tobacco fields in Kentucky, but an occasional field was found which was entirely free. In each of the latter cases investigated the grower did not use chewing tobacco. The writer has a considerable amount of other evidence indicating the importance of chewing tobacco as a source of plant-bed infection.

Although nearly all the evidence gathered so far points to chewing tobacco made from the natural leaf of the previous crop as the chief source of plant-bed infection, it is possible that commercial tobacco, either raw or manufactured, may have played an important part in the rapid world distribution of the wildfire organism.[1]

By properly protecting the seed heads from infection by the use of paper bags, pouring the seed from clipped seed pods, and proper sanitary precautions with respect to the seed beds, it should be possible to control these two destructive tobacco diseases without the use of either seed treatment or dusting and spraying.

W. D. VALLEAU

UNIVERSITY OF KENTUCKY

## MERCURIC CHLORIDE AS A PREVENTIVE OF CERTAIN DAMPING-OFF FUNGI

IN the course of a series of experiments for the control of the root maggot in cabbage seed-beds, a clear-cut relation has appeared between certain of the treatments applied for the maggot and the amount of damage done by soil-infesting fungi, as the Rhizoctonia and Plasmodiophora.

For the last three years it has been repeatedly observed that the plants in different plats showed a marked difference in susceptibility to such diseases. Some of the treatments used, while thoroughly effective in maggot control, actually increased the liability to loss from such fungous troubles, while others, notably mercuric chloride, very largely prevented the diseases.

In these experiments the mercuric chloride was commonly used at the rate of 1–1200, although dilutions considerably greater than this appear to have distinct value. A series of from one to six applications was ordinarily made in each plat, at intervals of a week or ten days, beginning shortly after the plants appeared through the ground.

Careful examination of such plats showed that while one application gave but little protection, two, and especially three, gave excellent control for Rhizoctonia. Under the existing conditions nothing appeared to be gained by a greater number of applications.

This treatment is being tried out on a number of soil-infesting fungi and on different crops, and it seems probable that this method may have a much wider application in controlling diseases of this character on other crops than cabbage.

HUGH GLASGOW,
W. O. GLOYER

NEW YORK AGRICULTURAL EXPERIMENT STATION,
GENEVA, NEW YORK

[1] Since writing the above, the writer has been informed by Mr. Temple Smith, of Victoria, Australia, that these two diseases are unknown there and that he has rarely if ever seen an Australian tobacco grower chew tobacco. He stated that every three or four years they obtain a new supply of seed from the United States.

## SCIENTIFIC BOOKS

*An Elementary Treatise on Frequency Curves and their Application in the Analysis of Death Curves and Life Tables.* By ARNE FISHER. Translated from the Danish by E. A. Vigfusson. With an introduction by Raymond Pearl. New York, The Macmillan Co., 1922. XV + 240 pp.

NOT many readers of SCIENCE will read Fisher's book; it is not the kind that is read. It is original and arithmetical—two items against it, particularly when taken in conjunction. It has been received both with enthusiasm and with contempt by specialists in its line—two items in its favor. The book undertakes to show that one can construct a life table from a record of deaths at attained ages without knowing the numbers alive. In a variety of worked illustrations of the method, in some of which the author could not have known the numbers living, he has set up a life table that has been shown to be good in so far as the numbers of the living could be ascertained and a computation made in the ordinary way. The working hypothesis is biological in the sense that it is assumed that the different causes of death or groups of causes take their toll of life in a regular or lawful way—that we have diseases and deaths of early, middle and late life. This is not any foolish hypothesis; everybody knows it. But it remained for Fisher to show that what all know he can use in a strictly quantitative way to set up a life table. The technical method of analysis is the Charlier system of frequency curves for handling statistical material, except that Fisher determines the coefficients of the expansions by the method of least squares instead of by the method of moments.

The best review of the book is Pearl's *Introduction* in which the relation of Fisher's work to biological and actuarial science and their intimate relation to each other is exhibited leading to the conclusion that this is *fundamentally* the most significant advance in actuarial theory since Halley. True, doubtless, but how terrifying. What with Einstein making the first fundamental advances in mechanics since Newton, and Mrs. Eddy the greatest religious leader and organizer