problem," the committee noted. "What is needed is significant strengthening at every level of activity."

Even so, the committee has offered constructive recommendations for pulling security programs out of the doldrums.

1. The Government should give high priority to materials problems and to the training of capable scientists and engineers. Programs in the various agencies should be strengthened and national security aspect of materials research should be recognized as an "end-object" in its own right.

2. Government agencies should reorganize for greater centralization of responsibility and more emphasis should be placed on materials research.

3. The Government should lead the way in creating more interest in materials problems by modifying contract and patent policies for private companies. Testing facilities owned by Government, private industry and universities should be pooled and used to the best advantage.

4. Long range supply and demand for metals and materials should be reviewed once a year by the Office of Civil and Defense Mobilization. The Government should spearhead the search for new ore deposits and should sponsor research on better ways of getting the metals from the ore.

5. The Government should stockpile all needed materials.

6. All groups concerned should make certain that technical information is passed on to the others as fast as possible. It must be accurate, concise and new, rather than "just a rehash of old information."

7. The Government should support the universities with funds and facilities for training scientists and engineers and for doing more basic research.

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MEDICINE

"Telemeter" Records Animal Temperatures

A TEMPERATURE recording device that can be implanted in a laboratory animal has been developed and promises to give medical researchers more accurate information on fever, man's natural defense against germs and viruses. The device is about the size of a man's watch and can be left in the animal throughout its life. It needs no batteries and eliminates handling the animals to take readings. Described to the Biophysical Society in Philadelphia by John H. Busser of Franklin Institute Laboratories, the "temperature telemeter" works when the animal in which it is implanted is surrounded by a low frequency power field—equivalent to placing the animal inside a transformer. From this power field, the device gets energy to send back its findings to a receiver.

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ANIMATED BRAIN—A giant brain, constructed of 20 layers of sandwiched plastic, tests the effects of tranquilizing drugs. The brain was developed by Dr. Harold E. Himwich, of Galesburg State Research Hospital, Ill., and built by George Krajian (seen at left) of the American Museum of Natural History, New York, with a grant from Wallace Laboratories. Its lighting arrangements are controlled by an electronic computer.