

GEOPHYSICS

U.S.-Russia Cooperate in 1964 Antarctic Program

► UNITED STATES and Soviet scientists will cooperate in Antarctica this year in a large-scale investigation of cosmic rays, the high energy particles that continually bombard the earth.

The study will detect distinct solar cosmic ray events and investigate their variations in energy, time, and location. The research will be part of the U.S. contribution to the International Years of the Quiet Sun (IQSY) 1964-1965, a period of minimum solar activity.

Two huge steel antenna towers ranging in height from 105 to 190 feet at the South Pole and two other U.S. stations, as well as at many Russian stations will be constructed for the project.

The investigation is taking place near the south magnetic pole because solar cosmic rays are guided by the earth's magnetic lines of force which converge in this area. The low level of solar activity during IQSY is expected to provide simpler experimental conditions than those prevailing at the high point of the sunspot cycle.

The towers will continually monitor the solar cosmic rays by beaming radio waves at the ionosphere (the ionized upper region of the atmosphere) from one station. The waves will be scattered downward to a receiving tower at another station, thus recording the flow of atomic particles generated in the ionosphere by solar cosmic rays.

The U.S. portion of the cosmic ray study is one of 64 National Science Foundation grants awarded so far this year in support of the United States Antarctic Research Program (USARP) 1964. The field activities will begin this October.

This year's USARP grants support investigations of various aspects of the Antarctic land, ice, air, sea, life, and magnetic field. Disciplines represented include geology, glaciology, gravimetry, seismology, biology, oceanography, meteorology, cartography, and upper atmosphere physics.

• Science News Letter, 84:184 Sept. 21, 1963

AGRICULTURE

Agricultural Planning For Undeveloped Nations

► AGRICULTURAL PLANNING, of great importance to undeveloped and developing nations, is a critical and complex undertaking, Dr. Marion Clawson of Resources for the Future, Washington, D. C., told the Rehovoth Conference in Israel.

Intelligent practical planning, as important as the process of development itself, can often make the difference between success and failure in an agricultural development project, he said. This planning, however, is far from easy, and mistakes can do irreparable damage.

In making plans for a developing nation whose economy is still primarily agricultural—and may well continue to be—it is important to keep in mind the national

goals and characteristics, both present and future. One must know what the developing nation is trying to accomplish—now, and ten years from now.

It should be asked, he said: Will the goals and viewpoints change with a rising standard of living? Are the people ready and willing to make the changes which will be involved? Will agricultural improvements actually benefit the nation as a whole?

In many underdeveloped nations, the vast majority of the people make their living from agriculture. Here, for the present at least, agricultural concerns are the national concerns. In other nations agricultural improvements, although important, are secondary to the development of growing industries.

Dr. Clawson said it is necessary to learn as much as possible about the land, the economy and the people. Irrigation problems and crop-rotation methods must be studied simultaneously with profit expectations and local customs.

Only by considering the political, economic and psychological implications as well as the physical situation can adequate and satisfactory plans be made.

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PSYCHOLOGY

Vision Drug Increases Religious Feeling

► FOR HIGHER RELIGIOUS feeling, LSD-25, the vision drug, is the thing to take.

This is an inference that can be made from tests on alcoholics by Ronald Ramsay of the Alcoholism Foundation of Alberta, Dr. Sven Jensen of the York County Mental Health Clinic, Newmarket, Ontario, and Dr. Robert Sommer of the Alcoholism Foundation of Alberta and the University of Alberta, reported in the Quarterly Journal of Studies on Alcohol, 24:443, 1963.

"I could never before believe in a higher power, but now I can," said one of the persons after being treated with LSD-25.

LSD-25 (d-lysergic acid diethylamide), controversial vision-causing drug, was given to 47 alcoholics at the end of a two-month treatment period in a hospital. The purpose was to help with the cure.

The treatment, based along Alcoholics Anonymous lines, included psychotherapy and work therapy.

Alcoholics Anonymous stresses belief in a power greater than the self, the researchers said, explaining why the alcoholics in their study had high religious values to begin with.

A spiritual need may also develop, they pointed out, as the alcoholic hits rock bottom. Taking LSD-25 was a "transcendental" experience for many of the alcoholics.

LSD-25 is currently in vogue with thrill-seekers who take it to get artistic visions and to expand their understanding of themselves and their relation to the universe.

Studies of persons taking the drug in relaxed rather than medical environments also have shown an increase in religious attitudes among many of the participants.

The drug can bring on a mental breakdown.

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IN SCIEN

AGRICULTURE

Undeveloped Tropics Can Blossom Despite Climate

► THE TROPICS, considered undeveloped largely because of climate, can be made fruitful, believes a visiting professor of geography at the University of California, Los Angeles.

"Despite Amazonia's unhealthy reputation, modern medical and sanitary measures are capable of bringing about dramatic changes in living standards," said Dr. Hilgard O'Reilly Sternberg of the University of Brazil.

"A recent example is afforded by the Serra do Navio manganese mining district, which is located in the primeval forest area, almost exactly on the equator," he said.

"Yet, good socioeconomic conditions and an integrated health program have resulted in remarkably low infant and general mortality rates.

"In fact, the rates are lower than those observed in the area of Sao Paulo's state capital on the cool plateau of southern Brazil," he said.

"In addition to the disadvantages of tropical climate, Amazonia suffers from extremely poor upland soil conditions."

The study of trace element deficiencies in Brazil may show that this can be corrected cheaply. If so, new lands, now practically useless, can be opened to agricultural development.

Several students from the University of California, Los Angeles, are working in various regions of Brazil, helping to gather material for research programs in soil composition and deficiencies.

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PUBLIC HEALTH

Flu Shot Time Again But No Epidemic Seen

► IT IS FLU SHOT time again. Although the U.S. Public Health Service does not anticipate an epidemic season this year, routine immunization now is wise for particularly susceptible persons.

If you had flu shots last year, all you need is a booster shot, the Public Health Service told SCIENCE SERVICE.

All persons over 65 years of age, pregnant women and those of any age who suffer from heart, lung, kidney or metabolic disorders should see their doctors about shots.

Do not wait for the flu season to get underway in the fall. Vaccine should be given early before the beginning of upper respiratory infections.

Especially if you have not had shots for a year or so, your doctor will probably want to start the series at once.

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CE FIELDS

SPACE

Life on Mars Talk Dealt a Setback

► THE EXISTENCE of life on Mars cannot be supported, as some contend, by readings made of energy beams from that planet, a team of University of California scientists reported.

They said their experiments with infrared reflections from a large number of minerals and biological specimens failed to uphold conclusions reached during the past six years by Dr. William M. Sinton, astronomer of Lowell Observatory, Flagstaff, Ariz.

Dr. Sinton had caused a stir in science circles by reporting that infrared readings of Mars show "absorption bands" in the region where organic molecules and plants absorb. He said there was only a remote possibility that the bands were due to lifeless inorganic matter.

However, the California team said, infrared readings within the observed band of organic and inorganic matter on earth show too much overlapping to justify such a conclusion.

The report was made in *Science*, 141:923, 1963, by Dr. Donald G. Rea, physical chemist; Nobel Prize winner Dr. Melvin Calvin, professor of organic chemistry, and T. Bel-sky, all of the Berkeley campus.

They said they know of "no satisfactory explanation" for the Martian bands but hope observations of the planet with improved equipment will soon give one.

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ENTOMOLOGY

Cabbage Moth's Sex Lure Used to Attract Males

► TRAPPING MALE insects with females is the latest method to control pesky insects.

Instead of using chemical insecticides with resulting residues dangerous to man and the balance of nature, scientists now are testing use of females to lure unsuspecting males into traps.

A sex attractant has been extracted from female cabbage loopers, entomologists of the U.S. Department of Agriculture reported in *Science*, 141:902, 1963.

This lure causes intense reactions from nearby cabbage looper males, C. M. Ignoffo, R. S. Berger, H. M. Graham and D. F. Martin, all of the Agricultural Research Service, Brownsville, Texas, have found.

For the experiment, the pesky cabbage moths were raised and observed in laboratory cages. Female loopers were collected and chemicals in last portions of the abdomen were extracted with methylene chloride.

When this extract of the female abdomen was put on paper, the scientists found, virgin males in a separate cage responded within two to three minutes. They first moved their antennae 90 degrees to an ele-

vated position in a wide V above the head. Then they rapidly vibrated their wings, slightly elevated their abdomens, and eventually flew to the source of the stimulus, where they attempted to mate. This response lasted from two to five minutes.

Gases from the extract strongly attracted the males and evoked the same mating response. The attractant is fairly volatile and has a relatively low molecular weight.

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BIOLOGY

Cigarette Smoke Effects Tested in Improved Way

► A METHOD for testing the effects of air pollutants and irritant vapors—such as cigarette smoke—was reported to the 1963 fall meeting of the American Society for Pharmacology and Experimental Therapeutics in San Francisco.

The new method was developed by Drs. Freddy Homburger and Peter Bernfeld of Bio-Research Consultants, Inc., Cambridge, Mass. The ciliary tissues from the esophagus of a frog are exposed to tobacco fumes and immersed in a stabilizing solution for observation. By measuring the rate of mucus flow in these tissues, it is possible to assess the damage done by tobacco fumes or any component thereof.

The new method is quicker, easier and more economical than any previously used method.

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GENERAL SCIENCE

October to Be National Science Youth Month

► A MONTH-LONG program will make October the time during which students, teachers and scientists organize for the school year science activity. National Science Youth Month is being observed during October with the aid of 56 national organizations cooperating. A program organized by SCIENCE SERVICE will offer aid to schools in getting science classes and hobby activities begun.

More than a million students in elementary grades, and junior and senior high schools will during this month begin their work on science projects, which in the spring will be shown at some 10,000 to 15,000 science fairs. Organization of science clubs and science fairs in all parts of the country will be stressed.

A calendar of events has been prepared and information assembled for those in local and regional organizations who wish to cooperate. This is the eighth year that October has been National Science Youth Month.

Newspapers, colleges, industries, service clubs and other science oriented groups throughout the nation cooperate in October to carry out the functions of National Science Youth Month.

A detailed listing of cooperation offered by national organizations has been prepared by SCIENCE SERVICE and is free upon request to SCIENCE SERVICE, Washington, D. C. 20036.

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MEDICINE

Lincoln's Doctor Used Closed Chest Massage

► A FORERUNNER of the closed chest massage developed nearly a hundred years later helped to keep President Lincoln alive for nine hours after he was shot.

Dr. Alfred Blalock, surgeon-in-chief of Johns Hopkins Hospital, Baltimore, where the closed chest massage was perfected, told scientists at the National Institutes of Health in Bethesda, Md., that the tip of Lincoln's heart was stimulated by the thumb and fingers of his doctor using sliding pressure under and beneath the ribs.

Dr. Charles A. Leale, a 23-year-old assistant Army surgeon, was the first doctor to reach the President on April 14, 1865. He attempted to establish an open airway to the lungs, and carried out a form of artificial respiration in addition to the heart massage.

The effects of shock on the Civil War President, along with the extent of his wound, prevented the surgeon from saving his life, as it would probably have done today, but young Dr. Leale kept trying every measure possible to keep Lincoln alive.

The mouth-to-mouth artificial respiration method now recommended was tried by Dr. Leale, who reported how he "leaned forward forcibly over his body, thorax to thorax, face to face, and several times drew in a long breath, then forcibly breathed directly into his mouth and nostrils." This expanded Lincoln's lungs and improved his breathing as well as the action of his heart.

These first-aid measures plus the removal of blood clots at the site entered by the assassin's bullet probably gave Lincoln his extra hours of life although he never became conscious.

Dr. Blalock's historical highlights were reported in the first of a series of National Institutes of Health lectures. He is a pioneer in cardiovascular surgery.

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TECHNOLOGY

Robots in Shelters Aid Survival Research

► ROBOTS are aiding researchers in learning about survival in various types of fall-out shelters.

The robots sit inside a shelter and give off heat and moisture. This helps a team of engineers find out how much heat and moisture a shelter's ventilation system can handle.

Known as Simocs, short for simulated occupants, the mechanical robots come in two models. One simulates the presence of a single occupant, the other can be adjusted to represent up to 60 persons.

Research using the Simocs has been carried on in all parts of the country, since climate conditions vary from place to place. The Simocs project is under the direction of mechanical engineering professor Frank M. Flanigan of the University of Florida in Gainesville.

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