

per ton of silage, which, at present costs, would run the farmer 60 to 70 cents a ton of silage. Their experiments indicate that silage so treated is superior from the standpoints of: reduced nutrient losses; improved composition of the product with regard to nutrients (especially carotene); better color and odor; more complete digestibility; and increased palatability.

Experiments to date have been with varying mixtures of orchard grass, alfalfa, brome grass, sweet clover, red clover, and timothy.

Tests with other types of silage are going on at other universities, state experiment stations, and other groups.

### American Associates Buys Metal Closures Manufacturer

Brass Goods Mfg. Co., manufacturer of specialties and metal closures used in the food and drug industries, has been purchased by American Associates, Inc., it is announced. The latter company plans to bring the plant to higher efficiency and to offer the trade improved service, quality, and promptness of deliveries. American Associates has also appointed Flyindustries Inc. as Eastern sales agents for its products.

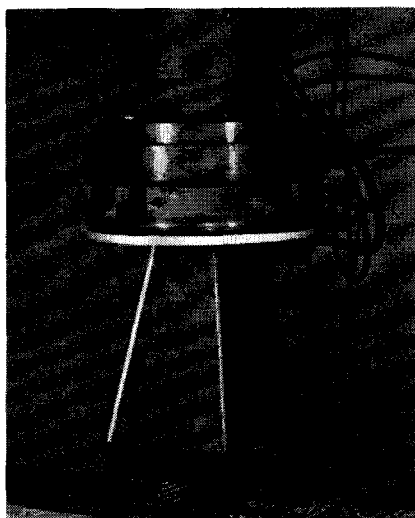
### Research

#### Cold Sterilization of Meat By Cathode Ray Irradiation

A cathode ray irradiation process for cold sterilization of meat has been developed by workers at Massachusetts Institute of Technology working under a contract with the Navy. The cathode ray process is much more rapid than the previously tested techniques, which used gamma radiation from radioactive sources. The latter process required up to 24 hours to sterilize small portions of meat and certain vegetables.

The MIT process, an assembly line in miniature, passes meat on a conveyor belt under the cathode ray discharge of a 3-million-volt Van der Graff accelerator. The MIT studies have indicated that the irradiation is sufficient to kill bacteria present in hamburger and extends the refrigerated storage stability of the meat by a factor of ten. Following radiant sterilization the keeping time of the meat has been extended to over 60 days. The importance to the Navy is that under a normal cruise of approximately two months, the ordinary refrigeration equipment is sufficient for storage of the ground meat, effecting a great saving in freezer space as well as cost.

The off-flavor and side-odor problem, which has previously been a serious problem in cold sterilization techniques



Irradiation for sterilization assembly line at MIT

has been met at MIT by the addition of free radical acceptors to the foods. The food technology department at MIT claims that this program has proved successful in the maintenance of flavor of chopped meat.

Working under the Navy contract, the MIT people have also preserved fresh spinach and newly ripened tomatoes.

### Foreign

#### Trace Elements to Improve Costa Rican Coffee Production

Trace element deficiencies may explain the cause of some heretofore baffling nutrition problems in the Costa Rican Coffee plantations according to Harold Mowry. Dr. Mowry, a member of the U. S. Department of Agriculture's Foreign Agricultural Service has reported on some recent work to improve the yields of the coffee plantations. It seems that the minor elements, zinc, copper, manganese, boron molybdenum and others, are destined to play a major role in overcoming some of the troublesome problems encountered in the coffee plantations.

Costa Rica's coffee yields have been among the lowest in Central America. Recent crops have been producing, on the average, less than one fifth of the yields reported in the early days of the industry there. These low yields have been primarily due to deficiencies of soil nutrients, the results of intensive cropping combined with leaching and erosion. However the responses from common fertilizers have not been as marked as would be anticipated. In 1950 a research program was initiated to study the problem and one of the results of these investigations was the discovery that much of the soil showed marked

deficiencies in trace elements. There are still difficulties in restoration of the deficiencies, for the steep terrain of the plantations rules out mechanical spraying, the preferred method of restoration.

Dr. Mowry believes that if these deficiencies can be corrected and if some of the necessary soil bases such as calcium and magnesium can be restored, greater responses in yield and vigor will be obtained from the common fertilizers.

### People

**Frank G. Helyar**, retiring director of resident instruction at the Rutgers college of agriculture, was honored by students at the recent field day held on the campus at New Brunswick, N. J.



Prof. Helyar joined Rutgers in 1917 as director of short courses and associate in experiment station administration, becoming professor of animal husbandry in 1919. He has been in his present position since 1929.

**James C. Rinehart** has accepted the newly created position of development agronomist with U. S. Gypsum Co. Dr. Rinehart was formerly with Rutgers University.

**Harold W. Schultz** becomes head of the food technology department at Oregon State College. He has been head of Swift & Co.'s baby food and table-ready meat research divisions.



Dr. Schultz replaces **E. H. Wiegand**, who founded the department in 1919 and is now retired.

**Arnold H. Smith** has resigned his position as president of Monsanto Canada, Ltd., to become a special assistant in St. Louis to **E. A. O'Neal, Jr.**, general manager of Monsanto's overseas division. **Leo E. Ryan**, executive vice president of Monsanto Canada, has taken over responsibility for company operations.

**John H. Payne, Jr.**, has been appointed senior research group leader for Monsanto's phosphate division. He will be in charge of certain phases of research in calcium and ammonium phosphates.

**L. E. Loveless** and **B. J. Katchman** have been promoted to group leaders at the Mound Laboratory's biochemistry section. Dr. Loveless will head the microbiology group and Dr. Katchman, the metabolism group.