

ASTRONAUTICS

Need Law for Outer Space

► A TWO-YEAR STUDY by the American Bar Foundation reveals there is too much integration of military and non-military uses of outer space. One problem is how to find a workable formula to separate the military from non-military uses of space, the Foundation reported.

The problem is complicated by world tensions reflected in the East-West power struggle and concern for national security. The inability of the United Nations Ad Hoc Committee on Peaceful Uses of Outer Space to define "peaceful uses" is an illustration of the problem, underscored in the 205-page legal analysis prepared under a grant by the National Aeronautics and Space Administration.

The report is a comprehensive outline of the broad range of space activities; the related problems of regulation and control that make it necessary to determine "how far is up" or the air limits of national sovereignty; and the liability involved if a rocket or parts of it launched by one nation fall on the territory of another. The rocket debris that recently landed in Cuba illustrates the difficulties.

The U-2 incident is an example of the problems involved in the question of "how far is up." The aerial reconnaissance of the U-2 has been challenged as a violation of national sovereignty, but there was no objection to the two satellites orbited about

the same time. The satellites were TIROS, a forerunner of a reconnaissance satellite with photographic capability, and an early MIDAS, a warning satellite designed to respond to the heat from missile launchings.

Do the differences in altitude and in vehicles make the activity politically and legally acceptable to states whose territories are observed? What are the boundaries of outer space? Do any, in fact, exist? These questions are basic to any international agreement or law on space. However, the position of any altitude line drawn varies with virtually every legal opinion.

Nevertheless, it appears possible to regulate or extend the present limits of international agreement on the use of radio wavelengths for communication purposes. This may be done, the report suggests, by merely amending and adjusting present laws and regulations.

The use of space for weather forecasting ultimately may involve the problem of weather control, in which all nations have a vital interest. With advances in space technology and increasing space traffic will come the need for safety standards.

Manned space travel will involve such problems as the repossession of space craft and the repatriation of space personnel who may land in a foreign country.

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GENERAL SCIENCE

NATO Endorses Institute

► THE CREATION of an international institute of science and technology in Western Europe, proposed by Rep. Victor L. Anfuso (D-N.Y.), was endorsed unanimously by the North Atlantic Treaty Organization's Parliamentary Conference recently concluded in Paris.

The necessary final approval by the NATO Council is a certainty, Rep. Anfuso said.

The institute will provide free training and research opportunities for students from the North Atlantic countries and the underdeveloped nations of the world for peaceful exploration of outer space, oceanography, meteorology, communications and other areas of scientific discipline.

"Its establishment is mandatory upon the free world," he said, "especially now that the Soviets are offering a free education plus living and travel expenses to students all over the world to attend their so-called Friendship University. This offer is profoundly appealing, particularly to the youth in the underdeveloped areas of the world, and is extremely effective in promoting the Communist way of life."

The international institute under NATO will promote Western ideals of liberty and democracy by offering training in an atmosphere of freedom.

"It also will help dispel the idea that

NATO is strictly a military alliance," he said, "and will promote world peace."

War may be eliminated "by the eventual creation of a world of abundance," he said. "This pooling of resources for peaceful purposes may help create such a world."

Rep. Anfuso, a member of the United States Congressional delegation to the NATO Conference, headed by Vice President-elect Lyndon B. Johnson, credited Sen. Henry Jackson (D-Wash.) with originally suggesting such an institute. Sen. Jackson is a former chairman of the NATO Science and Technology Committee.

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TECHNOLOGY

Produce Fresh Water By Freezing Salt Water

► FRESH WATER for the exploding population of the earth can be produced from salt water by freezing with ordinary "cooking" gas at a cost of only 19 cents per 1,000 gallons for the power and chemicals.

George Karnofsky of the Blaw-Knox Company, Pittsburgh, Pa., reported these figures at a symposium on saline water conversion at the American Institute of

Chemical Engineers meeting in Washington, D. C.

Butane is used as a refrigerant and as a melting agent in the process. A pilot plant for further studies is now being built. Preliminary studies indicate that a plant with a ten-million-gallon per day capacity can be built for \$20,000,000.

The salt water is frozen and melted with normal butane or isobutane in a closed cycle, providing direct contact between the butane and the water in both freezing and melting steps.

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TECHNOLOGY

Weather Maps Bounced Off Meteor Trails

► WEATHER MAPS have been successfully transmitted over distances up to 900 miles by bouncing radio signals off meteor trails, Dr. Philip Newman of the Air Force Cambridge Research Laboratories, Cambridge, Mass., reported.

Dr. Newman, speaking at the University of Maryland, said that radio communication by meteor trails is one possibility of overcoming disturbances in the ionosphere, affecting radio communications.

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TECHNOLOGY

Remote-Controlled Robot Has TV "Eyes," Soft Touch

See Front Cover

► THE LATEST IN ROBOTS, the Mobot Mark II, has double-jointed "shoulders," "elbows" and "wrists" as well as soft-padded "hands" to do its tasks in places too dangerous to man, such as radioactive areas.

The robot, seen on the cover of this week's SCIENCE NEWS LETTER, also has camera "eyes" to transmit pictures to a human operator at a remote control console.

Mobot Mark II, built by Hughes Aircraft Company, Culver City, Cal., was exhibited and demonstrated at the Atom Fair in San Francisco.

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Questions

AERONAUTICS—What type seats do most military planes have today? p. 421.

PHYSICS—Is californium believed ever to have existed on earth naturally? p. 423.

PUBLIC HEALTH—How many water-sampling stations does the Public Health Service have? p. 419.

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