

## GENERAL SCIENCE

# Chilean Renaissance

► A SCIENTIFIC and educational renaissance is underway in this land that extends from the tropics to the Antarctic. As "Yankee" in tone as any South American nation, Chile is applying to its time-honored colleges and schools new ideas both created in the country and imported from abroad.

The nucleus of this new infusion of action and concepts is the Council of Rectors of the seven principal Chilean universities. A colorful and energetic group, this council, with its technical advisory committee, is the driving force that will reorient both teaching and research by bringing American and other consultants to Chile and sending Chilean professors to the United States and other countries.

The Council of Rectors are diverse in personalities and in some cases in philosophies. They range from the dynamic head of the southernmost University of Valdivia (population 75,000) to the purple robed Archbishop who heads the Catholic University of Chile at Santiago, the capital city.

The Government of Chile has given the Council of Rectors financial sinews that amount to a million and a half dollars annually which, guaranteed for 20 years, amount to a half percent of the income tax revenue of Chile.

This has been reinforced by requested collaboration of the National Academy of Sciences of the United States and the International Cooperation Administration (ICA). In February and March the Rectors and their technical assistants will visit typical universities in Mexico and the United States.

Watson Davis, director of SCIENCE SERVICE, as a member of the National

Academy's cooperating committee, has visited five of the Chilean universities and has lectured at two summer schools for teachers being held in Santiago and Valparaiso. Two Brazilian scientists from Sao Paulo were members of this joint Brazilian-American mission that discussed, particularly with Chilean secondary school science teachers, the use of simple, inexpensive experimental apparatus that will allow the students themselves to learn science by actual performance of science experiments. The two Brazilian professors were Dr. Isaias Raw and Dr. Romulo Pieroni.

There seem to be good possibilities that a Chilean group of scientists and educators

will be able to produce in Chile for use in its schools, the kind of apparatus and kits that have proved useful in U.S. and Brazilian education.

The Chilean Council of Rectors is utilizing other Chilean and American funds for improving apparatus and laboratories, replacing equipment destroyed by the earthquakes of May, 1960, which damaged seriously Concepcion and Valdivia Universities, for libraries and documentation.

Quite as important as providing facilities for science teaching and research, the Council of Rectors will provide a regular means of exchanging ideas and promoting cooperation between the universities of Chile, which in the past sometimes have not worked together too effectively. This may be the most valuable result of the new development of Chilean science and education.

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## ASTRONAUTICS

# Germfree Men for Space

► GERMFREE men may be the ideal space pioneers.

Such bacteria-free astronauts would not contaminate the moon or other extraterrestrial areas to be explored. They can be available in 25 years, Dr. Charles Phillips of the U.S. Army Chemical Corps Biological Laboratories, Ft. Detrick, Md., reported to the National Aeronautics and Space Administration in Washington, D. C.

"The same methods used to obtain sterile guinea pigs, chickens and rats, will produce a sterile man. All we will have to do is to keep him in a germ-free cabinet for some 25 years following birth, meanwhile teaching him how to fly spacecraft," he said.

However, producing a sterile spacecraft with all the technical problems involved still is simpler than producing a germ-free man, Dr. Phillips reported.

The airless, barren moon, believed to be the repository of dust and debris of outer space, holds important data that may tell scientists about the origin of the solar system. Contamination might obscure these data, Dr. Phillips said, resulting in loss of "priceless opportunity" to get to the basis of life's origins.

Soviet scientists have said they sterilized the payload landed on the moon. However, even if the Russians did not sterilize the lunar payload, United States policy is to avoid extraterrestrial contamination by using sterilized spacecraft that will remain sterile, the Army biologist said. Dr. Phillips reported great success in developing techniques for sterilizing space equipment.

Germ-free animals are available and could be used in interplanetary exploration with marked success to detect possible life forms.

Dr. Stanley Levenson of the Walter Reed Army Institute of Research believes that the animal free of micro-organisms is probably the best sort of culture media to use for collecting and growing samples of extraterrestrial life.

Germ-free animals have very low resistance to ordinary biological agents and even a few organisms in such animals would multiply at "an alarming rate," Dr. Levenson said. This would provide scientists with an animal in which the organisms could be detected by biological means, he said.

Scientists engaged in space research also are working on the problem of avoiding contamination of earth with extraterrestrial matter when man can safely make round trips to outer space from earth.

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**PIGEONS FOR GUIDANCE SYSTEM**—Pigeons have been taught to peck at visual targets on a ground-glass screen of a missile guidance system. The chosen target might be a submarine at sea or a military site on the ground. As long as the pigeons peck at the image on the glass the missile stays on course.