BIOCHEMISTRY

Tests Prove Radioactivity Doesn't Speed Plant Growth

➤NEW evidence that radioactive elements as such do not make plants grow faster is presented in the fifth semi-annual report of the Atomic Energy Commission. Increased quantities of radioactive materials now available made possible the testing of 21 different kinds of plants, ranging from field crops like corn and soybeans to garden vegetables like carrots and tomatoes, in sites located in 15 states all the way from North Carolina to Washington. All results were negative.

These tests, which were designed to repeat on a critical and controlled basis the conditions claimed to produce greatly increased plant yields from the bombed soil of Hiroshima, have nothing to do with the use of radioactivity as a label or tag on fertilizer elements such as phosphorus. In the latter tests the aim is simply to find out how much of the "tagged" element the plant takes out of the soil and what it does with it. Tests of this sort have been quite successful.

Use of radioactive bombardments to change the genes or hereditary units in plants, speeding up the production of new and useful varieties, is also regarded as promising.

Science News Letter, February 12, 1949

INVENTION

Small Heater in Glass Keeps Your Drinks Hot

➤ KEEPING your glass of hot milk (or hot toddy) really hot gave some concern to Donald E. Keller of Millersport, Ohio, so he arranged for a neat little recess in the bottom of the glass, into which a small heating electric lamp is fitted. This neat gadget is covered by patent 2,460,509.

Science News Letter, February 12, 1949

SAFETY

Farm Accident Bill Totals $1,000,000,000 Yearly

➤ THE national bill for farm accidents runs to almost $1,000,000,000 a year.

More than half the average U. S. wheat crop for a year could be produced in the time lost through accidents to farmers.

These figures were reported by Maynard Coe, of Chicago, director of the farm division of the National Safety Council, at the National Conference on Rural Health. The conference is sponsored by the American Medical Association.

More than a third of the annual 19,000 accidental deaths on American farms, Mr. Coe stated, occur in homes. Falls, burns, poisons, suffocations, firearms and drownings are the principal causes. Farm work causes 4,300 accidental deaths per year.

Motor vehicles account for about 1,000 fatal accidents in farm work and for more than 6,000 deaths of rural residents in accidents not in line of work.

Nonfatal farm accidents total 1,500,000 annually, with many of the victims crippled permanently.

"A farm safety program means the changing of some of the basic habits of 27,000,000 people," Mr. Coe said. "Their habits of work, play, driving and living must be altered to eliminate the causes of accidents."

A warning that much of the gain in control of tuberculosis in cows may be lost because farmers have become complacent was sounded by Dr. Walter R. Krill of Ohio State University.

Farmers have done well in control of "filth borne" diseases but could do better, C. W. Kruse, associate professor of sanitary engineering at Johns Hopkins University, told the conference.

Science News Letter, February 12, 1949

PUBLIC HEALTH-VETERINARY MEDICINE

Germs from Animals and Poultry Are Health Menace

➤ GERM diseases of animals and poultry are a health menace to farmers that must be constantly watched, Dr. H. B. Mulholland of Charlottesville, Va., warned at the National Conference on Rural Health in Chicago.

The conference is sponsored by the American Medical Association.

Undulant fever, tularemia, also known as deer fly fever, Rocky Mountain spotted fever, ornithosis, horse sleeping sickness, rabies and lockjaw are the special diseases he mentioned as ones farmers need to guard against.

Undulant fever is caused by germs that cause contagious abortion in cattle. It remains, Dr. Mulholland said, one of the foremost problems of medicine today and causes untold suffering and economic loss in humans, cattle and swine.

Measures used to control tuberculosis in cows have not been satisfactory in reducing undulant fever in cattle, he said. Unless the latest antibiotic, aureomycin, proves effective, the treatment of the chronic human infection is discouraging.

Tularemia is of major importance in causing serious illness in humans in many rural areas, particularly in the South, Dr. Mulholland said. The principal carrier of this disease is the wild rabbit, but other species of animals can spread the disease to humans.

Ornithosis, which is related to parrot fever, may become of major importance to farmers. The virus that causes it is found in pigeons and barnyard fowl. A recent epidemic was traced to Long Island ducks. Fortunately, Dr. Mulholland said, the disease is mild and responds to penicillin treatment.

Science News Letter, February 12, 1949

IN SCIEN

NUCLEAR ENERGY

Plan New Public Reports On Atomic Energy Soon

➤ WE ALL are going to learn more about atomic energy. This was promised by Chairman David E. Lilienthal of the U. S. Atomic Energy Commission as the Commission's fifth semiannual report was made to Congress.

Chairman Lilienthal said that a more extensive report on the handling and disposal of radioactive wastes from atomic operations will be issued to the public shortly. This follows disclosure of the reports of scientists at a conference on the subject recently.

Other reports and publications scheduled for public release within the next few months include:

Report on nuclear reactors (atomic power).

Report on nuclear reactors for aircraft.

Atomic weapons effects handbook.

Source book on atomic energy.

A handbook or atomic primer, primarily for Commission employees but to be made available to the public when issued.

These new publications will be a sort of "stockholders' report" to the American people on their $3,000,000,000 atomic business, Mr. Lilienthal explained. They are a part of the AEC's program to tell as much as it can about what is known of atomic energy and its hazards and benefits.

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PSYCHIATRY

Workshop To Attack Mental Hospital Problem

➤ A WORKSHOP for mental hospital administrators and staff members will be the opening gun in an American Psychiatric Association drive to improve mental hospital services in the United States and Canada.

A pooling of "know-how" in meeting successfully the problems of personnel shortages, overcrowding of patients and lack of public and financial support is expected to be an important feature of the five-day institute.

Scheduled for April 11-15 in Philadelphia, the Mental Hospital Institute as it is formally termed will be under the program direction of Dr. Daniel Blain, medical director of the American Psychiatric Association. Announcement of the institute was made by Dr. William C. Menninger of Topeka, Kans., president of the association.

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SCIENCE FIELDS

ZOOLOGY

Rattlesnake Venom Found Able To Kill Bacteria

➤ RATTLESNAKE venom will kill bacteria, H. S. Robert Glaser of Riverside, Calif., reports in the zoological journal, COPEIA (Dec. 31, 1948). He tried venom from two different rattlesnake species on culture-plates of four kinds of bacteria, with definitely lethal results.

However, for the present at least this discovery will remain one of scientific interest rather than of practical medicinal value, since no one is likely to want to treat an infection with snake venom.

Effects of the rattlesnake poison on the bacteria appear to be similar to its effects on animal cells, Mr. Glaser states: a general breakdown of the cell structure, with killing of protoplasm.

Science News Letter, February 12, 1949

INVENTION

Processed Cellophane Makes Superior Condensers

➤ CELLOPHANE is claimed superior to paper as material for condensers in radios and for similar dielectric purposes, in U. S. patent 2,460,282, newly issued to Guy B. Gardner of Fairhaven, Mass. Paper, he says, is notoriously fibrous and grainy, and contains bits of carbon, minute fragments of metal and other conducting substances that are absent from the regenerated cellulose product.

Cellophane, however, is also partially conducting in its ordinary commercial forms, primarily because it contains slight residues of ionizable chemicals. In Mr. Gardner's process, these are washed out by successive immersions and scrubbings in alcohol and distilled water.

Science News Letter, February 12, 1949

ENTOMOLOGY

Insects' Food Habits Revealed by Crop Contents

➤ FOOD HABITS of insects can be learned in exactly the same way as the food habits of birds—by studying closely the contents of their crops. For insects, like birds, possess crops—storage pouches between mouth and stomach, where the food they eat is often stored for a while before it passes on to be digested.

The new method for learning more about what insects eat is suggested in SCIENCE (Feb. 4), by the late Dr. Frederick B. Isely of Trinity University, San Antonio, Texas, and Dr. Gordon Alexander of the University of Colorado.

Microscopic examination is of course necessary to identify the food fragments found in the crop of an insect, whether freshly killed or after long preservation in a jar. However, even small fragments of leaves can sometimes be made out for what they are; and such things as pollen grains are relatively easy to identify.

As an example of revision in the list of foods favored by one insect group, the meadow grasshoppers, the two researchers state that whereas it has long been assumed that this particular grasshopper type is a general feeder on vegetation and therefore harmful, crop examinations proved that it eats mainly pollen and seeds, together with a certain amount of "meat" in the form of other insects. Meadow grasshoppers may therefore be listed as neutral, or even beneficial to man, rather than harmful.

Science News Letter, February 12, 1949

ENGINEERING

Thorium-Tungsten Tubes Give Longer Service Life

➤ A SERVICE life 50 times as long as that of the ordinary tungsten rectifier tube used in X-ray equipment is promised in new tubes suitable for high voltage which have filaments made of thorium-tungsten alloy. These new tubes have a possible use in television.

Thorium-tungsten filaments have long been used in low voltage tubes. A decade or less ago, it was thought that 5,000 volts was the maximum that could be used with them. During the war the voltage was raised to 35,000. The new tubes raise the ceiling to above 100,000 volts.

The development of the new high voltage tubes was described at the meeting of the American Institute of Electrical Engineers in New York by Z. J. Atlee of the Dunlee Corporation, Chicago. He indicated that thorium-tungsten tubes suitable for much higher voltages may be available later. Because of the very much lower work function of thorium on tungsten, 2.63 volts, as compared to the high work function of pure tungsten, 4.52 volts, much more efficient emission is obtained and at an appreciably lower temperature, he said.

Two thorium-tungsten tubes, rated above 100,000 volts, are now in production by Dunlee. Although developed particularly for X-ray generators, they may be usable in television as well as for the water-cooled power size of transmitting tubes.

Thorium is a gray radioactive metallic element which is very ductile and very resistant to atmospheric corrosion. It is not an abundant element, but considerable supplies are available in monazite sand. There is considerable interest in this metal at the present time because scientists have found that it can be used with uranium in developing atomic energy.

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ASTRONOMY

Giant Red Stars May Have Large Noisy Center Zone

➤ A NOISY zone millions of miles deep may be the mechanism whereby giant red stars with terrifically hot centers are able to exist.

This theory has just been advanced by Robert S. Richardson of Mount Wilson and Palomar Observatories, and Dr. Martin Schwarzschild of Princeton University Observatory.

The star's central core, which may be as hot as 30,000,000 degrees Centigrade, is quite turbulent, the astronomers estimate. It sends out noise, too low-pitched to be heard by human ears, of such strength that energy from the gaseous central core may be carried solely by this means through the surrounding layers.

Little or none of this energy is lost as it bubbles through the noise zone, where the hydrogen, helium and a small percentage of heavier elements become increasingly rarefied. All energy is saved until this acoustical noise reaches the outer envelope. Here the mechanical energy of the unheard noise at last is converted into the light and heat radiated by the star.

A star built according to this model might have a central temperature high enough for hydrogen to be converted into helium by means of the famous "carbon cycle" and yet at the same time have a radius as great as that of the biggest red giants.

Reconciliation of these two requirements to date has been the chief difficulty in picturing the internal construction of giant red stars, Mr. Richardson and Dr. Schwarzschild report in the ASTROPHYSICAL JOURNAL (Nov., 1948).

Science News Letter, February 12, 1949

DENTISTRY

Tooth-Decay Prevention With Treated Sugar Fails

➤ HOPE of preventing tooth decay on a mass basis by adding a rare chemical to sugar at the refineries fades with the latest report from research laboratories.

The rare chemical is glyceraldehyde. When added to a standard test ration for rats during a 14-week period, the chemical failed to slow the usual rate of tooth decay or curb its extent, Dr. James H. Shaw of Harvard School of Dental Medicine in Boston found.

A strain of rats specially bred for susceptibility to tooth decay at a rate approximating that in humans was used in the studies. On a standard purified diet decay will appear in these rats at predictable intervals.

The only two pounds of glyceraldehyde in the world were obtained for the Harvard studies by Dr. Robert C. Hockett, Scientific director of the Sugar Research Foundation.

Science News Letter, February 12, 1949