

## BOTANY

# Headway in Plant Disease

A MAJOR breakthrough on plant research has been made with the discovery of substances in plants that determine their physiological susceptibility to disease.

A team of Federal-state scientists has uncovered the first concrete evidence of such substances, the U.S. Department of Agriculture reports.

A protein of the globulin type found in a particular race of flax rust fungus was found to occur also in flax plants susceptible to the same fungus. Plants resistant to that particular type did not contain the protein.

The discovery may prove especially important to plant breeders searching for disease-resistant plant material. Disease resistance is a primary objective in the development of almost all new crop varieties.

Physiological resistance to diseases is inherent in the genetic make-up of some plants. It is often observed but not yet understood. When cells of such resistant plants are invaded by a disease organism, these cells and some of those around them die. This causes the death of the invading pathogen, so the disease does not spread.

Physiological disease resistance in plants differs from structural resistance, in which

movements of the pathogen is prevented by the plant's cuticle or by cell walls.

Working with globulins from each of four lines of flax and four races of the rust fungus *Melampsora lini*, the researchers found a clear relationship between susceptibility to a particular fungus race and the presence in the plant of the protein that characterizes the race.

One flax line, for example, known to be susceptible to all four races, contained the characteristic proteins of all four. Another line contained only the two proteins for the races to which it was susceptible, and not the proteins characteristic of the races to which it was resistant. A third line contained the three proteins for the races to which it was susceptible and lacked the protein for the race to which it was resistant. The fourth line contained only the protein for the race of fungus to which it was susceptible and lacked the other three. The findings were made by Dr. Harold Flor of USDA's Agricultural Research Service, John A. Doubly of the North Dakota Agricultural Experiment Station, and Dr. Carl O. Claggett of Pennsylvania State University.

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## MEDICINE

# Two Factors for Longer Life

IF YOU CAN retain your pep as well as your desire to use it, you will probably live to a ripe old age.

A New York physician told the American Medical Association's Committee on Aging in Baltimore, Md., that the two major elements in prolonging life are the preservation of energy and a high degree of motivation.

The first of these, Dr. Theodore G. Klumpp said, can be maintained through proper diet, exercise and rest. The second comes from purposeful useful activity.

"I believe that we must do everything we can, as we grow older, to resist the inclination to slow down the tempo of our living," he said. "I am convinced that if you will just sit and wait for death to come along, you will not have long to wait."

Earlier at the two-day regional conference, Dr. David B. Allman of Atlantic City, N. J., past president of the AMA, promised more useful and productive lives for the aging population. He cited as "Medicine's Blueprint for the New Era of Aging" the following six points:

1. Stimulation of a realistic attitude toward aging by all people.
2. Promotion of health maintenance programs and wider use of restorative services.
3. Extension of effective methods of financing health care for persons over 65.
4. Expansion of skilled personnel training programs and improvement of medical facilities.
5. Amplification of medical and socio-

economic research in problems of aging.

6. Leadership and cooperation in community programs.

Another physician, Dr. Franklin Yoder, an official of the AMA, called for a vigorous program to eliminate handicaps imposed on older persons. Elimination of physical, social, mental, economic and employment handicaps, he said, "will insure the seniors of a greater opportunity for life fulfillment and would help them meet their overall economic needs with independence and dignity."

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## TECHNOLOGY

## TV Camera Will Inspect Under Intense Radiation

A SHOEBOX-SIZE television camera that is not easily damaged by nuclear radiation will soon be used to inspect nuclear reactors where radiation is too intense for observation windows. Special construction elements, including aluminum, magnesium, silicon, titanium and zirconium, allow atomic radiation to pass through the camera without harming it. The new camera, displayed by International Telephone and Telegraph Corporation at a meeting of the Institute of Radio Engineers, lasts much longer than conventional closed-circuit TV cameras, which can deteriorate in 10 to 30 minutes under intense radiation.

Science News Letter, April 9, 1960

## NUTRITION

## Discover New Vitamin Of the B-Family Group

A NEW VITAMIN has been isolated, marking the first discovery of a new vitamin since 1948, when vitamin B-12 was found. When its chemical structure and properties are determined, Dr. J. R. Couch of Texas A and M College told the Distillers Feed Research Conference, the new vitamin is slated to become the 15th vitamin and the 10th B vitamin known to science. Chemical companies will then attempt to synthesize it and make it available to the public. Presently known are vitamins A, C, D, E and K, as well as nine B vitamins.

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## PHYSICS

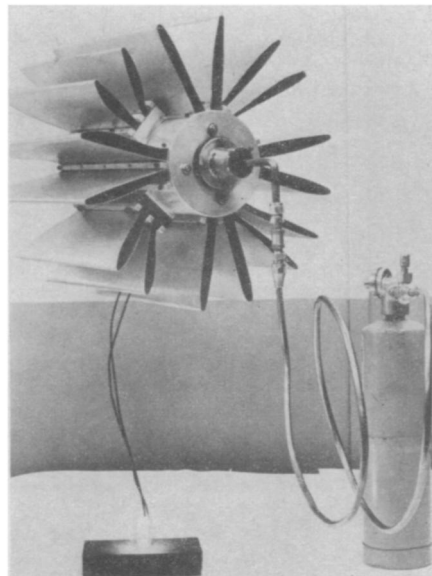
## Stellarators Used to Study Thernuclear Reactions

See Front Cover

TWELVE THEORETICAL physicists are at present engaged in plasma research at Princeton University, using results of research from five stellarators, which are one kind of device by which the possibilities of controlling thernuclear reactions can be studied.

The figure eight tube, seen on the cover of this week's SCIENCE NEWS LETTER, has been adopted for some stellarators to help prevent particles from escaping.

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**ELECTRICITY FROM GAS**—This thermoelectric generator, developed by General Instrument Corporation, burns propane gas to produce electricity that may be used for radio communication, navigational aids and scientific instrumentation in remote areas, such as the Arctic, where other power sources are unavailable.