

GENERAL SCIENCE

Science in Chilean Life

Eminent Chilean and North American scientists gathered together in Washington to discuss scientific education and research and the role of science in the development of nations.

► SCIENCE AND DEVELOPMENT in Chile was the theme of the 1964 Image of Chile program that brought eminent Chilean and North American scientists together in Washington for a series of discussions (Oct. 5). The program was jointly sponsored by the Embassy of Chile and the National Academy of Sciences, and was an outgrowth of the 1963 Image of Chile, which last year brought a representative cross-section of Chilean music, art, poetry, literature and drama to U.S. audiences.

Participants in the discussions touched on a wide range of scientific and technical matters relating to geology, geophysics, ocea-

nography, agriculture and animal husbandry, with special reference to Chile. There was a general discussion of the role of science in the development of nations, a symposium on scientific education and research, an illustrated lecture on Chile and an exhibit on Chilean geography and natural history.

The program began with a plenary session addressed by Ambassador Sergio Gutierrez; Dr. Frederick Seitz, president of the National Academy of Sciences, and Dr. Donald Hornig, White House Science adviser. Secretary of State Dean Rusk addressed the final session.

GENERAL SCIENCE

Dean Rusk Analyzes Alliance Science Progress

Excerpts of Remarks by Dr. Dean Rusk, Secretary of State, at the Conference on Science and Development in Chile

► WHEN THE UNITED STATES pledged its commitment to the Alliance for Progress in 1961, it recognized the central role science and technology must play in the economic and social transformation envisioned under the Alliance.

The experience of the first years of the Alliance has not lowered our assessment of the importance of science in this development process. But it has refined thinking on how scientific endeavor most usefully can spur economic growth.

In Latin America generally, scientific talent is limited in quantity—indeed only 2.3% of the population is classified as professional or technical in any field. It has been necessary to establish priorities.

This has led to extensive discussions between scientists and technologists, on the one hand, and those responsible for allocating national resources. And, as a rule, the result has been the sound conclusion that short-range scientific and technical projects however interesting in and of themselves, are less urgent than research and teaching institutions capable of promoting science and technology.

Much has been done, and is being done, in improving curricula, strengthening faculties, equipping laboratories with the most modern and sophisticated research devices, and providing interchanges between the United States and Latin-American scientists. This symposium is symbolic of these efforts.

There is general agreement, I believe, that most of the Latin American countries need to put more emphasis on improving their agriculture and on making their rural

areas a more active market and stimulus for manufacturing. Indeed, this is true of most of the developing areas of the world.

Agricultural production in the developing areas, particularly in Asia and Latin America, is growing less rapidly than population—and if current trends continue, the point will not be too far off when world food stocks will simply not be enough to meet minimum needs in the deficit areas.

Although Chile has a rich agricultural potential, it has been a net importer of food for some years and presently imports about 20%, or \$125 million, of its food needs. Every dollar of increased food production has the potential of freeing a dollar of valuable foreign exchange to buy goods and services needed for Chilean development.

The Agricultural Development project now being initiated in Chile is a good example of how applied science contributes to a total development strategy. This project seeks to increase farm production through research activity and improved rural educational institutions.

Closely correlated activities seek to stimulate food output and exports through changes in the agricultural credit and marketing systems and in overall national agricultural policy.

Another effective application of science to Chile's economic priorities is the Maule River project, so reminiscent of the Tennessee Valley Authority development in this country. By late 1967 a comprehensive regional development plan will be created for the Maule River Basin, to include an integrated and coordinated construction and financial schedule for individual projects.

The multi-purpose water resource plan will include uses for agriculture, industry, power, recreation, flood control and conservation. Related projects will cover agrarian reform, transportation, marketing, education and training, housing, urban growth, community development and public health.

The Manpower and Educational Plan-

ning project is key to assuring that, in the future, human resources will make their optimum contribution to Chile's economic and social goals.

I believe these three projects, among the other technical assistance activities with which we are concerned in Chile, are excellent examples of the cooperative endeavor we share under the Alliance.

They are being implemented by Chilean institutions in collaboration with the Chile-California Program and the USAID Mission in Santiago, with funds provided both by the Government of Chile and AID. And they are utilizing more fully than ever before the scientific capability of our two countries in the service of Chile's economic and social development under the Alliance for Progress.

Cooperation between Chile and the United States extends over a wide range of scientific subjects, including the sleep-wakefulness mechanisms. This has a somewhat special appeal to me. I have been told that science may make it possible for us to get on with less sleep at night.

I know some government officials who, of necessity, have made considerable progress in that direction.

I now turn to the second main discipline of these seminars, earth sciences.

The same force that caused so much destruction in Chile during 1960 manifested itself in Alaska only last year. This awesome power of nature disdains international boundaries.

Studies carried out in Chile on earthquake resistant construction can have universal application. Development of techniques and instrumentation which can sense the early on-rush of earthquakes is as im-

(Continued on p. 270)

GENERAL SCIENCE

Science Influences Foreign Relations

Excerpts of Remarks by Ambassador Sergio Gutierrez-Olivos of Chile at the closing session of the Conference on Science and Development in Chile.

► A GENERAL BELIEF exists in developing countries that only the foreign policies of the great powers are influenced by science and technology.

There is some justification for this belief, because the interrelationship of science, foreign policy and government is tangible and clear to the man in the street every time he opens his newspaper.

Even though the relatively underdeveloped countries do not face problems requiring foreign policy alternatives fixed at a given moment by the balance of space and nuclear progress; even though the day is still remote when such countries must resort to higher mathematics to interpret and predict the course of international relations, there is ample evidence, as even a rapid and objective survey reveals, that the interrelationship of science, foreign policy and government has a concrete and decisive effect on the theory and practice of foreign relations of even minor powers.

• Science News Letter, 86:258 October 24, 1964

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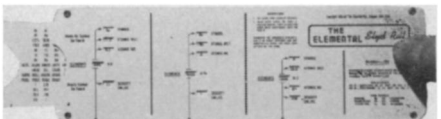


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Science in Chilean Life

(Continued from p. 258)

portant in the Eastern Hemisphere as the Western.

New techniques to determine the location and extent of as yet unfound ore deposits are of great significance in the economic development of a country such as Chile, which has potentially such a great mineral wealth. I understand that studies of this type are being actively pursued by the Institute of Geological Research.

Studies in physical oceanography offer many potential benefits, such as harnessing the tides and ocean currents for power. Exploitation of the plant and animal resources of the sea promises, I think, even more rewarding benefits.

In a world where much of the population goes to bed at night hungry, where protein deficiency is widespread, the potential benefits from harvesting the sources in the sea are spectacular. The successful conclusion of experiments now under way in Chile producing fish protein concentrate on a pilot plant scale could be of far-reaching benefit to mankind.

We need more research in methods of influencing the biological cycle of the sea and in techniques leading to farming fish

rather than hunting them. Such programs might pose a challenge for scientists in the Fish Development Institute in Chile.

Progress in any of these scientific fields depends not so much on dollars as on manpower. One of your symposia considered "Scientific Manpower and Education."

This necessity — the development of trained manpower, including scientists—is an essential component of Chile's goals. It will continue to receive close attention by Chilean authorities and the U.S. AID Mission.

As you know, because of the particular importance of science and engineering in economic development, a special committee of the Pan American Union has been set up to investigate the science and engineering education programs in Latin America.

Studies have already been carried out in several countries. It is good to know that the study for Chile has now been completed.

Let this meeting of scientists from Chile and the United States, gathered within the spirit of hemispheric cooperation, be interpreted by all as a certain sign that we stand together, ready to attack any and all to overcome any scientific or technological obstacles in the path of the economic progress of the peoples of the New World.

• Science News Letter, 86:258 October 24, 1964

MEDICINE

New Throat Cancer Test

➤ A NEW WAY to detect throat cancer has been reported by Yugoslav scientists who used an ultraviolet lamp to produce fluorescence after giving a patient the antibiotic tetracycline. This drug has been shown to respond to fluorescence previously.

The scientists reported preliminary work with one person, but believe future experiments will also be successful. They are constructing a special ultraviolet lamp for future use on the ear, nose and throat, and believe it will have value not only for diagnosis but also for possible treatment and for forecasting the future course of a cancer.

This is not the first time that tetracycline has been used in conjunction with fluores-

cence tests in detecting cancer. So far, diagnoses of cancer of the stomach and bones using this method are the only ones reported in this country.

The Yugoslav researchers called attention of previous work in the United States done by a team including Drs. J. Edward Berk and Sheldon M. Kantor of Wayne State University College of Medicine on detecting stomach cancer by fluorescence tests. SCIENCE SERVICE reported these studies, which appeared in the Journal of the American Medical Association, March 31, 1962 (SNL 81:235, April 14, 1962).

After their patient was given tetracycline, the scientists reported they were able to see a tumor the size of a hazelnut in the lower end of the larynx when it was illuminated by an ultraviolet lamp. Tetracycline is a yellow, crystalline antibiotic, used in treatment of a number of infections.

The investigators said they saw a distinct fluorescence in the region of the tumor and also in some places that, with the naked eye, looked healthy.

After surgery, the larynx was again observed in ultraviolet light, and the researchers saw a distinct yellow fluorescence. They are looking forward to construction of an ultraviolet lamp especially for ear, nose and throat tests. They foresee value in the future not only for diagnosis and possible treatment, but also for forecasting the probable course of the cancer.

Drs. J. Krmpotic, M. Lipozencic and N. Sipus reported the Yugoslav study in the Bulletin Scientifique, published in Zagreb, 9:11, 1964.

• Science News Letter, 86:270 October 24, 1964

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