to have the apples in as sterile a condition as possible. The apples were washed thoroughly in tap water, allowed to remain in mercuric chloride (1: 1,000) for five minutes, washed in water that had been boiled, then rinsed in 95 per cent. alcohol. Two punctures were made on each apple with a sterile platinum needle. The inoculum of conidiospores was applied to each puncture with a sterile loop needle. The inoculated apples were placed in a sterile granite pan and covered over with a similar pan. The total diameter in millimeters of the spots on the ten apples was recorded. The five series of inoculations were averaged and the results recorded in the following table:

Apples inoculated on May 10: May 13, 140 mm.; May 15, 414 mm.; May 17, 788 mm.; May 19, 1,060 mm.; May 21, 1,386 mm.

POLYSCYTALUM ON GRAPEFRUIT

Polyscytalum has only been found on the market three times and as yet is not a disease of importance.

The fungus was isolated from a slightly sunken soft area one half an inch in diameter. The spot was of a little lighter color than the color of the fruit itself. The spot has the appearance of a blister filled with water. In the early stages of the disease the rot works down to the pulp of the fruit in a perpendicular manner. The affected tissue is very soft, more so than that attacked by *Penicillium*. When a spot has reached the diameter of 20 or 25 millimeters the fungus begins to attack the pulp of the fruit. An attacked fruit soon becomes a soft mushy mass.

Five series of inoculations were made using four grapefruits in each series. The average development of a spot is shown as follows: fruit inoculated May 10, May 17, 55 mm.; May 19, 49 mm.; May 21, 70 mm.; May 23, 91 mm.

GRAPEFRUIT FUSARIUM

Fusarium sp. was first found on a shipment of Florida grapefruit. The fungus was found enough on the Chicago market to classify it as a disease of economic importance.

The isolation was made from a tan to red-dish brown rough sunken area an inch in diameter. The tissue underneath was dry, corky, and of a tan color extending inward an eighth of an inch. These rough sunken areas often reach the size of two and a half by one and a half inches. In the case of the larger spots the fungus often develops down into the pulp of the fruit causing a rot. A black and pink development is made in the host tissue. A very fine white cottony growth often develops in the pulp of the fruit and sometimes on the surface of the brown rough area.

Ten series of inoculations were made using three grapefruit in each inoculation. The average growth of a spot is shown as follows: fruit inoculated April 24, May 1, 5 mm. in diameter; May 19, 10 mm.; May 29, 17 mm.; June 2, 20 mm. It is seen that a *Fusarium* spot develops very slowly. However, in fifty per cent. of the inoculations when a spot had reached a diameter of twenty of twenty-five millimeters a rot developed at the edge of the sunken area. When *Fusarium* acts in this manner it is very serious, for a grapefruit will be a worthless rotten mass within forty-eight hours after the rot has started.

In order to discover what fruit diseases are of economic importance one has to study them from a market point of view as well as in the field. Some diseases are field infections which develop and spread under transit and storage conditions. A more complete study of fruit diseases as occuring on the market will reveal many diseases as yet unknown to plant pathologists.

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SCIENCE

A Weekly Journal devoted to the Advancement of Science, publishing the official notices and proceedings of the American Association for the Advancement of Science

Published every Friday by

THE SCIENCE PRESS

LANCASTER, PA. GARRISON, N. Y.
NEW YORK, N. Y.

Entered in the post-office at Lancaster, Pa., as second class matter