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Some Fungous Diseases of Fruit Trees in Iowa

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organic matter contained in the water, but also to the growth of a micro-organism. The water below the glucose and starch works at the above places contained large quantities of a greyish gelatinous substance. In microscopical examination this was found to contain large numbers of putrefactive bacteria, but especially common was *Beggiatoa alba*, which is not uncommon on the dead filaments of *algæ* and other decaying organic matter in water. The odor of hydrogen sulphide was very pronounced in the fresh material. After the heavy rains in June the gelatinous masses were washed away and caused little trouble for the rest of the season.¹

SOME FUNGOUS DISEASES OF FRUIT TREES IN IOWA.

BY PROF. L. H. PAMMEL.

(Abstract.)

LEAF BLIGHT OF THE PEAR. ENTOMOSPORIUM MACULATUM LEV.

Last summer while investigating a cotton disease in Texas, Mr. R. D. Blackshaw called my attention to a disease among some of his Le Conte pear trees. This was in the latter part of June, the leaves were falling rapidly and of some all had fallen. Since then new leaves and flowers have been produced. On returning to Ames I found that many of the seedling pear trees in the orchard were affected in a similar way. The disease was especially bad in the nursery. With the exception of some of the Chinese pears every variety in the orchard suffered more or less.

Nearly all of the young trees set out by Captain Speer in the experimental orchard of the experimental station lost most of their foliage prematurely, regardless of variety. The

¹—The reader is referred to Dr. Kennedy's paper in July Bull. Iowa State Board of Health, 1889, for an extended account. For an account of the life history, Zopf, "Die Spaltpilze," 1884, p. 75; De Bary, "Vorlesungen über Bacterien," English translation Garnsey and Bal'our, p. 70; Flugge Mikro-organismen, p. 396, Warming, Om nogle ved; Danmarks Kepterleende; Bacterier i Vidensk Meddel-Iser fra d. Naturhist. Forening, Copenhagen, 1875; Farlow Marine Algae of New England, p. 28 and p. 32; Cohn, Beiträge, I Heft 3, p. 157, etc., etc.

disease is widespread in both Europe and America.² In Iowa it has been known for some time as Dr. Halsted writes me, and occurs in different parts of the State. Mr. Beach sent some good material from Atlantic. In this abstract I cannot enter into the development of the fungus and its life history nor is it necessary as that is freely given by authors cited in foot-notes. The spores, however, seem to vary considerably. Mr. Kelsey, a special student in the laboratory, found that a good many leaves were uniformly brown, and that such leaves had an abundance of black pustules independent of the spots, and in these the spores were larger and much better developed than in the pustules found in the spots. The disease is known to occur on several species of *Pyrus*, (*cydonia*, *mespilus*), and on a closely related genus *Catoneaster*. It is quite troublesome at times on the fruit of the quince and pear. It also occurs on the apple (*Pyrus malus*), but is not common. Among a row of seedling pear trees in the college nursery a few apple tree seedlings had accidentally gotten in the leaves of these and they were also affected, though the fungus was found on no other trees on the grounds. Experiments with fungicides have not been made on the grounds, but Galloway³ has recently shown that the application of fungicides at the proper time has proved beneficial.

A CHERRY DISEASE.

BY PROF. L. H. PAMMEL.

(Abstract.)

The past season has been a very severe one on a good many of our cherry trees in the experimental orchards at Ames. Several kinds of parasitic fungi have been especially common.

²—New York; Arthur, Report New York Agricultural Experiment Station, 1884, p. 271, and 1885, p. 276. Illinois, F. S. Earl, Prairie Farmer Feb. 12, 1887. New Jersey; Byron D. Halsted, Rural New Yorker. Georgia, New Jersey; B. T. Galloway, Report the Chief of the Section of Vegetable Pathology, 1888, p. 357. Europe; Sorauer, Pflanzen Krau Rheiten, Second Edition, Vol. II, p. 371. Frank, Die Krau Rheiten der Pflanzen, Vol. II, p. 590.

³—Experiments in the treatment of Pear Leaf Blight and the Apple Powdery Mildew, Circular No. 8, United States Department of Agriculture, Division of Vegetable Pathology.