

## GENERAL SCIENCE

## Expand NATO Science

➤ A GREATLY EXPANDED science research program in which all member countries of the North Atlantic Treaty Organization would cooperate has been urged by Sen. Henry M. Jackson (D-Wash.)

Sen. Jackson is chairman of the scientific and technical committee of the NATO Parliamentarian's Conference, which recently met in Paris. In submitting his report on progress during the past year, Sen. Jackson said a solid foundation had been laid but called for strengthening existing programs and initiating new ones.

He said the NATO science fellowship program should be doubled so it would operate on an annual budget of \$8,000,000. If a "Maxwell, a Fermi, an Einstein or a Bohr of the coming generation" is discovered through this program, then the investment will have more than paid off, Sen. Jackson told the Conference.

He also asked for establishment of joint research programs or centers in materials, in upper atmosphere and space, and in oceanography.

Viewed in terms of political geography, Sen. Jackson said, the NATO community is essentially a maritime confederation. Its survival depends upon the free transport of materials and peoples across the Atlantic basin.

The use of nuclear submarines and the threat of submarine-launched missiles has exposed the NATO nations to the threat of devastating attack from the sea. An effective defense system, Sen. Jackson reported, is contingent upon a thorough knowledge of the ocean environment in which submarines operate.

He pointed out that man's knowledge of the oceans making up three-fourths of the earth's surface is "meager and fragmentary," even though man has already taken his first step into space.

Even roughly accurate maps of the deep sea floor exist for only about two percent of the total ocean area, Sen. Jackson said. Very little is known about the properties of the ocean's waters and its bottoms, including the nature of the deep sea currents or the water's acoustic properties.

As the NATO Council launches programs of scientific cooperation, Sen. Jackson noted, the need increases for a basic NATO policy of scientific research and development. The committee therefore called for the formulation of an integrated and long-range policy for scientific research and development in the NATO area.

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## IMMUNOLOGY

## Develop TB Spray Vaccine

➤ A NEW FORM of tuberculosis vaccine may in the future be sprayed in entire rooms full of people and produce the same amount of immunity as thousands of times the amount of injected vaccine.

The vaccine, known as BCG and used extensively in its injectible form in Europe and Asia, has never been widely used in the U. S.

Three Colorado scientists, who did preliminary testing with guinea pigs, say the airborne vaccine is ready for investigation with human beings.

The scientists, Drs. G. Middlebrook, M. L. Cohn and C. L. Davis, conducted their experiments at the National Jewish Hospital and the University of Colorado School of Medicine, both in Denver. Their work is reported in *Science* (Nov. 21).

Dr. Middlebrook believes it would be possible to vaccinate a great number of persons simultaneously, such as a theater filled with patrons or a classroom of children.

The scientists found the airborne vaccine, when inhaled, is as effective as thousands of times the amount of the same inoculant injected under the skin.

BCG vaccine, named after the bacillus of Calmette and Guérin, was developed in France, and first used there in 1921. Since then, more than 75,000,000 persons throughout the world have been protected via the injection route.

Although the vaccine is considered 80%

effective, its use in the U. S. has been rather perfunctory. There are several reasons for this as reported last year to the U. S. Public Health Service by its Ad Hoc Advisory Committee on BCG:

1. BCG destroys the value of the tuberculin test by converting non-reactors into reactors to tuberculin.

2. Tuberculosis control in the U. S. has reached such a point of sophistication that for the most part BCG is not needed.

3. Wide use of BCG would divert funds and personnel from other tuberculosis control activities.

However, the committee suggested BCG vaccination programs would be useful in such groups as physicians, nurses, medical and nursing students, laboratory workers and hospital employees; persons unavoidably exposed to tuberculosis in their homes; and patients, inmates and employees in institutions, such as mental hospitals and prisons, where exposure is likely to be high.

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## ENGINEERING

## Tiny Tape Recorder Stores 3,000,000 Bits of Data

➤ A TINY tape recorder able to store 3,000,000 "bits" of scientific information as it travels through space has been developed.

The unit is small enough to be held in

one hand, weighs only eight pounds and measures nine inches long, five inches high and four and a half inches wide. This makes it two-thirds the size of existing recorders with the same capacity.

Developed at Lockheed Missile Systems, Palo Alto, Calif., it can record at unlimited altitudes and in any position or axis for a maximum uninterrupted period of 96 minutes. Unloading the accumulated information takes one-sixth the time it takes to record it. Immediately after the unloading, the recorder is ready to begin storing new information.

The device has survived simulated rocket launchings of 50 times the force of gravity, indicative of its ruggedness. This is comparable to putting it in a jet plane and crashing it into a concrete wall at 1,100 miles per hour.

Driven by synchronous motors, the recorder makes it possible for the first time for a missile or space vehicle to obtain data with an automatic and accurate time reference. The device can record and store data from space during the long interval when space craft are out of direct radio contact with the earth. It then transmits the data on a command signal when the vehicle returns to within the earth's radio range.

In a lunar probe, for example, the midjet recorder could store information collected on the far side of the moon while the rocket was out of radio range of the earth.

Fully transistorized, the device requires a low power input of only ten watts to operate its entire electronic system. Furthermore, it is designed so that the power is turned on only when the recorder is in actual operation.

Known as AMR-100 (Airborne Magnetic Recorder), it was developed by Mark Siera, researcher in Lockheed's telecommunications department.

Science News Letter, December 6, 1958



**TINY TAPE RECORDER**—Mark Siera easily holds lightweight magnetic tape recorder he developed. Complete recorder container is on the table.