

METEOROLOGY

Artificial Rain Compound Tested in Australia

► **SPRINKLING CLOUDS** with a simple organic substance, metaldehyde, instead of silver iodide, may be the way artificial rain will be made in the future.

Norihiko Fukuta of Nagoya University, Japan, reported in *Nature*, 199:475, 1963, that metaldehyde can cause ice crystals to form in the laboratory at temperatures as high as 31 degrees Fahrenheit. The limitation on silver iodide, which is now used for cloud seeding, is 25 degrees Fahrenheit.

Mr. Fukuta said the laboratory experiments indicate artificial rainfalls can be created in warmer air than at present.

To make rain, ice crystals are formed at high, cool altitudes. The crystals melt on their plunge to earth.

Mr. Fukuta, who carried out his experiments while on a fellowship with the Commonwealth Scientific and Industrial Research Organization, Sydney, Australia, said he found that metaldehyde also forms more ice crystals per gram than does silver iodide.

Besides being expensive, silver iodide decays in sunshine so that it does not form ice crystals.

Mr. Fukuta reported that he placed ground particles of metaldehyde, made from ethanolic solution, "in sunlight on a fine day in April in Sydney" for two hours. He found no significant change in their ability to form ice crystals.

Other organic substances have been tested as substitutes for silver iodide, but they have been hard-to-get chemicals with complicated molecular and crystalline structures. "It therefore seems that the use of metaldehyde in cloud-seeding should be seriously considered," Mr. Fukuta concluded, "for it is both more efficient and more economical at the temperatures where natural ice nuclei are very rare."

• *Science News Letter*, 84:104 Aug. 17, 1963

ANTHROPOLOGY

Scientists Probe Infancy Of Human Civilization

► **A PROGRAM** to understand how primitive man gave up his wandering ways and settled down to become civilized is ready for action.

Scientists from all over the world are gathering at the land between the Tigris and Euphrates Rivers in southeast Turkey, the so-called "cradle of civilization," to study the infancy of civilized man.

They are looking for traces of the last of the food gatherers, for a place where the first of the farmers lived, and for later settlements.

From excavations of these sites, studies of the soil, and reconstructions of the ancient climates, the scientists hope to reconstruct the magic moments when man learned to cultivate seeds.

This is a crucial period in history, scientists believe, for when man learned the art of agriculture some 12,000 years ago, he freed himself from the constant task of

searching for food. He could settle in one place and devote himself to making tools and weapons and to forming relationships with his fellow men.

Profs. Halet Cambel of the University of Istanbul and Robert J. Braidwood of the Oriental Institute and the department of anthropology at the University of Chicago are co-directors of the expedition that will ultimately involve several dozen scholars, scientists and graduate students.

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ENTOMOLOGY

Rye Cover Crop Reduces Wireworms to Minimum

► **CROP-DAMAGING** wireworms can be kept to a minimum by planting a cover crop of winter rye and plowing it under in the spring.

Studies by Dr. James B. Kring at the Agricultural Experiment Station in New Haven, Conn., revealed that while decaying, the plowed-under rye provides a plentiful food supply for a type of bacterial growth.

This acts on the rye, producing a chemical poisonous to wireworms, and when they eat the rye, they die. Although not 100% effective, the rye treatment shows great promise for controlling this pest, highly damaging to corn, potato and tobacco crops.

• *Science News Letter*, 84:104 Aug. 17, 1963

GENERAL SCIENCE

FAS Endorses Test Ban; Backs Policy With Facts

► **BACKING** policy statement with technical facts, the Federation of American Scientists stood up to be counted in favor of the three-power nuclear test ban agreement recently initiated in Moscow.

It would be "a national catastrophe," FAS said, if the Senate did not ratify the pending treaty. FAS said it hoped the agreement would be a step to "more substantial arms control and disarmament agreements."

Declaring that the risks of nuclear annihilation are greater than the risks of a test ban treaty, FAS noted these relevant technical facts:

1. U.S. detection techniques are refined enough to catch militarily important nuclear "cheating."

2. Developing an effective anti-missile system depends on mastery of technical problems of handling decoys and a large number of simultaneously incoming vehicles. If these problems were solved, the U.S. could perfect warhead for the anti-missile missile underground.

3. Many smaller-yield weapons, which the U.S. already has, are more reliable and effective as a means of attack than a very high-yield nuclear weapon.

4. The Soviet Union is not likely to screen off forbidden nuclear tests with a shield of lead dust, for the new method would be risky and expensive.

The Federation of American Scientists is a nonprofit organization of some 2,500 scientists, many of whom participated in the initial development of nuclear weapons.

• *Science News Letter*, 84:104 Aug. 17, 1963

IN SCIEN

TECHNOLOGY

Movies Through Eye Help Study of Vision

► **COLOR MOVIES** of the inner eye are being shot through the pupil with the help of special contact lenses and a microscope. These are providing detailed information concerning pressure effects upon the optic nerve in the blinding eye disease, glaucoma.

New information on disorders of vision may result from the movies and a unique eye collection Drs. Robert E. Christensen and Raymond Allen of the University of California, Los Angeles, Medical School, have established as part of a study of early glaucoma.

More than 250 eyes have been donated to the collection from 500 patients involved in the study. Some will be available for corneal transplants. The project is being carried out in collaboration with the Long Beach Veterans Administration Hospital.

All eyes in the collection were studied for some time prior to the donors' deaths. The investigators hope to find what causes the characteristic pressure to build up within the glaucoma victim's eyes. It is hoped that functional changes in eyes during life can be correlated with microscopic changes seen after death.

Other eye diseases such as tumors, retinal detachment, and inflammation can be studied with the motion picture techniques.

The movies will also serve as an ophthalmology teaching tool.

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GEOLOGY

Television Cameras Give Geologists Inside Story

► **ELECTRONIC** researchers have designed two television cameras that can reach down, scan and show conditions in boreholes accurately for geologists and others drilling into the earth's crust.

The technique will indicate what the rock fractures look like, what minerals are present, why recovery of oil was poor, or even how the drilling bit was lost.

The cameras were developed by the Lawrence Radiation Laboratory of the University of California and are described in an Atomic Energy Commission report available from the Office of Technical Services, U.S. Department of Commerce.

Capable of reaching 5,000 feet into the earth, one of the cameras looks down the hole and the other views the side walls. They have been successfully used in boreholes to obtain information useful to geologists, drillers and engineers.

Information from them, according to the report, can supplement and in some cases even replace information from core drilling.

• *Science News Letter*, 84:104 Aug. 17, 1963

CE FIELDS

MEDICINE

Animal Malformations Caused by Cancer Drugs

► THE POSSIBILITY of abnormalities similar to those caused by thalidomide is seen in the effect of two cancer drugs on animals by Dr. Vergil H. Ferm of the Dartmouth Medical School, Hanover, N. H.

Compounds obtained from the common periwinkle plant, *Vinca rosea* Linn, which have been used effectively in treating human tumors, caused gross malformations when injected into pregnant hamsters.

Vinblastine (VLB) and vincristine (VCR) are the drugs causing malformed fetuses in the animals. Dr. Ferm said it seemed "advisable to mention the possibility of their teratogenic (monster-producing) effect in man."

Another cancer drug, 6-mercaptopurine, increases the number of chromosomes, Drs. John F. Jackson and Kerstin Lindahl-Kiessling, working at the Institute for Medical Genetics, University of Uppsala, Sweden, have found.

They treated cultured human peripheral white blood cells with B-mercaptopyruvate, which occurs in man. Marked increases in chromosomes resulted, which they believe is an important finding.

Both reports appear in *Science*, 141:424, 1963.

• *Science News Letter*, 84:105 Aug. 17, 1963

MEDICINE

Red Cross Research Aims To Help Hemophiliacs

► HEMOPHILIACS, the bleeders who lack a blood-clotting factor, are expected to benefit along with the anemic, heart patients and others who get parts of the blood donated through American Red Cross chapters in Washington and New York.

Plasma is being separated into fractions in New York and Washington Red Cross laboratories in an attempt to develop a new product that will contain sufficient AHG, or antihemophilic globulin, to stop the bleeding of hemophiliacs. AHG is superior to plasma alone and other clotting substances, although it is not expected to replace the absent clotting factor permanently.

The Red Cross research staff will work with the National Heart Institute, Bethesda, Md., in studies of AHG.

Very rapid and specialized handling of the blood is required at all times so that each component in the blood can be used most effectively. The collection of blood has to be timed with a stop-watch to within six minutes.

The pint of blood being given by the volunteer donors is divided into three parts. One component, the red-packed blood cells, is returned to the local chapter for treating anemias, heart cases and other suitable dis-

eases. In Washington, the platelets, which also aid in blood clotting, are sent to the National Institutes of Health to provide the platelets needed to treat leukemia.

The third component, the plasma, is first used for the purification of AHG. Then it is further processed for many other important blood fractions such as fibrinogen, gamma globulin and albumin, which are used to treat a wide variety of diseases.

Whole blood has been provided through the American Red Cross to those in need of transfusions since 1948. The new approach of immediately separating blood into its different components so that each factor can meet the specific needs of a particular patient is being developed by the research staff of the blood program under the direction of Dr. James H. Pert.

• *Science News Letter*, 84:105 Aug. 17, 1963

MEDICINE

Drug Successfully Stops Cancer Growth in Mice

► AN UNUSUAL DRUG that is known to stop the growth of mouse cancer cells by making them into a tumor and then getting rid of the tumor is now being tested on humans.

Indications are that the drug will work.

The drug, Refuin, apparently gathers the floating cancer cells into a small solid tumor by acting in cooperation with other body elements. Continued treatment with Refuin then eliminates the tumor. This result was found in 45% of the mice treated.

The spread of other types of cancer of the breast and of connective tissue was also held in check by the drug. However, it was not found effective in treatment of leukemia.

Experiments first on mice and then on humans have shown that the drug has no harmful side-effects to the blood, bone marrow, stomach or nervous system.

Drs. Moses David Tendler of Yeshiva University and Samuel Korman of the Montefiore Hospital developed and tested Refuin.

Refuin is obtained from *Thermoactinomyces*, organisms that are classed between molds and bacteria. More than two dozen drugs are now commonly used in the treatment of tumors.

This report was made in *Nature*, 199:501, 1963.

• *Science News Letter*, 84:105 Aug. 17, 1963

VETERINARY MEDICINE

Ulcers in Cows May Cause Death

► COWS, like people, have ulcers. Overworked and overfed, pushed toward ever-higher milk production levels, more and more cows with ulcers are found. The ulcers are responsible for conditions ranging from occasional "off" days to sudden death. Cows have been known to die within a few hours of the time an ulcer penetrates the wall of a large blood vessel in the stomach, due to internal loss of blood, Dr. F. H. Fox of New York State Veterinary College in Ithaca reports.

• *Science News Letter*, 84:105 Aug. 17, 1963

CHEMISTRY

Combined Weed Killers Pick and Choose Victims

► TWO WEED KILLERS that are effective when used separately are entirely unpredictable when combined.

Two Indiana agriculturists discovered that the weed killers almost cancelled each other out when applied to weeds in tomato fields. But the combination of poisonous chemicals was doubly effective on crabgrass and eggplant.

One of the herbicides, solan, inhibits the process of photosynthesis in mature plants, whereas paraquat, the other weed killer, depends on photosynthesis for its poisonous effect.

In an experiment the solan protected the tomato plants against the toxic effects of paraquat, but failed to protect the eggplant, an extremely sensitive plant tested at about the same age as the tomato ones.

The study was reported by Drs. S. R. Colby and G. F. Warren of Purdue University, Lafayette, Ind., in *Science*, 141:362, 1963.

• *Science News Letter*, 84:105 Aug. 17, 1963

CONSERVATION

Buffalo, Elk for Sale By Interior Department

► FOR A LIMITED TIME, the U.S. Department of the Interior is offering for sale to the public 250 genuine buffalo.

The price is \$165 for a live buffalo, \$220 to \$270 for a butchered carcass. Also available are elk, carcasses only, and longhorn cattle, live only. Reason for the sale is to keep the number of animals on the game refuges down to a reasonable number.

Those interested in how and where to order one of the animals should write to the U.S. Department of Interior.

• *Science News Letter*, 84:105 Aug. 17, 1963

DENTISTRY

Worry and Stress May Cause Acute Tooth Decay

► WORRY AND STRESS cause headaches and may also cause acute tooth decay.

Dr. Philip R. N. Sutton of Melbourne, Australia, in a study of 169 patients more than 25 years old with acute tooth decay found that 96% had undergone severe mental stress. Only two percent of 492 patients without acute tooth decay had suffered from stress, he reported in *Dental Abstracts*, July, 1963.

The main reasons for worry were personal or family illness, housing conditions, and business, financial or employment troubles. Only 14% would not disclose the nature of their stress.

Acute tooth decay usually affects children and young adults up to 25 years of age. However, in this study acute tooth decay occurred most frequently among those 45 to 54 years old. The average number of natural teeth still present in that age group was 19.

• *Science News Letter*, 84:105 Aug. 17, 1963