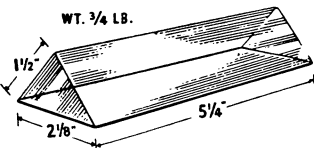


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PLANT PHYSIOLOGY**Plant Has "Heart Attack"**

► **PLANTS** such as bananas, tomatoes and peas can suffer "strokes" and "heart attacks" caused by clots in their veins just as humans suffer attacks due to clots in their blood vessels.

Two University of Wisconsin scientists identified the causes of several widespread and economically important plant wilts and reported a method of developing plants that are resistant to the diseases.

Death-dealing wilts of many vegetables as well as cotton plants, oak and elm trees were blamed on a soil fungus by Drs. Mark A. Stahmann, department of biochemistry, and J. C. Walker, department of plant pathology. They reported their research to a meeting of the American Chemical Society in San Francisco.

Fusarium fungus, a simple plant having no root, stem or leaf system and similar to molds, toadstools, bacteria and yeast, may penetrate a plant's vascular system, Dr. Stahmann said.

Once inside the plant's veins, or "blood vessels," the fungi produce a substance, an enzyme, that attacks some of the pectin in the vessel walls.

Pectin fragments then break off into the vascular stream where they form gelatinous masses of clots that plug the vessels. This action is similar to blood clots clogging

human blood vessels to cause strokes or heart attacks.

Fortunately, Dr. Stahmann said, some varieties of the plants investigated are not susceptible to wilt diseases and it is possible to develop resistant plant strains.

Using their new understanding of wilt disease causes, the scientists then began the difficult task of finding out exactly what enables certain plant strains to resist wilt.

Although they have not completely identified the resistance mechanism, they reported the resistant plants seem to produce a substance toxic to the invading fungi. Also, the disease-resistant plants apparently fail to produce normal amounts of another enzyme essential to the formation of the fatal pectin plugs.

Science News Letter, May 3, 1958

TECHNOLOGY**Automatic Machine Designed for Post Offices**

► **LETTERS** may in the future enter and leave U.S. post offices much faster, thanks to an automatic high-speed sorting machine.

A laboratory prototype machine, developed by the Rabinow Engineering Co., is designed to sort 36,000 letters per hour. Sorting can be directed either by a built-in electronic control, by human operators, or a combination of the two.

Two problems had to be solved in machine-sorting letters: translating the address information and controlling the computer-like device that directs the mail sort is one problem. The other has to do with the physical handling of the letters in all their various sizes and shapes.

Letters mechanically placed in a reading-and-coding position are read by a human operator. The important parts of the address are abbreviated and typed by means of a special printer on the envelope back. The operator then sends the letter through its first sort by pushing one of four buttons—local, outgoing, airmail or miscellaneous. Altogether, it takes a few seconds to accomplish these steps.

The National Bureau of Standards, which arranged and supervised the engineering contract in behalf of the U.S. Post Office Department, reports this may ultimately be the only human operation in the entire sorting process.

An electro-mechanical-optical device serves as an electronic directory, "looking up" the sorting destination for each address and controlling the delivery of the letter to its destination receptacle. This takes about one-tenth of a second.

The basic units of the automatic sorting machine can be arranged in various ways to suit the size and special problems of different post offices.

It is expected these machines will be an important help to post office personnel in keeping up with the continuing rapid growth of letter mail.

Science News Letter, May 3, 1958

Questions

CHEMISTRY—How much berkelium has been isolated? p. 280.

MEDICINE—When can the usual method of detecting fetal heartbeat, by means of the stethoscope, be used successfully? p. 279.

PLANT PHYSIOLOGY—What is one way scientists believe clots form in plants' veins? p. 286.

TECHNOLOGY—What are diffraction gratings used for? p. 281.

Photographs: Cover, Westinghouse; p. 275, Bendix Aviation Corporation; p. 277, Bell Telephone Laboratories; p. 278, New York Academy of Sciences; p. 279, Dow Corning Corporation; p. 282, The Martin Company; p. 288, Park Plastic Co.

Do You Know?

In most large cities in the northeast U.S., population either has grown slowly, less than one percent a year, or has actually decreased since 1950.

More than \$17,000,000 are to be spent on the World Health Organization's campaign for malaria eradication throughout the world this year, compared with \$8,000,000 in 1957.

The *South Pole* receives more sun than any place on earth during December, its midsummer, but most of this energy is reflected by the ice cover.