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A Provisional Bibliography of the more important works published by the U. S. Department of Agriculture and the Agricultural Experiment Stations of the United States from 1886 to 1893 inclusive, on Fungous and Bacterial Diseases of Economic Plants.

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NOTICE AS TO BULLETINS.

The Bulletins of this Station, usually issued quarterly or oftener, are mailed free to citizens of Connecticut who apply for them, and to others, as far as the limited editions permit.

Applications should be renewed annually before January 1st.

The matter of all the Bulletins of this Station in so far as it is new and of permanent value will be made part of the Annual Report of the Director.

Bulletins earlier than No. 71 and Nos. 83, 92, 93, 100, 101, and 109 are exhausted and cannot be supplied.

NOTICE AS TO SUPPLY OF STATION REPORTS.

The Station has no supply of its Annual Reports for the years 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1887, and 1891.

The Annual Report of this Station, printed at State expense, is by law limited to an edition of 12,000 copies, of which 5,000 copies are bound with the Annual Report of the Connecticut State Board of Agriculture, and distributed by the Secretary of the Board, T. S. Gold, West Cornwall, Conn.

After exchanging with other Experiment Stations and Agricultural Journals, the Reports remaining at the disposal of the Station will be sent to citizens of Connecticut who shall seasonably apply for them, and to others as long as the supply lasts.

LITERATURE OF FUNGOUS DISEASES.*

The substance of the following Bulletin has occupied what time and attention I have been able to spare from other duties during the past three years. Although meanwhile other publications have appeared covering the same ground, the present work has been prepared for publication in the hope that it might still prove of some value to intelligent farmers and horticulturists as well as to the mycologists of Experiment Stations.

General scope and plan of the Bulletin.—The determination of a fungus which is the cause of a specific disease of any economic plant is of course a matter for the specialist alone, but there seems to be no reason why any intelligent man should not be able to recognize, within certain limits, the cause of a diseased condition of a certain plant, provided only that he be furnished with a list of all diseases to which that particular plant is liable, each disease being characterized by a common name more or less expressive of the effect which the agent of disease produces, or of some evident peculiarity of that agent whether vegetable or animal. It is solely with the fungous and bacterial parasites of economic plants that this bibliography has to do, and it has been thought advisable to give to the common names of the diseases recorded, a prominence which might serve to render the latter more readily recognizable.

Such recognition of a fungous disease being thus partially provided for, references are given to such publications as careful study has convinced me to be the best as regards the description and illustration of the cause or effect of the disease in question, and any line of treatment which has been tested. This will enable anyone who has access to agricultural libraries or to files of Station publications, to answer for himself many questions which at present he must refer to those who are better informed than himself.

As I have stated above, the ground of this Bulletin has already been covered, notably by certain publications of the Department of Agriculture,—the Experiment Station Record published monthly and giving digests of all publications of the Department

* Including diseases caused primarily by Bacteria.

and of the Stations; a Card Catalogue of the literature of the Experiment Stations and kindred institutions; and Bulletin 15 of the Office of Experiment Stations, a Handbook of Experiment Station Work consisting of a Popular Digest of the Publications of the Experiment Stations. It will be seen at once that these three sources of information have a very wide scope, an admirable feature in itself but one which renders finding just the item desired almost as difficult as would be the process of looking through the original publications themselves. This difficulty increases rapidly every year, and promises soon to become insuperable. Even now it frequently requires much unnecessary labor to discover if a certain parasitic fungus of economic importance has been recorded in Station publications, if any definite line of treatment has been recommended, and if so, where and when. The consequence is that much work is repeated over and over again as it is almost impossible to ascertain just what has been done along any special line.

Furthermore, the Record naturally publishes an Index only at the close of each year, so that in order to find any particular item recorded not less than a year ago, the separate table of contents for each number must be examined; whereas in the case of the Handbook of Experiment Station Work mentioned above, though the alphabetical arrangement of the subjects and the concise summary under each should render it a most available source of reference, its value is largely neutralized by errors and omissions, some of them doubtless due to the wide scope of the work which rendered strict attention to details impracticable, but most of them quite inexplicable. Moreover while no attempt is made in the Handbook to give all references to Station publications, as is the case with both the Record and the Card Catalogue, those which are given are often to articles which are by no means the best or most complete; and finally the Handbook gives no references to the publications of the Department of Agriculture to which we owe many of our best illustrated articles upon fungous diseases, and the most reliable records of lines of treatment.

I have thought that by limiting the scope of my subject to diseases caused by fungi and bacteria alone, and broadly speaking, to the years 1886-1893, I might eliminate the danger of error incidental to a larger undertaking, and at the same time depend upon a careful and personal comparison of the available Station litera-

ture under each subject to enable me to select what seemed to be the best.

Arrangement of topics.—The general arrangement of the work **needs little comment.** The main subjects are the host-plants and these are arranged alphabetically; under the name of each host-plant are arranged, also alphabetically, the “common names” of the fungous diseases recorded as affecting the plant. References to descriptions and illustrations either of the fungus itself or of its effect upon the host-plant follow, and finally a line of treatment, if any has been recommended or tested, is referred to. All references are arranged chronologically under each of the sub-headings,—*Description* and *Treatment*. The date of publication occupies the right-hand margin of the page. In the case of references to Annual Reports, the number of the Report is given, followed immediately by the year which it covers, and in the margin the date of publication for the sake of uniformity.

Occasionally I have referred to other than Station literature, viz., to Lamson-Scribner's “Fungous Diseases of the Grape and other Plants,” and to “Garden and Forest.” I have made these exceptions on the ground that both of these publications should be, and probably are, in every library of agriculture, and because the author of the former was for some time connected with the Department of Agriculture, and many of its best publications on economic mycology proceeded from him, while in the columns of Garden and Forest, there appear from time to time important notes upon fungous diseases by Station workers.

Wherever, as in the case of Black-Rot of Grapes or Scab of Apple, a great number of admirable papers have issued from many Stations, I have aimed first to select the fullest and best, and then to select those from widely separated localities in order that some one of the original publications referred to may be accessible to as many observers as possible. This has compelled me to omit many references which might have been recorded since I have thought it best not to record two of equal worth from adjacent States, in case it were possible to substitute for one of them, a publication from a widely different locality.

Common names of fungous diseases.—A word must be said regarding the so-called “common names” selected. Many names such as Black-Knot, Black-Rot, Rust, etc., have made such an impression that, as in the case of flowering plants, it would be unwise to disregard them. In economic mycology however, we

are met by a difficulty regarding common names which is not so evident in the nomenclature of flowering plants. In the latter case the common names represent what alone the plants are known by either locally or nationally outside of scientific circles, and they have arisen spontaneously from common observation. In economic mycology on the other hand, many of the "common names" have been invented by the mycologists themselves and most loosely applied. Such, it is true, has not always been the case; thus every one recognizes that the "Rusts" belong to one group of fungi which the botanist calls *Uredineæ*, although doubtless the name first arose among people who were quite ignorant of the cause, but who noticed the rusty color produced uniformly by the disease; so in the case of the "Smut," a common name fitly given by observant people, although the fungi causing "Smut," all happen to belong to the natural group of the *Ustilagineæ*. In such cases the common name has originated spontaneously and is fairly satisfactory. It is at least natural. But who knows even what one of the great natural groups of fungi is designated by the term "Leaf-Blight" or "Leaf-Spot," "Stem-Rot" or "Mildew?"

Where such confusion has necessarily arisen regarding common names given arbitrarily and with no definite plan or system, it is manifestly impossible to arrange them on any satisfactory lines, and it would be an impertinence for one observer to attempt all the desirable changes. Deeming it expedient for the reasons explained, to make use of common names in the present Bulletin, and to give them a decided prominence, I have endeavored to group them as far as possible in conformity with the natural scientific arrangement, and in doing so, have ventured to change only a few which seem to have been originally bestowed with the least imaginable forethought. Such changes have been made chiefly in those diseases of the leaves which have been indiscriminately called "Leaf-Blight" or "Leaf-Spot." The former of these terms I have, with few exceptions, confined to conidial fungous forms belonging to the group of *Hyphomycetes* and producing upon the leaves attacked indeterminate or effused areas, which sometimes involve the whole leaf in a condition most aptly described by the term "Blight." The perithecial forms whether acigerous, pycnidial, or spermogonial, I have grouped together under the general term "Leaf-Spot," since the diseased areas produced by such forms in the leaf-tissue are often

circumscribed in outline, giving the leaf a spotted appearance, and not infrequently become separated from the leaf altogether producing the appearance described as "shot-hole." That on this basis the same disease must at one time be called "Leaf-Blight" and later "Leaf-Spot," is very true, but it seems to be one of the lesser evils attending the use of common names. The term "Scab," I have limited to hyphomycetous fungi which produce upon either the leaves or fruit attacked determinate spots occupied by a dense growth of the fungus and more or less indurated, although here again I have thought it best to denominate as "Scab" certain fungi which may not produce any definite scabby appearance, but which nevertheless belong to genera such as *Fusicladium*, *Fusarium*, *Cladosporium* and the like, to which belong those fungi which were originally and aptly called "Scab-fungi." I have done this because it seems best to make these common names depend more upon scientific principles than upon some indefinite effect produced on the tissues of the host. Under the general term "Anthracnose," I have followed established precedent in including conidial forms belonging, with one exception, to the group of the *Melanconieæ*. That exception is the genus *Vermicularia* in which, though grouped with the *Sphaeropsidææ*, forms are included in which the perithecium is obsolete and which therefore approach the genus *Colletotrichum*. In cases where hyphomycetous fungi related to those which cause "Leaf-Blight," attack fruit and produce a decided decay, I have thought best to speak of them as "Fruit-Mould," and in some cases where similar effects are produced upon the leaves, as "Leaf-Mould," it being doubtful in some of these instances whether the attack is of a truly parasitic nature or does not more nearly resemble the process by which any dead organic substance becomes "mouldy."

Finally, I have followed established precedent in the use of common names wherever it seemed that the name so applied was one actually in common use, outside of scientific circles, to designate a specific disease of an economic plant. Such names I have not felt at liberty to change, although, upon a scientific basis, a change might appear both practicable and desirable. Such cases are the "White-Rust" (*Cystopus*) of the Beet, Cabbage, Radish and Turnip, the "Frenching" (*Fusarium*) of Cotton, the "Damping-off" (*Pythium*) of seedlings, "Plum-pockets" (*Taphrina*), "Leaf-curl" (*Exoascus*) of Peach, etc.

It will be noted that the familiarly descriptive term "Rot"

has been applied to a great number of fungous diseases, a slight degree of system and clearness being secured by some qualifying prefix indicating where practicable, the portion attacked.

Nomenclature.—I have relied upon several sources for the scientific names which I have used. For the Phænogams I have followed Gray's Manual, and the Index Kewensis of Hooker and Jackson so far as that work has as yet appeared. For the fungi I have relied almost entirely upon Farlow & Seymour's Provisional Host-Index of the Fungi of the United States.

Abbreviations.—Little need be said regarding the abbreviations used, since most of them are readily intelligible. Among the publications referred to *Journ. Mycol.*, stands for the *Journal of Mycology*, at present issued serially by the Department of Agriculture, Division of Vegetable Pathology; *Scribner, Fung. Dis.*, refers to "*Fungous Diseases of the Grape and other Plants*," by F. Lamson-Scribner, published by the J. T. Lovett Company, Little Silver, N. J., 1890; and *Gar. and For.* refers to the horticultural monthly "*Garden and Forest*," published from the Tribune building, New York City. The two latter publications are occasionally referred to for reasons stated above.

The names of States are abbreviated according to the usual custom; *Bulletin* and *Report* are abbreviated respectively to *Bull.* and *Rep.*, and, as explained above (p. 5) are arranged chronologically according to date of publication. Where two Stations exist in one State, they are distinguished by separate titles; thus *N. Y. Corn. Univ. Agr. Exp. Sta.*, refers to the Experiment Station connected with Cornell University at Ithaca, N. Y. The publications under the heading *U. S. Dept. Agr.*, and abbreviated to *Circ.* and *Farm. Bull.*, are occasional issues of the Department of Agriculture called *Circulars* and *Farmers Bulletins* which give information of value to farmers and others in a simple and concise form.

The abbreviations which precede the references will require more extended explanation. *Descr.*, indicates that in the work referred to, the fungus or its effect on the plant has been described; if followed by *Illus.*, the fungus or its effect has also been illustrated. *Occ.*, indicates that the occurrence of the fungus has been noted, with no further comment. *Treat.*, stands for Treatment, the abbreviation in parenthesis which follows being explanatory; (*rec.*), indicates that a definite line of treatment has been recommended, though based upon analogy and not

upon any direct experiment; (*pos.*), that a positive line of treatment has been proved successful by definite experiments the results of which are recorded; (*neg.*), either that some treatment has been tried and has given negative results, or that nothing has yet been attempted in this direction. It may be well to note that *Cf.*, the usual abbreviation of *Compare*, refers the reader to some other portion of the Bulletin for further information.

In preparing this Bulletin for publication I am only too conscious that critical eyes will detect many errors and omissions. I have attempted to include only the best publications of permanent value relative to fungous diseases which have issued from the Department of Agriculture and the Agricultural Experiment Stations, between and including the years 1886 and 1893, though I have not always limited myself to those dates. Many will doubtless dissent from my judgment in the selection of papers as worthy of record; such critics I would ask kindly to inform me of any such errors or omissions in order that they may be corrected if possible and advisable.

For the use of Station workers interleaved copies of this Bulletin are issued in order that each observer may continue the work as he sees fit.

Alfalfa.*(Medicago sativa, L.)*

- Leaf-Spot (*Pseudopeziza Medicaginis*, (Lib.) Sacc.)
 Descr. Illus., Del. Agr. Exp. Sta., Rep. 3, 1890, pp. 79-82. (1891)
 Treat. (rec.), Del. Agr. Exp. Sta., Rep. 3, 1890, p. 82. (1891)
- Root-Rot (*Ozonium auricomum*, Lk.)
 Occ., Tex. Agr. Exp. Sta., Bull. 22. (1892)
 Cf., Cotton (Root-Rot).

Almond.*(Prunus (Amygdalus) communis, L.)*

- Leaf-Blight (*Cercospora circumscissa*, Sacc.)
 Descr. Illus., Journ. Mycol., Vol. vii, p. 66. (1892)
 Treat. (pos.), Journ. Mycol., Vol. vii, p. 232. (1893)

Apple.*(Pirus malus, L.)*

- Black-Rot (*Sphaeropsis Matorum*, Berk.)
 Descr., Scribner, Fung. Dis., p. 81. (1890)
 Cf. Quince (Black-Rot).
- Fire-Blight (*Micrococcus amylovorus*, Burrill.)
 Descr., Colo. Agr. Exp. Sta., Rep. 1, 1888, pp. 64-69. (1888)
 N. C. Agr. Exp. Sta., Bull. 92, p. 89. (1893)
 Treat. (rec.), Colo. Agr. Exp. Sta., Rep. 1, 1888, pp. 69
 & 70. (1888)
 N. C. Agr. Exp. Sta., Bull. 92, p. 89. (1893)
 Cf. Pear (Fire-Blight).
- Fruit-Spot (*Phyllachora pomigena*, (Schw.) Sacc.)
 Descr., Vt. Agr. Exp. Sta., Rep. 5, 1891, p. 133. (1892)
- Leaf-Spot (*Phyllosticta pirina*, Sacc.)
 Descr., Vt. Agr. Exp. Sta., Rep. 6, 1892, p. 83. (1893)
 Va. Agr. Exp. Sta., Bull. 17, p. 62. (1892)
 Treat. (rec.), Va. Agr. Exp. Sta., Bull. 17, p. 64. (1892)
- Powdery-Mildew (*Podosphaera oxycanthae*, (DC.) DBy.)
 Treat. (pos.), U. S. Dep. Agr., Sec. Veg. Path., Circ. 8, p. 8. (1889)
 Journ. Mycol., Vol. vi, p. 14. (1890)
 U. S. Dep. Agr., Farm. Bull. 7, p. 14. (1892)
 Cf. Journ. Mycol., Vol. vii, p. 256.
- Ripe-Rot or Anthracnose (*Gloeosporium fructigenum*, Berk.; *G. versicolor*, B. & C.)
 Descr. Illus., U. S. Dep. Agr. Rep. for 1887, p. 348. (1888)
 Journ. Mycol., Vol. vi, p. 164. (1891)
 Treat. (pos.), Journ. Mycol., Vol. vi, p. 172. (1891)
 Ky. Agr. Exp. Sta., Bull. 44, p. 20. (1893)
 Cf. Grape (Ripe-Rot).
 Cf. N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 326-333.

- Rust (*Gymnosporangium macropus*, Lk., Syn. *Roestelia pirata*,
(Schw.) Thaxter).
 Descr. Illus., U. S. Dep. Agr., Rep. for 1888, pp. 370-378. (1889)
 Scribner, Fung. Dis., p. 84. (1890)
 Treat. (pos.), U. S. Dep. Agr., Rep. for 1888, p. 379. (1889)
 U. S. Dep. Agr., Sec. Veg. Path., Bull. 11,
 p. 46. (1890)
 Iowa Agr. Exp. Sta., Bull. 13, p. 43. (1891)
 N. C. Agr. Exp. Sta., Bull. 92, p. 86. (1893)
 Cf. Conn. Agr. Exp. Sta., Bull. 107.
- Scab (*Fusicladium dendriticum*, (Wallr.) Fekl.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, p. 341. (1888)
 Treat. (pos.), U. S. Dep. Agr., Rep. for 1887, p. 346. (1888)
 U. S. Dep. Agr., Sec. Veg. Path., Bull. 11,
 pp. 27 & 36. (1890)
 U. S. Dep. Agr., Div. Veg. Path., Bull. 3,
 pp. 35 & 36. (1892)
 Va. Agr. Exp. Sta., Bull. 17, p. 63. (1892)
 N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 48,
 pp. 297 & 298. (1892)
 N. C. Agr. Exp. Sta., Bull. 92, p. 87. (1893)
 Conn. Agr. Exp. Sta., Bull. 115, pp. 3 & 4. (1893)

Barley.

(*Hordeum sp.*)

- Ergot (*Claviceps purpurea*, Tul.)
 See Rye (Ergot.)
- Leaf-Blight (*Scolecotrichum graminis*, Fekl., and *Helminthosporium
graminum*, Rab.)
 Descr. and Illus., U. S. Dep. Agr., Rep. for 1886, p. 129. (1887)
 Descr., Journ. Mycol., Vol. vii, pp. 96 & 97. (1892)
- Rust (*Puccinia graminis*, P. and *P. Rubigo-vera*, (DC.) Wint.)
 See Oats and Wheat (Rust).
- Smut (*Ustilago Hordei*, (P.) Kell. & Sw., and *U. nuda*, (Jens.) Kell. & Sw.)
 Descr. Illus., Mass. Agr. Exp. Sta., Rep. 9, 1891,
 pp. 244-246. (1892)
 Treat. (pos.), Mass. Agr. Exp. Sta., Rep. 9, 1891, p. 246. (1892)
 Cf. Oats and Wheat (Smut).

Bean.

(*Phaseolus vulgaris*, L.; *Faba vulgaris*, L., &c.)

- Anthracnose (*Colletotrichum Lindemuthianum*, (Sacc. & Magn.) Bri.
& Cav.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, p. 361. (1888)
 N. Y. Agr. Exp. Sta., Bull. 48, pp. 310 & 318. (1892)
 Treat. (pos.), N. Y. Agr. Exp. Sta., Bull. 48, pp. 320-326. (1892)
 U. S. Dep. Agr., Bot. Div., Bull. 8, p. 65. (1889)
 N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 284. (1892)
 Cf. N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 326-333.

Blight (Bacterial).

- Descr. Illus., N. Y. Agr. Exp. Sta., Bull. 48, pp. 329-331. (1892)
N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 283. (1893)

Downy-Mildew (*Phytophthora Phaseoli*, Thaxter).

- Descr. Illus., Conn. Agr. Exp. Sta., Rep. 13, 1889,
pp. 167-170. (1890)
Treat. (rec.), Conn. Agr. Exp. Sta., Rep. 13, 1889, p. 171. (1890)
Conn. Agr. Exp. Sta., Rep. 17, 1893, p. 77. (1894)

Leaf-Spot (*Phyllosticta* sp.)

- Descr. N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 287. (1892)

Powdery Mildew (*Erysiphe Martii*, Lév.)

- Treat. (pos.), Journ. Mycol., Vol. v, p. 214. (1889)

Rust (*Uromyces appendiculatus*, (P.) Lév.)

- Descr. Illus., N. Y. Agr. Exp. Sta., Bull. 48, p. 331. (1892)
Treat. (neg.), N. Y. Agr. Exp. Sta., Bull. 48, p. 333. (1892)

Beet.

(*Beta vulgaris*, L.)

Blight (Bacterial).

- Descr., Ind. Agr. Exp. Sta., Bull. 39, pp. 54-58. (1892)

Leaf-Blight (*Cercospora longissima*, C. and E.)

- Descr. Illus., Iowa Agr. Exp. Sta., Bull. 15, pp. 239-242. (1891)
Treat. (rec.), Iowa Agr. Exp. Sta., Bull. 15, p. 243. (1891)

Root-Rot (*Rhizoctonia Betae*, Kühn.)

- Descr. Illus., Iowa Agr. Exp. Sta., Bull. 15, pp. 244-248. (1891)
Treat. (rec.), Iowa Agr. Exp. Sta., Bull. 15, p. 250. (1891)

Rust (*Uromyces Betae*, (P.) Kühn.)

- Descr. Illus., U. S. Dep. Agr., Rep. for 1887, p. 351. (1888)
Descr., Iowa Agr. Exp. Sta., Bull. 15, p. 235. (1891)
Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, p. 353. (1888)
Iowa Agr. Exp. Sta., Bull. 15, p. 236. (1891)

Scab (*Oospora scabies*, Thaxter.)

- Descr. Illus., Iowa Agr. Exp. Sta., Bull. 15, p. 251. (1891)
Ind. Agr. Exp. Sta., Bull. 39, p. 58. (1892)
Treat. (rec.), Ind. Agr. Exp. Sta., Bull. 39, p. 60. (1892)
Cf. Potato (Scab).

White-Rust (*Cystopus Bliti*, (Biv.) Lév.)

- Descr. Illus., Iowa Agr. Exp. Sta., Bull. 15, pp. 237 & 238. (1891)

Blackberry.

(*Rubus villosus*, Ait. vars.)

Anthracnose (*Gloeosporium Venetum*, Speg.)

- Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 358-360. (1888)
Ohio Agr. Exp. Sta., Bull. Vol. iv, No. 6, p. 124. (1891)
Treat. (pos.), U. S. Dep. Agr., Rep. for 1887, p. 361. (1887)
Conn. Agr. Exp. Sta., Rep. 13, 1889, p. 172. (1890)
Ohio Agr. Exp. Sta., Bull. Vol. iv, No. 6, p. 119. (1891)

Blight (Bacterial)

Occ., Ohio Agr. Exp. Sta., Bull. Vol. iv, No. 6, p. 129. (1891)

Cf. Raspberry (Blight.)

Leaf-Spot (*Septoria Rubi*, Westd.)

Descr., Ohio Agr. Exp. Sta., Bull. Vol. iv, No. 6, p. 126. (1891)

Treat. (neg.), Journ. Mycol., Vol. vii, p. 22. (1891)

(rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 129. (1893)

Rust (*Caeoma (Uredo) luminatum*, Lk.; Syn. *Puccinia Peckiana*, Howe.)

Descr., Ohio Agr. Exp. Sta., Bull. Vol. iv, No. 6, p. 127. (1891)

Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 224. (1891)

Descr. Illus., Ill. Agr. Exp. Sta., Bull. 29, pp. 273-281

& 286. (1893)

Treat. (pos.), Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 224. (1891)

Buckwheat.

(*Fagopyrum esculentum*, Mönch.)

Leaf-Blight (*Ramularia rufomaculans*, Pk.)

Descr., Conn. Agr. Exp. Sta., Rep. 14, 1890, p. 98. (1891)

Treat. (rec.), Conn. Agr. Ex. Sta., Rep. 14, 1890, p. 98. (1891)

Cabbage.

(*Brassica oleracea*, L.)

Club-Root (*Plasmidiophora Brassicae*, Wor.)

Descr., N. J. Agr. Exp. Sta., Bull. 50, p. 14. (1888)

Descr. Illus., Journ. Mycol., Vol. vii, pp. 79-84. (1892)

N. J. Agr. Exp. Sta., Bull. 98. (1893)

Treat. (rec.), Journ. Mycol., Vol. vii, p. 85. (1892)

N. C. Agr. Exp. Sta., Bull. 84, p. 15. (1892)

N. J. Agr. Exp. Sta., Bull. 98, pp. 13-16. (1893)

Downy Mildew (*Peronospora parasitica*, (P.) Tul.)

Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 349. (1891)

N. C. Agr. Exp. Sta., Bull. 84, p. 15. (1892)

Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 84, p. 15. (1892)

Leaf-Blight (*Macrosporium Brassicae*, Berk.)

Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 349. (1891)

White Rust (*Cystopus candidus*, (P.) Lév.)

Occ., N. C. Agr. Exp. Sta., Bull. 84, p. 15. (1892)

Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 84, p. 15. (1892)

Carnation.

(*Dianthus Caryophyllus*, L.)

Anthracnose (*Colletotrichum* sp.)

Descr., N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 301. (1892)

Gar. and For., Vol. v, p. 594. (1892)

Treat. (rec.), Gar. and For., Vol. v, p. 595. (1892)

Anthracnose (*Vermicularia subeffigurata*, Schw.)

Descr., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 363. (1891)

Treat. (pos.), N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 363. (1891)

- Leaf-Spot (*Septoria Dianthi*, Desm.)
 Descr., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 363. (1891)
 Gar. and For., Vol. v, p. 594. (1892)
 Treat. (pos.), N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 363. (1891)
 Gar. and For., Vol. v, p. 594. (1892)
- Rust (*Uromyces caryophyllinus*, (Schrank) Schrt.)
 Descr. Illus., Gar. and For., Vol. v, pp. 18 & 19. (1892)
 Descr., N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 302. (1892)
 Treat. (rec.), Gar. and For., Vol. iv, p. 595. (1891)
 Gar. and For., Vol. v, p. 19. (1892)
 (pos.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 302. (1892)

Catalpa.

(*Catalpa Bignonioides*, Walt.)

- Leaf-Blight (*Macrosporium Catalpae*, Ell. & Mart.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 364
 & 365. (1888)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, p. 366. (1888)
- Leaf-Spot (*Phyllosticta Catalpae*, Ell. & Mart.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 364
 & 365. (1888)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, p. 366. (1888)

Celery.

(*Apium graveolens*, L.)

- Blight (Bacterial).
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 257
 & 258. (1892)
 (?) Descr., N. Y. Agr. Exp. Sta., Bull. 51, pp. 134 & 136. (1893)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 258. (1892)
 N. Y. Agr. Exp. Sta., Bull. 51, p. 136. (1893)
- Leaf-Blight (*Cercospora Apii*, Fres.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1886, pp. 117-120. (1887)
 N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 250. (1892)
 Treat. (pos.), N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 251
 & 252. (1892)
 (pos.), Conn. Agr. Exp. Sta., Rep. 16, 1892, pp. 44
 & 45. (1893)
 Conn. Agr. Exp. Sta., Bull. 115, p. 17. (1893)
- Leaf-Spot (*Phyllosticta Apii*, Halsted.)
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 253
 & 254. (1892)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 254. (1892)
- Leaf-Spot (*Septoria Petroselinii*, Desm., var. *Apii*, Br. & Cav.)
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 255
 & 256. (1892)
 N. Y. Agr. Exp. Sta., Bull. 51, pp. 137 & 138. (1893)
 Treat. (rec.), N. Y. Agr. Exp. Sta., Bull. 51, pp. 139-141. (1893)
 Cf. Del. Agr. Exp. Sta., Rep. 4, 1891, pp. 63-65.

Rust (*Puccinia bullata*, (Pers.) Schrt.)

- Descr. Illus., N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 256
& 257. (1892)

Cherry.

(*Prunus Cerasus*, L.)

Black Knot (*Plowrightia morbosa*, (Schw.) Sacc.)

- Descr. Illus., Scribner, Fung. Dis., p. 111. (1890)
Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 200. (1891)
N. J. Agr. Exp. Sta., Bull. 78. (1891)
N. Y. Agr. Exp. Sta., Bull. 46. (1892)
Treat. (rec.), N. Y. Agr. Exp. Sta., Bull. 40, p. 33. (1892)
Mass. Agr. Exp. Sta., Rep. 10, 1892,
pp. 236-238. (1893)
Conn. Agr. Exp. Sta., Bull. 115, p. 9. (1893)

Fruit-Mould (*Oidium fructigenum*, Kze. & Schm.)

- Descr. Illus., U. S. Dep. Agr., Rep. for 1888, p. 349. (1889)
Ky. Agr. Exp. Sta., Rep. 2, 1889, pp. 31-34. (1890)
Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 213. (1891)
Treat. (rec.), U. S. Dep. Agr., Rep. for 1888, p. 352. (1889)
(pos.), Ky. Agr. Exp. Sta., Rep. 2, 1889, pp. 35-42. (1890)

Leaf-Spot (*Cylindrosporium Padi*, Karst.)

- Descr. Illus., Scribner, Fung. Dis., p. 119. (1890)
Iowa Agr. Exp. Sta., Bull. 13, pp. 61-65. (1891)
Treat. (pos.), Conn. Agr. Exp. Sta., Rep. 13, 1889, p. 176. (1890)
U. S. Dep. Agr., Rep. for 1890, p. 396. (1891)
Iowa Agr. Exp. Sta., Bull. 17, pp. 421-431. (1892)
(rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 114. (1893)
Cf. Plum. (Leaf-Spot).

Powdery Mildew (*Podosphaera oxycantha*, (DC.) DBy.)

- Descr. Illus., U. S. Dep. Agr., Rep. for 1888, pp. 352-356. (1889)
Treat. (rec.), U. S. Dep. Agr., Rep. for 1888, p. 356. (1889)
(pos.), Iowa Agr. Exp. Sta., Bull. 17, pp. 422-428. (1892)
Cf. Apple (Powdery Mildew).

Rust (*Puccinia Pruni*, Pers.)

- Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 353 & 354. (1888)
Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, p. 354. (1888)

Scab (*Cladosporium carpophilum*, Thüm.)

- Occ., Iowa Agr. Exp. Sta., Bull. 17, p. 421. (1892)
Descr. Illus., Iowa Agr. Exp. Sta., Bull. 23, pp. 918-920. (1894)
Treat. (rec.), Iowa Agr. Exp. Sta., Bull. 23, pp. 920 & 921. (1894)
Cf. Peach and Plum (Scab).

Chestnut.

(*Castanea sativa*, Mill.)

Anthracnose (*Marsonia ochroleuca*, B. & C.)

- Occ., Mass. Agr. Exp. Sta., Rep. 9, 1891, p. 234. (1892)

Chrysanthemum.*(Chrysanthemum, sp.)*

- Leaf-Spot (*Septoria* sp. and *Phyllosticta* sp.)
 Descr., N. Y. Agr. Exp. Sta., Rep. 12, 1891, p. 298. (1892)
 Treat. (pos.), N. Y. Agr. Exp. Sta., "Leaf-Spot of Chrysanthemums." (1892)

Clematis.*(Clematis spp.)*

- Root-Rot (*Phoma* sp.)?
 Descr., N. Y. Agr. Exp. Sta., Rep. 3, 1884, pp. 383 & 384. (1885)

Clover.*(Trifolium spp.)*

- Rust (*Uromyces Trifolii*, A. & S.) Wint.)
 Descr. Illus., N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 24. (1890)
 Iowa Ag. Exp. Sta., Bull. 13, p. 53. (1891)
 Treat. (rec.), N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 24, p. 139. (1890)
- Stem-Rot (*Sclerotinia Trifolium*, Erick.)
 Descr. Illus., Del. Agr. Exp. Sta., Rep. 3, 1890, pp. 84-88. (1891)
 Treat. (neg.), Del. Agr. Exp. Sta., Rep. 3, 1890, p. 88. (1891)

Corn.*(Zea Mays, L.)*

- Blight (Bacterial.)
 Descr. Illus., Ill. Agr. Exp. Sta., Bull. 6. (1889)
 Treat. (neg.), Ill. Agr. Exp. Sta., Bull. 6, p. 174. (1889)
- Leaf-Blight (*Helminthosporium graminum*, Rab.)
 Occ., Conn. Agr. Exp. Sta., Rep. 13, 1889, p. 171. (1890)
- Rust (*Puccinia Maydis*, Bérang.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, p. 390. (1888)
 Treat. (neg.), U. S. Dep. Agr., Rep. for 1887, p. 391. (1888)
- Smut (*Ustilago Maydis*, Cord.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 380-386. (1888)
 Neb. Agr. Exp. Sta., Bull. 11, pp. 25-30. (1889)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, pp. 386 & 387. (1888)
 Neb. Agr. Exp. Sta., Bull. 11, p. 35. (1889)
 Ohio Agr. Exp. Sta., Bull., Vol. iii, No. 10, p. 271. (1890)

Cotton.*(Gossypium spp.)*

- Anthracnose (*Colletotrichum Gossypii*, Southworth.)
 Descr. Illus., Journ. Mycol., Vol. vi, pp. 100-104 & 173-177. (1891)
 Ala. Agr. Exp. Sta., Bull. 41, pp. 40-49. (1892)

- Blight (Bacterial.)
 Descr., Ala. Agr. Exp. Sta., Bull. 27, p. 10. (1891)
- “Frenching” or Scab (*Fusarium vasinfectum*, Atkinson.)
 Descr. Illus., Ala. Agr. Exp. Sta., Bull. 41, pp. 19-29. (1892)
- Leaf-Blight (*Cercospora gossypina*, Cke.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 355
 & 356. (1888)
 Ala. Agr. Exp. Sta., Bull. 27, pp. 7 & 8. (1891)
- Leaf-Mould (*Macrosporium nigricantium*, Atk. and *Alternaria* sp.)
 Descr. Illus., Ala. Agr. Exp. Sta., Bull. 27, pp. 8-10. (1891)
- Leaf-Mould (*Ramularia areola*, Atkinson.)
 Descr. Illus., Ala. Agr. Exp. Sta., Bull. 41, pp. 55-58. (1892)
- Leaf-Spot (*Sphaerella gossypina*, Atkinson.)
 Descr. Illus., Ala. Agr. Exp. Sta., Bull. 41, pp. 58-60. (1892)
- Root-Rot (*Ozonium auricomum*, Lk.)
 Descr. Illus., Tex. Agr. Exp. Sta., Rep. 2, 1889, pp. 67-76. (1890)
 Treat. (rec.), Tex. Agr. Exp. Sta., Rep. 2, 1889, p. 81. (1890)
 Cf. Alfalfa (Root-Rot.)

Cranberry.

(*Vaccinium Oxycoccus*, L.)

- Gall (*Synchytrium Vaccinii*, Thomas.)
 Descr. Illus., N. J. Agr. Exp. Sta., Bull. 64, pp. 4-9. (1889)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 64, p. 16. (1889)
 N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 333. (1891)
- “Scald” (Fungus Sp. indet.)
 Descr. Illus., N. J. Agr. Exp. Sta., Bull. 64, pp. 30-34. (1889)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 64, pp. 39 & 40. (1889)
 Journ. Mycol., Vol. vi, p. 18. (1890)

Cucumber.

(*Cucumis sativus*, L.)

- Anthracoze (*Glaeosporium*, sp.)
 Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 231. (1893)
 Occ., Cf. Melon (Anthracoze.)
- Blight (Bacterial.)
 Descr., N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 273-276. (1892)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 276. (1892)
 Cf. Melon, Potato, Squash and Tomato (Blight).
- “Damping-off” or Seedling-Mildew (*Pythium De Baryanum*, Hesse.)
 Descr. Illus., Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 220. (1891)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 221. (1891)
- Downy Mildew (*Plasmopara Cubensis*, (B. & C.) Humphrey.)
 Descr. Illus., Mass. Agr. Exp. Sta., Rep. 8, 1890,
 pp. 210-212. (1891)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 227. (1893)

- Leaf-Blight (*Acremonium* sp.)
 Descr., Mass. Agr. Exp. Sta., Rep. 9, 1891, p. 227. (1892)
 Descr. Illus., Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 230. (1893)
- Powdery Mildew (*Erysiphe cichoracearum*, DC.)
 Descr. Illus., Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 225. (1893)
 Treat. (pos.), N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 31,
 p. 138. (1891)
 Mass. Agr. Exp. Sta., Rep. 9, 1891, p. 225. (1892)
- Scab (*Cladosporium cucumerinum*, Ell. & Arth.)
 Descr. Illus., Ind. Agr. Exp. Sta., Bull. 19, pp. 8-10. (1889)
 Mass. Agr. Exp. Sta., Rep. 10, 1892, pp. 227-229. (1893)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 229. (1893)
- Stem-Rot (*Sclerotinia Libertiana*, Fckl.)
 Descr. Illus., Mass. Agr. Exp. Sta., Rep. 10, 1892,
 pp. 212-224. (1893)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 222. (1893)

Currant.

(*Ribes*, spp.)

- Anthraxnose (*Glaeosporium Ribis*, (Lib.) Mont. & Desm.)
 Descr. Illus., N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 15,
 p. 196. (1889)
 Treat. (rec.), N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 15,
 p. 197. (1889)
- Leaf-Spot (*Septoria Ribis*, Desm., and *Cercospora angulata*, Wint.)
 Descr. Illus., Iowa Agr. Exp. Sta., Bull. 13, pp. 68 & 69. (1891)
 Treat. (pos.), Iowa Agr. Exp. Sta., Bull. 17, pp. 420 & 421.
 (1892)
- Powdery Mildew (*Sphaerotheca mors-uvae* (Schw.) B. & C.)
 See Gooseberry (Powdery Mildew.)

Egg-plant.

(*Solanum Melongena*, L.)

- Anthraxnose (*Glaeosporium melongenae*, Ell. & Hals.)
 Descr., N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 281. (1892)
 Cf. N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 326-333.
- "Damping-off," or Seedling-Mildew (*Pythium DeBaryanum*, Hesse.)
 Descr., N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 286. (1893)
 Cf. Cucumber (Damping-off.)
- Fruit-Mould (*Botrytis fascicularis*, (Cord.) Sacc.)
 Descr., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 357. (1891)
- Leaf-Spot (*Phyllosticta hortorum*, Speg.)
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 11, 1890,
 pp. 355-357. (1891)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 357. (1891)

- Seedling-Rot (*Phoma Solani*, Hals.)
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 12, 1891,
 pp. 277-279. (1892)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 279. (1892)
- Stem-Rot (*Nectria Ipomoeae*, Hals.)
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 12, 1891,
 pp. 281-283. (1892)

Fig.

(Ficus Carica, L.)

- Rust (*Uredo Fici*, Cast.)
 Occ., N. C. Agr. Exp. Sta., Bull. 92, p. 117. (1893)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 117. (1893)
- Scab (*Fusarium roseum*, Lk.)
 Occ., N. C. Agr. Exp. Sta., Bull. 92, p. 117. (1893)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 117. (1893)

Filbert.

(Corylus Avellana, L.)

- Black Knot (*Cryptosporella anomala*, (Pk.) Sacc.)
 Descr., N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 287. (1893)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 289. (1893)
 Cf. Hazel (Black Knot.)

Geranium.

(Pelargonium sp.)

- Rot (Bacterial.)
 Descr. Illus., Journ. Mycol., Vol. vi, p. 114. (1891)

Gooseberry.

(Ribes Grossularia, L.)

- Leaf-Spot (*Septoria Ribis*, Desm., and *Cercospora angulata*, Wint.)
 Cf. Currant (Leaf-Spot.)
- Leaf-Spot (? *Sphaerella Grossulariae*, (Fr.) Awd.)
 Iowa Agr. Exp. Sta., Bull. 13, p. 70. (1891)
- Powdery Mildew (*Sphaerotheca mors-uvae*, (Schw.) B. & C.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 373-378. (1888)
 Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 240. (1893)
 Descr., N. C. Agr. Exp. Sta., Bull. 92, p. 131. (1893)
 Treat. (pos.), N. Y. Agr. Exp. Sta., Rep. 6, 1887, p. 349. (1888)
 N. Y. Agr. Exp. Sta., Bull. 36, p. 645. (1891)
 N. C. Agr. Exp. Sta., Bull. 92, p. 131. (1893)
- Rust (*Aecidium Grossulariae*, Schum.)
 Descr., Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 241. (1893)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 241. (1893)

Grape.

(Vitis spp.)

- Anthracnose (*Sphaceloma ampelinum*, DBy.)
 Descr. Illus., Scribner, Fung. Dis., pp. 72-80. (1890)
 Tenn. Agr. Exp. Sta., Bull. Vol. iv, No. 4,
 pp. 111 & 112. (1891)
 Treat. (rec.), N. Y. Agr. Exp. Sta., Rep. 9, 1890, pp. 336
 & 337. (1891)
 Conn. Agr. Exp. Sta., Rep. 14, 1890, p. 102. (1891)
 Tenn. Agr. Exp. Sta., Bull. Vol. iv, No. 4, p. 112. (1891)
 N. C. Agr. Exp. Sta., Bull. 92, p. 121. (1893)
- Bitter-Rot (*Melanconium fuliginum*, (Scrib. & Viala.) Cav.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 324
 & 325. (1888)
 Descr., N. Y. Agr. Exp. Sta., Rep. 9, 1890, p. 325. (1891)
 Treat. (neg.), U. S. Dep. Agr., Rep. for 1887, p. 325. (1888)
 (rec.), Scribner, Fung. Dis., p. 40. (1890)
 Cf. N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 61, pp. 302-305.
- Black-Rot (*Laestadia Bidwellii*, (Ell.) Viala & Ravaz.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1886,
 pp. 109-111. (1887)
 Del. Agr. Exp. Sta., Bull. 6, pp. 18-27. (1889)
 Scribner, Fung. Dis., pp. 8-14. (1890)
 Tenn. Agr. Exp. Sta., Bull. Vol. iv,
 No. 4, pp. 98-101. (1891)
 Treat. (pos.), U. S. Dep. Agr., Sec. Veg. Path., Circ. 6. (1889)
 U. S. Dep. Agr., Farm. Bull. 7, pp. 15 & 16. (1892)
 Del. Agr. Exp. Sta., Bull. 15, p. 7. (1892)
 U. S. Dep. Agr., Div. Veg. Path., Bull. 3, p. 31. (1892)
 Tex. Agr. Exp. Sta., Bull. 23, pp. 228-231. (1892)
 Conn. Agr. Exp. Sta., Bull. 115, p. 11. (1893)
- Downey Mildew (*Plasmopara viticola*, (B. & C.) Berl. & De Ton.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1886, pp. 96-99. (1887)
 Tenn. Agr. Exp. Sta., Bull. Vol. iv, No. 4, p. 108. (1891)
 Mich. Agr. Exp. Sta., Bull. 83, pp. 9-12. (1892)
 Treat. (pos.), Ohio Agr. Exp. Sta., Bull. Vol. iii, No. 10,
 p. 263. (1890)
 U. S. Dep. Agr., Farm. Bull. 4, p. 8. (1891)
 Tenn. Agr. Exp. Sta., Bull. Vol. iv, No. 4, p. 110. (1891)
 Conn. Agr. Exp. Sta., Bull. 115, p. 12. (1893)
- Leaf-Blight (*Cercospora viticola*, (Ces.) Sacc.)
 Descr. Illus., Scribner, Fung. Dis. pp. 60-62. (1890)
 Descr., N. Y. Agr. Exp. Sta., Rep. 9, 1890, p. 324. (1891)
 Treat. (neg.), N. Y. Agr. Exp. Sta., Rep. 9, 1890, p. 324. (1891)
 (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 122. (1893)
- Powdery Mildew (*Uncinula spiralis*, B. & C.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1886, pp. 105-108. (1887)
 Mich. Agr. Exp. Sta., Bull. 83, p. 11. (1892)

- Powdery Mildew (*Uncinula spiralis*, B. & C.)
 Descr., N. Y. Agr. Exp. Sta., Rep. 9, 1890, pp. 322 & 323. (1891)
 Treat. (pos.), U. S. Dep. Agr., Farm. Bull. 4, p. 8. (1891)
 Ind. Agr. Exp. Sta., Bull. 38, p. 17. (1892)
 N. C. Agr. Exp. Sta., Bull. 92, p. 120. (1893)
- Ripe-Rot or Anthracnose (*Glaeosporium fructigenum*, Berk.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1890, p. 408. (1891)
 Journ. Mycol., Vol. vi, pp. 164-171. (1891)
 Cf. Apple (Ripe-Rot.)
- Root-Rot (*Armillaria mellea*, (Wallr.) Fr. and *Dematophora necatrix*,
 Hartig.)
 Descr. Illus., Scribner, Fung. Dis., pp. 64-69. (1890)
 N. C. Agr. Exp. Sta., Bull. 92, p. 122. (1893)
 Treat. (rec.), Scribner, Fung. Dis., pp. 70 & 71. (1890)
 N. C. Agr. Exp. Sta., Bull. 92, p. 122. (1893)
- White-Rot (*Coniothyrium Diplodiella*, (Speg.) Sacc.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 325
 & 326. (1888)
 Scribner, Fung. Dis., pp. 41-44. (1890)
 Descr., N. Y. Agr. Exp. Sta., Rep. 9, 1890, p. 324. (1891)
 Treat. (pos.), U. S. Dep. Agr., Sec. Veg. Path., Bull. 11. (1890)

Hazel.

(*Corylus*, spp.)

- Black-Knot (*Cryptosporella anomala*, (Pk.) Sacc.)
 Descr. Illus., Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 242. (1893)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 243. (1893)
 Cf. Filbert (Black-Knot).

Hollyhock.

(*Althaea rosea*, Cav.)

- Anthracnose (*Colletotrichum Malvarum*, (Braun. & Casp.) Southworth.)
 Descr. Illus., Journ. Mycol., Vol. vi, pp. 46-48. (1890)
 Treat. (pos.), Journ. Mycol., Vol. vi, p. 50. (1890)
 N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 362. (1891)
- Leaf-Blight (*Cercospora Althaeina*, Sacc.)
 Descr., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 361. (1891)
 Cf. Garden and Forest, March 26, 1890.
- Leaf-Spot (*Phyllosticta Althaeina*, Sacc.)
 Descr., N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 297. (1892)
- Rust (*Puccinia Malvacearum*, Mont.)
 Descr. Illus., N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 25,
 p. 154. (1890)
 Treat. (rec.), N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 25,
 p. 155. (1890)
 Cf. N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 361.

Horseradish.*(Cochlearia Armoracia, L.)*

- Leaf-Blight (*Ramularia Armoraciae*, Fekl.)
 Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 360. (1891)
- Leaf-Spot (*Septoria Armoraciae*, Sacc.)
 Descr., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 360. (1891)

Hydrangea.*(Hydrangea Hortensis, Siebold.)*

- Leaf-Spot (*Phyllosticta Hydrangeae*, Ell. & Ev.)
 Descr., N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 298. (1892)
 Cf. Garden and Forest, Vol. iv, p. 177, 1891.

Lettuce.*(Lactuca sativa, L.)*

- Downy Mildew (*Bremia Lactuceae*, Regel.)
 Descr. Illus., N. Y. Agr. Exp. Sta., Rep. 4, 1885, p. 253. (1886)
 Treat. (pos.), Journ. Mycol., Vol. vi, p. 17. (1890)
 Mass. (Hatch) Agr. Exp. Sta., Bull. 4, pp. 11-14. (1889)
 Vt. Agr. Exp. Sta., Rep. 5, 1891, p. 141. (1892)
- Leaf-Rot (*Botrytis vulgaris*, Fr.)
 Descr., Mass. Agr. Exp. Sta., Rep. 9, 1891, pp. 219-221. (1892)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 9, 1891, p. 221. (1892)
- Leaf-Spot (*Septoria consimilis*, Ell. & Mart.)
 Descr. Illus., Ohio Agr. Exp. Sta., Bull. 44, pp. 145 & 146. (1892)
- Stem-Rot (Bacterial.)
 Descr., Vt. Agr. Exp. Sta., Rep. 6, 1892, p. 87. (1893)
 Treat. (rec.), Vt. Agr. Exp. Sta., Rep. 6, 1892, p. 88. (1893)

Maple.*(Acer, spp.)*

- Leaf-spot (*Phyllosticta acericola*, Cke. & Ell.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1888, pp. 383-386. (1889)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1888, p. 386. (1889)

Melon.*(Cucumis, spp.)*

- Anthracoze (*Colletotrichum lagenarium*, (Pass.) Ell. & Hals.)
 Descr., U. S. Dep. Agr., Bot. Div., Bull. 8, p. 64. (1889)
 Treat. (pos.), Md. Agr. Exp. Sta., Rep. 4, 1891, p. 387. (1892)
- Blight (Bacterial.)
 Descr., N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 273 & 274. (1892)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 276. (1892)
 Cf. Cucumber, Potato, Squash and Tomato (Blight.)
- Downy Mildew (*Plasmopara Cubensis*, (B. & C.) Humphrey.)
 See Cucumber (Downy Mildew.)

Mignonette.*(Reseda odorata, L.)*

- Leaf-Blight (*Cercospora Resedæ*, Fckl.)
 Deser. Illus., U. S. Dep. Agr., Rep. for 1889, pp. 429
 & 430. (1890)
 Treat. (pos.), U. S. Dep. Agr., Rep. for 1889, p. 431. (1890)

Nasturtium.*(Tropæolum Majus, L.)*

- Leaf-Blight *Alternaria*, sp., and *Pleospora Tropæoli*, Hals.)
 Deser., N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 290-293. (1893)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 299. (1892)

Oats.*(Avena sativa, L.)*

- Blight (Bacterial.)
 Deser., Journ. Mycol., Vol. vi, p. 72. (1890)
 Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 225. (1891)
- Rust (*Puccinia coronata*, Cda., *P. graminis*, P., and *P. Rubigo-vera*,
 (DC.) Wint.)
 Deser. Illus., Kan. Agr. Exp. Sta., Bull. 38. (1893)
 Treat. (neg.), Journ. Mycol., Vol. vii, pp. 225 & 226. (1893)
 Cf. Wheat (Rust.)
- Smut (*Ustilago Avenæ*, (P.) Jensen.)
 Deser. Illus., Kans. Agr. Exp. Sta., Bull. 8. (1889)
 N. Dak. Agr. Exp. Sta., Bull. 1. (1891)
 U. S. Dep. Agr., Div. Veg. Path., Farm. Bull. 5. (1892)
 R. I. Agr. Exp. Sta., Bull. 15. (1892)
 Treat. (pos.), Kan. Agr. Exp. Sta., Bull. 15, pp. 128-130. (1890)
 N. Dak. Agr. Exp. Sta., Bull. 1, pp. 25-28. (1891)
 U. S. Dep. Agr., Div. Veg. Path., Farm. Bull. 5. (1892)
 R. I. Agr. Exp. Sta., Bull. 15, pp. 6-8. (1892)

Olive.*(Olea Europæa, L.)*

- Tuberculosis (Bacterial.)
 Deser. Illus., Journ. Mycol., Vol. vi, pp. 148-153. (1891)

Onion.*(Allium Cepa, L.)*

- Anthracoïse or Rot (*Vermicularia circinans*, Berk.)
 Deser. Illus., Conn. Agr. Exp. Sta., Rep. 13, 1889, p. 163. (1890)
 Treat. (rec.), Conn. Agr. Exp. Sta., Rep. 13, 1889, pp. 164
 & 165. (1890)

- “Damping-off” or Seedling-Mildew (*Pythium De Baryanum*, Hesse.)
Occ., Conn. Agr. Exp. Sta., Rep. 13, 1889, pp. 165 & 166. (1890)
Cf. Cucumber (“Damping-off.”)
- Downy Mildew (*Peronospora Schleideniana*, DBy.)
Descr. Illus., Wis. Agr. Exp. Sta., Rep. 1, 1883, pp. 38-44. (1884)
N. Y. Corn. Univ. Exp. Sta., Rep. 2, 1889,
pp. 193 & 194. (1890)
Treat. (rec.), Conn. Agr. Exp. Sta., Rep. 13, 1889, p. 157. (1890)
- Smut (*Urocystis Cepulae*, Frost.)
Descr. Illus., Conn. Agr. Exp. Sta., Rep. 13, 1889,
pp. 129-146. (1890)
Treat. (rec.), Conn. Agr. Exp. Sta., Rept. 13, 1889,
pp. 147-153. (1890)
(Transplanting), Conn. Agr. Exp. Sta., Bull. 115,
p. 15. (1893)
Cf. Ohio Agr. Exp. Sta., Bull. Vol. iii, No. 9, p. 244.
Tenn. Agr. Exp. Sta., Bull. Vol. v, No. 4, p. 147.
- Stalk-Blight (*Macrosporium Sarcinula*, B. var. *parasiticum*, Thm.,
and *M. Porri*, Ell.)
Descr. Illus., Conn. Agr. Exp. Sta., Rep. 13, 1889,
pp. 158-162. (1890)
Treat. (rec.), Conn. Agr. Exp. Sta., Rep. 13, 1889, p. 161. (1890)

Orange.

(*Citrus Aurantium*, L.)

- Anthracnose (*Colletotrichum adustum*, Ell.)
Occ., Journ. Mycol., Vol. vii, p. 34. (1891)
- Leaf-glaze (*Strigula complanata*, Fée.)
Occ., Journ. Mycol., Vol. vii, p. 36. (1891)
- Leaf-Mould (*Caprodium Citri*, Berk. & Desm.)
Occ., Journ. Mycol., Vol. vii, p. 35. (1891)
Treat. (rec.), Journ. Mycol., Vol. vii, p. 35. (1891)
(Cf. Bull. Bussey Inst. I, pp. 404-414.)
- Scab (*Cladosporium* sp.)
Descr., Fla. Agr. Exp. Sta., Bull. 2, pp. 35 & 36. (1888)
Journ. Mycol., Vol. vii, p. 34. (1891)
Treat. (rec.), Fla. Agr. Exp. Sta., Bull. 2, p. 37. (1888)
Journ. Mycol., Vol. vii, p. 34. (1891)

Orchid.

(*Orchidaceae*.)

- Anthracnose (*Glaeosporium* sp.)
Occ., N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 298. (1892)
Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 298. (1892)

Pea.

(Pisum sativum, L.)

- Powdery Mildew (*Erysiphe Martii*, Lév.)
 Occ., S. Dak. Agr. Exp. Sta., Bull. 29, p. 39. (1891)
 Treat. (rec.), N. Y. Agr. Exp. Sta., Rep. 4, 1885, p. 187. (1886)
 Cf. Bean (Powdery Mildew.)

Peach.

(Prunus Persica, Benth. & Hook.)

- Anthraxnose (*Glowsorium lacticolor*, Berk.)
 Occ., N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 325. (1893)
 Cf. N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 328.
- Fruit-Mould (*Oidium fructigenum*, Kze. & Schm.)
 Deser. Illus., Journ. Mycol., Vol. vii, pp. 36-38. (1891)
 Treat. (pos.), Del. Agr. Exp. Sta., Bull. 19, pp. 15 & 16. (1892)
 Del. Agr. Exp. Sta., Rep. 5, 1892, p. 66. (1893)
 (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 102. (1893)
 Cf. Cherry (Fruit-Mould.)
- Leaf-Blight (*Cercospora Persica*, Sacc.)
 Occ., N. C. Agr. Exp. Sta., Bull. 92, p. 103. (1893)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 103. (1893)
- Leaf-Blight (*Cercospora Persica*, Sacc.)
 Occ., Journ. Mycol., Vol. vii, p. 91. (1892)
- Leaf-Curl (*Ecoascus deformans*, (Berk.) Fckl.)
 Deser. Illus., Scribner, Fung. Dis., pp. 127-130. (1890)
 N. C. Agr. Exp. Sta., Bull. 92, p. 103. (1893)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 103. (1893)
- Powdery Mildew (*Sphaerotheca pannosa*, (Wallr.) Lév. (?)
 Occ., Journ. Mycol., Vol. vii, p. 90. (1892)
- Rust (*Puccinia Pruni*, P.)
 Deser. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 353 & 354. (1888)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, p. 355. (1888)
- Scab (*Cladosporium carpophilum*, Thüm.)
 Deser. Illus., Ind. Agr. Exp. Sta., Bull. 19, pp. 5-8. (1889)
 Treat. (rec.), Ind. Agr. Exp. Sta., Bull. 19, p. 8. (1889)

Pear.

(Pirus Communis, L.)

- Dry-Rot (*Thelephora pedicellata*, Schw.)
 Deser., Journ. Mycol., Vol. vi, pp. 113 & 114. (1891)
 Treat. (pos.), Journ. Mycol., Vol. vi, p. 114. (1891)
- Fire-Blight (*Micrococcus amylovorus*, Burrill.)
 Deser. Illus., N. Y. Agr. Exp. Sta., Rep. 5, 1886,
 pp. 275-289. (1887)
 Deser., Ala. Agr. Exp. Sta., Bull. 50. (1893)

- Fire-Blight (*Micrococcus amylovorus*, Burrill.)
 Treat. (rec.), Ill. Agr. Exp. Sta., Bull. 2, pp. 16 & 17. (1886)
 (neg.), Mo. Agr. Exp. Sta., Bull. 16, pp. 8 & 9. (1891)
 (rec.), Mich. Agr. Exp. Sta., Bull. 83, p. 14. (1892)
 Cf. N. Y. Agr. Exp. Sta., Rep. 5, 1886, pp. 300-315.
 Cf. Apple (Fire-Blight.)
- Leaf-Spot (*Entomosporium maculatum*, Lév.)
 Descr. Illus., U. S. Dep. Agr., Report for 1888, pp. 359-362. (1889)
 Scribner, Fung. Dis., pp. 101-104. (1890)
 Del. Agr. Exp. Sta., Bull. 13, pp. 4-6. (1891)
 Treat. (pos.), U. S. Dep. Agr., Sec. Veg. Path., Circ. 8, p. 6. (1889)
 Del. Agr. Exp. Sta., Bull. 15, pp. 9 & 10. (1892)
 U. S. Dep. Agr., Farm. Bull. 7, p. 15. (1892)
 Conn. Agr. Exp. Sta., Bull. 115, pp. 4 & 5. (1893)
 Cf. Quince (Leaf-Spot.)
- Rust (*Gymnosporangium globosum*, Farl.)
 Occ., Conn. Agr. Exp. Sta., Rep. 14, 1890, p. 98. (1891)
 Treat. (rec.), Conn. Agr. Exp. Sta., Rep. 14, 1890, p. 98. (1891)
- Scab (*Fusicladium pirinum*, (Lib.) Fekl.)
 Descr. Illus., Scribner, Fung. Dis., pp. 98 & 99. (1890)
 N. Y. Agr. Exp. Sta., Bull. 67, pp. 191 & 192. (1894)
 Treat. (pos.), Del. Agr. Exp. Sta., Bull. 8, pp. 11-14. (1890)
 U. S. Dep. Agr., Farm. Bull. 7, p. 15. (1892)
 Del. Agr. Exp. Sta., Bull. 28, pp. 30-34. (1892)
 Conn. Agr. Exp. Sta., Bull. 115, p. 5. (1893)
 N. Y. Agr. Exp. Sta., Bull. 67. (1894)
 Cf. Apple (Scab.)

Peppers.

(*Capsicum annuum*, L.)

- Anthracnose (*Colletotrichum nigrum*, Ell. & Hals.)
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 359. (1891)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 360. (1891)
 Cf. N. J. Agr. Exp. Sta., Rep. 13, pp. 332 & 333. (1893)
- Anthracnose (*Gleospodium piperatum*, Ell. & Ev.)
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 358. (1891)
 Treat. (rec.), N. J. Agr. Sta., Rep. 11, 1890, p. 360. (1891)
 Cf. N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 330 & 331. (1893)

Persimmon.

(*Diospyros*, spp.)

- Anthracnose (*Gleospodium*, sp.)
 Occ., N. C. Agr. Exp. Sta., Bull. 92, p. 116. (1893)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 116. (1893)
 Cf. N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 326-330.
 Cf. Apple (Ripe-Rot or Anthracnose.)

- Leaf-Blight (*Cercospora* sp.)
 Occ., N. C. Agr. Exp. Sta., Bull. 92, p. 116. (1893)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 116. (1893)
 Cf. Peach (Leaf-Blight.)

- Root-Rot (*Armillaria mellea*, (Wallr.) Fr.)
 Occ., N. C. Agr. Exp. Sta., Bull. 92, p. 116. (1893)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 116. (1893)
 Cf. Grape (Root-Rot.)

Pink (Sweet William.)

(*Dianthus barbatus*, L.)

- Rust (*Puccinia Arenaria*, (Schum.) Wint.)
 Descr. Illus., N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 278-280. (1893)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 280. (1893)

Plum.

(*Prunus* spp.)

- Black Knot (*Plowrightia morbosa*, (Schw.) Sacc.)
 See Cherry (Black Knot.)
- Fruit-Mould (*Oidium fructigenum*, Kze. & Schm.)
 See Cherry (Fruit-Mould.)
- Leaf-Spot (*Cylindrosporium Padi*, Karst.)
 Descr. Illus., N. Y. Agr. Exp. Sta., Rep. 5, 1886,
 pp. 293-296. (1887)
 Iowa Agr. Exp. Sta., Bull. 13, pp. 55-65. (1891)
 Treat. (pos.), Ohio Agr. Exp. Sta., Bull., Vol. iv, No. 9,
 p. 216. (1891)
 Journ. Mycol., Vol. vii, p. 255. (1893)
 Cf. Cherry (Leaf-Spot.)
- Plum-Pockets (*Taphrina Pruni*, (Fekl.) Tul.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1888, pp. 366-369. (1889)
 Occ. Illus., Mich. Agr. Exp. Sta., Bull. 83, pp. 18 & 19. (1892)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 92, p. 111. (1893)
- Powdery Mildew (*Podosphaera Oxyacanthæ*, (DC.) DBy.)
 See Cherry (Powdery Mildew.)
- Rust (*Puccinia Pruni*, Pers.)
 See Cherry (Rust.)
- Scab (*Cladosporium carpophilum*, Thüm.)
 Descr., Journ. Mycol., Vol. vii, pp. 99 & 100. (1892)
 Descr. Illus., Iowa Agr. Exp. Sta., Bull. 23, pp. 918-920. (1894)
 Cf. Cherry and Peach (Scab.)

Poplar.

(*Populus* spp.)

- Rust (*Melampsora populina*, (Jacq.) Lév.)
 Occ. Treat., Mass. Agr. Exp. Sta., Rep. 9, 1891, pp. 233
 & 234. (1892)

Potato.*(Solanum tuberosum, L.)***Blight (Bacterial.)**

- Descr., N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 269. (1892)
 Del. Agr. Exp. Sta., Rep. 4, 1891, pp. 54-56. (1892)
 Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 12, 1891, p. 276. (1892)
 Del. Agr. Exp. Sta., Bull. 15, p. 13. (1892)

Cf. Cucumber, Melon, Squash and Tomato (Blight.)

Downy Mildew or Rot (*Phytophthora infestans*, DBy.)

- Descr. Illus., U. S. Dep. Agr., Rep. for 1888, pp. 337 & 338. (1889)
 Me. Agr. Exp. Sta., Rep., 1889, pp. 172-178. (1890)
 Treat. (pos.), Ohio Agr. Exp. Sta., Bull., Vol. ii, No. 6,
 pp. 162-169. (1889)
 U. S. Dep. Agr., Sec. Veg. Path., Bull. 11,
 pp. 47 & 48. (1890)
 R. I. Agr. Exp. Sta., Bull. 14, pp. 186 & 187.
 (1891)
 Vt. Agr. Exp. Sta., Rep. 6, 1892, pp. 57-66. (1893)
 Conn. Agr. Exp. Sta., Bull. 115, pp. 15 & 16.
 (1893)

Leaf-Blight (*Macrosporium Solani*, Ell. & Mart.)

- Descr. Illus., Del. Agr. Exp. Sta., Rep. 4, 1891, pp. 58 & 59.
 (1892)
 Vt. Agr. Exp. Sta., Bull. 36. (1893)
 Treat. (pos.), Del. Agr. Exp. Sta., Rep. 4, 1891, p. 60. (1892)
 Vt. Agr. Exp. Sta., Bull. 36. (1893)

Scab (*Oospora scabies*, Thaxter.)

- Descr. Illus., Conn. Agr. Exp. Sta., Rep. 14, 1890, pp. 81-95.
 (1891)
 N. Dak. Agr. Exp. Sta., Bull. 4, pp. 6 & 7. (1891)
 Treat. (pos.), N. Dak. Agr. Sta. Exp., Bull. 9, pp. 31-33. (1893)
 R. I. Agr. Exp. Sta., Bull. 26, p. 155. (1893)
 Wash. Agr. Exp. Sta., Bull. 8, pp. 137 & 138.
 (1894)
 (Cf. Conn. Agr. Exp. Sta., Rep. 15, 1891, pp. 153-160.)
 Cf. Beet (Scab.)

Privet.*(Ligustrum vulgare, L.)***Anthracnose (*Glaeosporium cingulatum*, Atkinson.)**

- Descr. Illus., N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 49,
 pp. 306-314. (1892)

Quince.*(Pirus Cydonia.)***Black-Rot (*Sphaeropsis Malorum*, Berk.)**

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 91, pp. 8-10. (1892)
 Treat. (rec.), Conn. Agr. Exp. Sta., Bull. 115, pp. 6 & 7. (1893)
 Cf. Apple (Black-Rot.)

- Fire-Blight (*Micrococcus amylovorus*, Burrill.)
See Apple and Pear (Fire-Blight.)
- Leaf-Spot (*Entomosporium maculatum*, Lév.)
Descr. Illus., See Pear (Leaf-Spot.)
Treat. (pos.), U. S. Dep. Agr., Sec. Veg. Path., Bull. 11,
pp. 46 & 47. (1890)
Conn. Agr. Exp. Sta., Rep. 15, 1891,
pp. 150-152. (1892)
Conn. Agr. Exp. Sta., Bull. 115, p. 6. (1893)
- Cf. Pear (Leaf-Spot.)
- Pale-Rot (*Phoma Cydoniae*, Sacc. & Schulz.)?
Descr. Illus., N. J. Agr. Exp. Sta., Bull. 91, pp. 10 & 11. (1892)
Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 91, p. 11. (1892)
- Ripe-Rot or Anthracnose (*Glæosporium fructigenum*, Berk.)
See Apple and Grape (Ripe-Rot.)

Radish.*(Raphanus sativus*, L.)

- Club-Root (*Plasmodiophora Brassicæ*, Wor.)
Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, pp. 348 & 349. (1891)
Cf. Cabbage (Club-Root.)
- Downy Mildew (*Peronospora parasitica*, (P.) Tul.)
Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 349. (1891)
Cf. Turnip (Downy Mildew.)
- White Rust (*Cystopus candidus*, (P.) Lév.)
Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 350. (1891)
Treat. (rec.), N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 350. (1891)
Cf. Turnip (White Rust.)

Raspberry.*(Rubus spp.)*

- Anthracnose (*Glæosporium Venetum*, Speg.)
See Blackberry (Anthracnose.)
- Blight (Bacterial.)
Descr., Ohio Agr. Exp. Sta., Bull., Vol. iv, No. 6, p. 128. (1891)
- Leaf-Spot (*Septoria Rubi*, Westd.)
See Blackberry (Leaf-Spot.)
- Rust (*Cœoma (Uredo) luminatum*, Lk.)
See Blackberry (Rust.)

Rose.*(Rosa spp.)*

- Anthracnose (*Glæosporium Rosæ*, Hals.)
Descr., N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 282 & 283. (1893)
- Downy Mildew (*Peronospora sparsa*, Berk.)
Occ., N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 282. (1893)

- Leaf-Spot (*Actinonema Rosa*, (Lib.) Fr.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 366-368. (1888)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, pp. 368
 & 369. (1888)
 (pos.), Mass. (Hatch) Agr. Exp. Sta., Bull. 4, pp. 10
 & 11. (1889)
 N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 281. (1893)
- Powdery Mildew (*Sphaerotheca pannosa*, (Wallr.) Lév.)
 Descr., N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 281. (1893)
 Treat. (pos.), Mass. (Hatch) Agr. Exp. Sta., Bull. 4, p. 11. (1889)
 N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 281
 & 282. (1893)
- Rust (*Phragmidium speciosum*, Fr.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, p. 372. (1888)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, p. 372. (1888)
- Rust (*Phragmidium subcorticium*, (Schränk) Wint.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 369
 & 370. (1888)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1887, p. 371. (1888)
 N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 282. (1893)

Rye.

(*Secale cereale*, L.)

- Ergot (*Claviceps purpurea*, Tul.)
 Descr. Illus., S. Dak. Exp. Sta., Bull. 33, pp. 40-43. (1893)
 Treat. (rec.), N. C. Agr. Exp. Sta., Bull. 76, p. 20. (1891)
 S. Dak. Agr. Exp. Sta., Bull. 33, pp. 43 & 44. (1893)
- Rust (*Puccinia graminis*, P., and *P. Rubigo-vera*, (DC.) Wint.)
 See Oats and Wheat (Rust.)
- Smut (*Urocystis occulta*, (Wallr.) Rabh.)
 Occ. Illus., Mass. Agr. Exp. Sta., Rep. 9, 1891, p. 247. (1892)
 Treat. (pos.), See Oats and Wheat (Smut.)

Salsify.

(*Tragopogon porrifolius*, L.)

- Rot (Bacterial.)
 Descr., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 351. (1891)

Sorghum.

(*Sorghum vulgare*, P.)

- Blight (*Bacillus Sorghi*, Burrill.)
 Descr., Kan. Agr. Exp. Sta., Rep. 1, 1888, pp. 281-301. (1889)
 Treat. (rec.), Kan. Agr. Exp. Sta., Rep. 1, 1888, pp. 301
 & 302. (1889)
- Smut (*Ustilago Sorghi*, (Lk.) Pass., and *U. Reiliana*, Kühn.)
 Descr. Illus., Kan. Agr. Exp. Sta., Bull. 23, pp. 95 & 96. (1891)
 Treat. (neg.), Kan. Agr. Exp. Sta., Bull. 23, p. 101. (1891)

Spinach.*(Spinacia oleracea, Mill.)*

- Anthracnose (*Colletotrichum Spinaceae*, Ell. & Hals.)
 Descr. Illus., N. J. Agr. Exp. Sta., Bull. 70, pp. 6-8. (1890)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 70, pp. 13 & 14. (1890)
- Downy Mildew (*Peronospora effusa*, (Grev.) Rabh.)
 Descr. Illus., N. J. Agr. Exp. Sta., Bull. 70, pp. 4-6. (1890)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 70, pp. 13 & 14. (1890)
 Mass. Agr. Exp. Sta., Rep. 8, 1890, pp. 221
 & 222. (1891)
- Leaf-Spot (*Phyllosticta Chenopodii*, Sacc.)
 Descr. Illus., N. J. Agr. Exp. Sta., Bull. 70, pp. 9 & 10. (1890)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 70, pp. 13 & 14. (1890)
- Scab (*Cladosporium macrocarpum*, Preuss.)
 Descr. Illus., N. J. Agr. Exp. Sta., Bull. 70, pp. 11 & 12. (1890)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 70, pp. 13 & 14. (1890)
- White Smut (*Entyloma Ellisii*, Hals.)
 Descr. Illus., N. J. Agr. Exp. Sta., Bull. 70, pp. 10 & 11. (1890)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 70, pp. 13 & 14. (1890)

Squash.*(Cucurbita spp.)*

- Anthracnose (*Colletotrichum lagenarium*, (Pass.) Ell. & Hals.)
 See Melon (Anthracnose.)
- Blight (Bacterial.)
 See N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 274-276. (1892)
 Cf. Cucumber, Melon, Potato and Tomato (Blight.)
- Downy Mildew (*Plasmopara Cubensis*, (B. & C.) Humphrey.)
 See Cucumber (Downy Mildew.)
- Powdery Mildew (*Erysiphe cichoracearum*, DC.)
 Descr. Illus., See Cucumber (Powdery Mildew.)
 Treat. (pos.), Corn. Univ. Agr. Exp. Sta., Bull. 35,
 pp. 330-332. (1891)
 Cf. Cucumber (Powdery Mildew.)

Strawberry.*(Fragaria spp.)*

- Leaf-Spot (*Ascochyta Fragariae*, Sacc.)
 Descr. Illus., N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 14,
 pp. 182 & 183. (1889)
 Treat. (rec.), N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 14,
 p. 183. (1889)
- Leaf-Spot (*Sphaerella Fragariae*, (Tul.) Sacc.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1887, pp. 334-339. (1888)
 N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 14,
 pp. 171-181. (1889)

Leaf-Spot (*Sphaerella Fragariae*, (Tul.) Sacc.)

- Treat. (pos.), U. S. Dep. Agr., Rep. for 1890, p. 397. (1890)
 Ken. Agr. Exp. Sta., Bull. 31, pp. 7-12. (1890)
 Md. Agr. Exp. Sta., Rep. 3, 1890, pp. 106-108. (1891)
 N. C. Agr. Exp. Sta., Bull. 92, p. 133. (1893)
 Conn. Agr. Exp. Sta., Bull. 115, p. 14. (1893)

Powdery Mildew (*Sphaerotheca Castagnei*, Lév.)

- Descr., N. Y. Agr. Exp. Sta., Rep. 5, 1886, pp. 291 & 292. (1887)
 Descr. Illus., Mass. Agr. Exp. Sta., Rep. 10, 1892, p. 239. (1893)
 Treat. (rec.), N. Y. Agr. Exp. Sta., Rep. 5, 1886, p. 293. (1887)
 Mass. Agr. Exp. Sta., Rep. 10, 1892,
 pp. 243-245. (1893)

Sweet Potato.*(Ipomœa Batatas, Lam.)*Black-Rot (*Ceratocystis fimbriata*, Ell. & Hals.)

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 76, pp. 7-13. (1890)
 Journ. Mycol., Vol. vii, pp. 1-9. (1891)
 U. S. Dep. Agr., Rep. for 1891, pp. 376
 & 377. (1892)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 76, pp. 13 & 14. (1890)
 Journ. Mycol., Vol. vii, pp. 9 & 10. (1891)
 U. S. Dep. Agr., Rep. for 1891, p. 377. (1892)

Dry-Rot (*Phoma Batatae*, Ell. & Hals.)

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 76, pp. 23-25. (1890)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 76, p. 25. (1890)

Leaf-Spot (*Phyllosticta bataticola*, Ell. & Mart.)

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 76, pp. 27 & 28. (1890)

Scab (*Monilochaetes infuscans*, Ell. & Hals.)

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 76, pp. 25-27. (1890)

Soft-Rot (*Rhizopus nigricans*, Ehrb.)

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 76, pp. 4-6. (1890)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 76, pp. 6 & 7. (1890)

Soil-Rot (*Acrocystis Batatas*, Ell. & Hals.)

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 76, pp. 14-18. (1890)
 Treat. (rec.), N. J. Agr. Exp. Sta., Bull. 76, pp. 18-20. (1890)

Stem-Rot (*Nectria Ipomœae*, Hals.)

See Egg-Plant (Stem-Rot.)

White-Rot (*Penicillium* sp.)

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 76, pp. 22 & 23. (1890)

White Rust (*Cystopus Ipomœae-panduroneae*, (Schw.) Farl.)

- Descr. Illus., N. J. Agr. Exp. Sta., Bull. 76, pp. 28-30. (1890)

Sycamore.*(Platanus spp.)*Anthracnose (*Gleosporium nervisequum*, (Fckl.) Sacc.)

- Descr. Illus., U. S. Dep. Agr., Rep. for 1888, pp. 387-389. (1889)
 Treat. (rec.), U. S. Dep. Agr., Rep. for 1888, p. 389. (1889)
 Cf. Journ. Mycol., Vol. v, p. 51 e. s.

Tomato.*(Lycopersicum esculentum, Mill.)*

- Anthraxnose (*Colletotrichum Lycopersici*, Chester.)
 Descr. Illus., Del. Agr. Exp. Sta., Rep. 4, 1891, pp. 60-62. (1892)
 Cf. Del. Agr. Exp. Sta., Rep. 5, 1892, p. 80. (1893)
- Anthraxnose (*Gleosporium phomoides*, Sacc.)
 Occ., N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 325. (1893)
 Cf. N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 326-330.
- Blight (Bacterial.)
 Descr., Miss. Agr. Exp. Sta., Bull. 19. (1892)
 N. J. Agr. Exp. Sta., Rep. 12, 1891, pp. 267 & 268. (1892)
 N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 45, p. 213. (1892)
 Cf. Cucumber, Melon, Potato and Squash (Blight.)
- Blight (Bacterial?)
 Descr., N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 43,
 pp. 149-154. (1892)
- Blight (Fungus, Sp. indet.)
 Descr., Fla. Agr. Exp. Sta., Bull. 21, pp. 25-27. (1893)
 Treat. (pos.), Fla. Agr. Exp. Sta., Bull. 21, pp. 32-36. (1893)
- Downy Mildew (*Phytophthora infestans*, DBy.)
 See Potato (Downy Mildew.)
- Fruit-Mould (*Macrosporium Tomato*, Cke., and *Fusarium Solani*, (Mart.)
 Sacc.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1888, pp. 339-344. (1889)
 Treat. (pos.), ? U. S. Dep. Agr., Sec. Veg. Path., Bull. 11,
 pp. 61-65. (1890)
- Leaf-Blight (*Macrosporium Solani*, Ell. & Mart.)
 Occ., Del. Agr. Exp. Sta., Rep. 4, 1891, p. 62. (1892)
 See Potato (Leaf-Blight.)
- Scab (*Cladosporium fulvum*, Cke.)
 Descr. Illus., U. S. Dep. Agr., Rep. for 1888, pp. 347 & 348. (1889)
 Treat. (pos.), Journ. Mycol., Vol. v, p. 38. (1889)
 U. S. Dep. Agr., Sec. Veg. Path., Bull. 11,
 p. 47. (1890)
 N. C. Agr. Exp. Sta., Bull. 84, p. 21. (1892)
 Conn. Agr. Exp. Sta., Bull. 115, p. 16. (1893)

Turnip.*(Brassica campestris, L.)*

- Club-Root (*Plasmodiophora Brassicæ*, Wor.)
 See Cabbage (Club-Root.)
- Downy Mildew (*Peronospora parasitica*, (P.) Tul.)
 Occ., Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 222. (1891)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 223. (1891)
 Cf. Cabbage (Downy Mildew.)

- Powdery Mildew (*Oidium Balsamii*, Mont.)
 Occ., N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 61, pp. 305
 & 306. (1893)
- White Rust (*Cystopus candidus*, (P.) Lév.)
 Occ., Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 222. (1891)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 8, 1890, p. 223. (1891)
 Cf. Cabbage (White Rust.)

Verbena.

(*Verbena* sp.)

- Powdery Mildew (*Erysiphe cichoracearum*, DC.)
 Occ., N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 37, p. 405. (1891)
 Treat. (pos.), N. Y. Corn. Univ. Agr. Exp. Sta., Bull. 37,
 p. 405. (1891)
 Cf. Cucumber and Squash (Powdery Mildew.)

Violet.

(*Viola odorata*, L.)

- Anthracnose (*Glæosporium Violaë*, B. & Br.)
 Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 362. (1891)
- Downy-Mildew (*Peronospora Violaë*, DBy.)
 Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 362. (1891)
- Leaf-Blight (*Cercospora Violaë*, Sacc.)
 Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 362. (1891)
- Leaf-Spot (*Phyllosticta Violaë*, Desm.)
 Deser., Mass. Agr. Exp. Sta., Rep. 10, 1892, pp. 231 & 232.
 (1893)
 Treat. (rec.), Mass. Agr. Exp. Sta., Rep. 10, 1892,
 pp. 232-235. (1893)
- Root-Rot (*Thielavia basicola*, Zopf.)
 Deser., Conn. Agr. Exp. Sta., Rep. 15, 1891, pp. 166 & 167.
 (1892)
- Leaf-Mould (*Zygodemus albidus*, Ell. & Hals.)
 Occ., N. J. Agr. Exp. Sta., Rep. 11, 1890, p. 362. (1891)

Watermelon.

(*Citrullus vulgaris*, Schrad.)

- Anthracnose (*Colletotrichum lagenarium*, (Pass.) Ell. & Hals.)
 Occ., N. J. Agr. Exp. Sta., Rep. 13, 1892, p. 326. (1893)
 Treat. (neg.), Del. Agr. Exp. Sta., Rep. 5, 1892, p. 79. (1893)
 Cf. N. J. Agr. Exp. Sta., Rep. 13, 1892, pp. 326-330.
 Del. Agr. Exp. Sta., Rep. 5, 1892, pp. 78 & 79.
 Cf. Melon (Anthracnose.)
- Leaf-spot (*Phyllosticta* sp., and (?) *Sphaerella* sp.)
 Deser. Illus., Del. Agr. Exp. Sta., Rep. 5, 1892, pp. 75-78. (1893)

Wheat.

*(Triticum vulgare, L.)*Ergot (*Claviceps purpurea*, Tul.)

See Rye (Ergot.)

Rust (*Puccinia coronata*, Cda., *P. graminis*, P., and *P. Rubigo-vera*,
(DC.) Wint.)

Descr. Illus., Ind. Agr. Exp. Sta., Bull. 26. (1889)

Iowa Agr. Exp. Sta., Bull. 16, pp. 324-326. (1892)

Kan. Agr. Exp. Sta., Bull. 38, pp. 1-3. (1893)

Treat. (neg.), Kan. Agr. Exp. Sta., Bull. 22, pp. 90-93. (1891)

Iowa Agr. Exp. Sta., Bull. 16, pp. 326-329. (1892)

Cf. Oats (Rust.)

Scab (*Fusarium culmorum*, Smith.)

Descr. Illus., Del. Agr. Exp. Sta., Rep. 3, 1890, pp. 89 & 90.

(1891)

Ohio Agr. Exp. Sta., Bull. 44, pp. 147 & 148.

(1892)

Descr., Ind. Agr. Exp. Sta., Bull. 36, pp. 129 & 130. (1891)

Iowa Agr. Exp. Sta., Bull. 18, pp. 502 & 503. (1892)

Smut (*Tilletia foetans* (B. & C.) Trel., *T. Tritici*, (Bjerk.) Wint.,
and *Ustilago Tritici*, (P.) Jens.)

Descr. Illus., N. Dak. Agr. Exp. Sta., Bull. 1, pp. 9-20. (1891)

Mich. Agr. Exp. Sta., Bull. 87. (1892)

U. S. Dep. Agr., Div. Veg. Path., Farm.
Bull. 5. (1892)

Treat. (pos.), Journ. Mycol., Vol. v, pp. 164 & 165. (1889)

Ind. Agr. Exp. Sta., Bull. 32, pp. 8 & 9. (1890)

Kans. Agr. Exp. Sta., Bull. 21, pp. 70 & 71. (1891)

Mich. Agr. Exp. Sta., Bull. 87, pp. 6 & 7. (1892)

U. S. Dep. Agr., Div. Veg. Path., Farm.
Bull. 5, pp. 5-8. (1892)

Wash. Agr. Exp. Sta., Bull. 8, pp. 135 & 136.

(1894)