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HON. DAVID MURRAY, LL. D., *Secretary of the Board of Regents of the University:*

SIR — Since the date of my last report, specimens of two hundred and thirty-nine species of plants have been mounted and placed in the Herbarium in the State Museum of Natural History, of which one hundred and sixty-seven were not before represented therein. Seventy-two species have been represented by better specimens or by the addition of specimens of some form or variety not before shown. A list of the mounted specimens is marked (1). Specimens have been collected in the counties of Albany, Columbia, Dutchess, Essex, Greene, Hamilton, Franklin, Rensselaer, Schenectady, Saratoga, Ulster and Warren. These represent one hundred and ninety-seven species, of which eighty-five are new to the Herbarium and thirty-eight are believed to be unpublished. A list of collected specimens is marked (2). Specimens of thirteen New York species, new to the Herbarium and not among my own collections, have been contributed by correspondents, or have been obtained in naming specimens for them. These, added to the collected species, make the whole number of additions new to the Herbarium, ninety-eight species. A list of contributors and their contributions is marked (3). Previously unreported species will be noticed and descriptions of new species given in a part of the report marked (4). New stations of rare plants, remarks upon interesting species or varieties, and various observations are recorded in a part marked (5).

The plants designated by the term "fungi," are very numerous, whether we speak of them as individual plants or as species. In localities where they have been most thoroughly collected and investigated they outnumber in species the larger and far more conspicuous flowering plants. They are also extremely varied in their characters and habits. All, however, are comparatively small in size, but few species ever attaining the length or breadth of a single foot. If we except the fleshy and speedily perishable sorts which are not generally very abundant, we may say that most of the species are too small to be readily distinguished by the naked eye. And of no species is it possible for the unaided eye to distinguish clearly the shape and features of the spores (seeds). Even the entire plant in multitudes of species would probably wholly escape observation and detection if they had not the habit of growing in masses or patches of many individuals closely congregated together, for masses of minute objects become visible when the single elements that compose them are invisible. They sometimes produce changes also in or on the substances they inhabit, which attract attention and lead to their discovery. Such changes were known and noticed long before the fungi that produce

them were detected. The leaves of many plants often became discolored in spots or would wither and die in an unaccountable manner ; the branches of plum trees and cherry trees bore black and unsightly excrescences which at length caused them to die ; potato vines were suddenly affected with blackish spots and premature death, and the tubers themselves rotted mysteriously, either in the ground or out of it ; fields of waving grain were struck with "rust" that was not due to any oxidation ; stems and leaves of grass and grain were "branded" in blackish lines, yet not by the use of fire ; Indian corn often produced turgid, smutty excrescences on the ears that should have been well filled with golden grain ; the products of the fruit trees and the orchards would speedily decay without any apparent or satisfactorily explainable cause ; the sweetened juice of grapes and other fruits would quickly ferment, effervesce and indicate chemical activity without the introduction of any chemical reagents ; preserved fruits would often turn sour or musty ; even sweet milk would not retain its sweetness long ; wood thoroughly dried and kept so, or if kept constantly submerged, was found to be almost imperishable, but in intermediate circumstances it would speedily decay. These and many other phenomena were noticed, and their causes were sometimes made the subject of speculative theories, but the real agencies that produced them were not and could not well be fully understood till investigated by the aid of the microscope. When by this means our powers of vision have been sufficiently increased, we find that the dead spots on leaves usually bear crops of minute fungi, that the "black knot" of plum and cherry trees is an enlargement of the branch covered by a fungus whose threads have caused the mischief, that the spots on the potato leaves and the consequent rotting of the tubers are the work of a minute parasitical fungus, that the "rusts" and "brands" of the grain fields, the smut of corn, the decay of fruits, the fermentation of juices, the souring of milk and other substances and the rotting of wood are all due to the presence of fungi of one kind or another. And now that the microscope has disclosed this previously almost invisible world of vegetation and we have entered upon its investigation, we can only wonder at its extent and importance. We find these minute organisms endowed with certain definite forms and certain fixed structural characters by means of which they can be systematically classified and specifically designated just as readily as the ordinary plants we see about us. We find in many instances that they have peculiar habits and habitats to which they are addicted, so that a knowledge of the habitat and behavior of the fungus is many times sufficient to indicate pretty accurately the systematic character of the parasite.

We have already learned that nearly all flowering plants, whether cultivated or wild, have one or more parasitic fungoid foes to whose attacks they are sometimes subject. Some plants have several of these enemies that attack them in one part or another, at one time or another, while some more fortunate are rarely affected and then only under circumstances peculiarly favorable to the parasite. Besides the fungi that attack only living plants, there are multitudes of species that are often less particular concerning their habitat and that revel promiscuously upon the tissues of dead plants. Nor can we stop here, for living animal

organisms are by no means exempt from the pernicious and even fatal attacks of these minute parasites. Fishes and flies, silkworms and cicadas, the larvæ and pupæ of various moths, beetles and other insects are killed by certain fungi that grow in or upon them. So peculiarly liable are insects to death from this cause that eminent scientists have suggested that these parasitic plants may be made available as insecticides with which we may combat injurious species. But before this can be accomplished it is necessary to find a fungus that will inhabit the insects we wish to destroy, for it is evident that no single insect-killing fungus can be used against every noxious insect; and, unfortunately, those insects which are most hurtful to our crops do not thus far appear to be subject to the attack of any fungus. Parasites and predaceous foes of their own class yet appear to be a more promising means of diminishing the numbers and ravages of such insects.

Most of our knowledge of fungi has been acquired within the present century. Many thousands of species have been described and classified, and new ones are discovered and published almost monthly. But much yet remains to be done. The life histories and the true specific limits of many comparatively common species are yet to be ascertained. In some instances a kind of polymorphism or alternation of generations exists and makes investigation more difficult. The minuteness of some species and the peculiar conditions necessary for the development of others are also obstacles to be overcome before we can claim to fully understand these organisms. Indeed there is a lower grade of these very lowly plants the investigation of which is difficult even with our best microscopes. I refer to such organisms as Bacteria, Vibriones, Bacilli and Micrococci. To them the putrefaction of animal substances is attributed and also of some vegetable substances; they are also charged with the production of some of the most destructive maladies of our domestic animals; and the recent investigations of Prof. Burrill indicate that they are responsible too for the production of those dread diseases of our fruit trees, the "yellows" of the peach and the "blight" of the apple and the pear trees, diseases that have hitherto baffled all efforts to ascertain their causes. There are also those who believe that many of the contagious diseases of the human race are due to similar agencies. It is very probable that this belief will yet be supported by abundant evidence; but, if it should not be, enough is already known to make it evident that the relations of fungi to our material interests and well-being are much more intimate and far-reaching than is generally supposed. In view of their relations to us and to our food-plants, and of their importance in the economy of nature, and of the general lack of information concerning them, I have thought it would be well to give a plain and easy account of a few of our common species, avoiding, as far as possible, the use of technical terms and illustrating the minute parts by enlarged drawings. I have selected for this purpose such species as almost any one may find and observe if they will examine our corn fields, strawberry plants and orchards.

*Ustilago Maydis*, *Lev.* Indian corn Smut. (Plate 3, Figs. 1-3.) This fungus can be found in almost any corn field after the corn has developed its flowers. The visible part of the fungus consists of more

or less irregular and unsightly swellings or excrescences on the tassel or the ears of the corn. Very rarely these swellings occur on the stem and leaves also, but as a rule they occur on the tassels and ears and more often on the latter than on the former. They are very variable in size and shape. Generally they range from the size of a hazel-nut to that of an ordinary apple. They are soft to the touch and externally whitish and membranous, but they soon rupture and are then more or less stained by their own contents. The interior is composed of a shreddy mass of tissue filled in and covered over with a copious blackish-brown dust or powder that creaks the fingers in handling it or the clothes that brush against it. By microscopic examination this is found to be a mass of globular grains each one of which has a diameter of about four ten-thousandths of an inch; that is, it would take two thousand five hundred of them when laid in a straight row in contact with each other to cover the space of one inch. The surface is covered with minute points or prominences which gives them a rough but pretty appearance under the microscope. These powdery grains are the spores, that is, the seeds of the fungus. There are thousands, perhaps millions of them in a single excrescence. Nature has thus made plentiful provision for the multiplication and spread of the fungus. This and other closely related fungi have been specially studied by Professor Fischer Von Waldheim who finds that the fungus enters the corn while yet young, tender and germinating. The spores of the fungus are scattered over the ground by the wind. They may then be carried beneath its surface by rain or water soaking into the ground or the farmer himself in preparing his ground and planting his seed may unwittingly plant beneath the surface the seeds of a crop of fungi. If any of these spores happen to be in such a position that they come in contact with the young corn sprout in its upward growth they immediately send forth their growing filaments which penetrate the tender tissues of the young plant. When they have established themselves within the supporting plant they continue to live at its expense and grow with its growth, extending themselves upward through the stem as it elongates, until the proper time comes for them to break forth in excrescences and perfect a new crop of spores. It is characteristic of the smuts that they perfect their spores in certain definite parts of the supporting plant, though their mycelial threads may pervade all parts of the plant. A few produce their spores in the leaves or on the stem, but most of them develop their fruit in the flowers or seeds of the host plant. A knowledge of this fact is important in case it is deemed desirable to attempt the destruction or extermination of the parasite. It may serve as a guide to us in our search for the pest, informing us both as to the time when and the place where. In the case of the Indian corn smut it would be useless to look for it before the tassels appear. I am not aware that any experiments, made with the purpose to discover a remedy for this malady, have been successful. It is not probable that any external application will be of much avail, for the threads of the fungus are well protected by the surrounding tissues of the supporting plant. In this, as in so many other cases, prevention is better than cure. Although it may not be possible wholly to prevent the attacks of this pest, yet it is reasonable

to suppose that if every cultivator of corn would go through his fields at the proper time, that is, as soon as the excrescences have made their appearance, and cut off and burn up every excrescence, he would thereby prevent the dissemination of millions of these fungus spores and do much toward the prevention of the continuance and spread of the evil. Though the winds may carry the spores to great distances it is probable that most of them fall to the ground in the field in which they are produced. In this event it is easy to see that corn raised for several consecutive years on the same piece of ground would be more likely to be affected with smut than corn raised where there is a constant rotation of crops.

The specific name *Muydis*, applied to this fungus, is derived from the specific name *Mays*, which belongs to its supporting plants. *Ustilago Zea*, Schw., is a synonym, the specific part of which is derived from *Zea*, the generic name of Indian corn. The specific names of fungi are often derived from the name of the plant they inhabit.

*Helminthosporium inconspicuum*, C. & E. Obscure corn-leaf Fungus. (Plate 3, figs. 4-6.) If the lower leaves of corn stalks be examined toward the end of Summer, some of them will be found to be dead and discolored at and near the pointed end. This discoloration is sometimes continuous, involving the whole outer half of the leaf, and sometimes it is interrupted and forms spots of various sizes and shapes. The spots, by increasing in size, become confluent, and thus a leaf at first spotted may soon become uniformly discolored. The discoloration results from the death of the leaf tissues and the destruction of the green coloring matter of the leaf cells, the affected part appearing to the observer like so much dead leaf. The fungus that causes the discoloration is too minute to be easily seen by the unaided eye. But if a hand-glass of moderate magnifying power is brought into use, the surface of the dead spots will appear as if adorned with a slight pubescence or hairiness. With good eyes, well trained, this apparent hairiness can be seen in a favorable light by looking horizontally across the surface of the affected part. By microscopic examination it is found that this appearance is not due to the presence of hairs, but of a minute fungus. Numerous short, stiff, dark-colored articulated threads grow up from the surface, each one of which bears at its apex one or two nearly black spores. These are about as long as the threads and a little thicker. They are generally from thirty-five to forty-five ten-thousandths of an inch long, and about one-seventh or one-eighth as broad. They are divided into several cells by dark transverse partitions. In the original description of the species these partitions are said to vary in number from three to five, but I have generally found them more numerous, running up even to eight or nine. The life history of this fungus has not yet been traced and therefore it is not known where it passes the Winter. The genus to which it belongs takes its name from two Greek words, one of which signifies a worm, and the other, a spore. It was doubtless given because of some fancied or real resemblance between the spores of some species and a worm. The species of *Helminthosporium* usually inhabit vegetable matter already dead. From the habit the present species has of attacking the lower leaves only, which already have had their vigor impaired by age, and their vitality diminished by partial

exclusion from the full rays of the sun, it is quite probable that it never attacks healthy and vigorous leaves, but only those already weak and languishing. In this case it would be but slightly different in its habitat from those species that live on dead vegetable matter, and it could only be said to hasten the death of the leaf by a few days or weeks and therefore should not be regarded as a very noxious fungus. It is not unusual to find another fungus, a species of *Macrosporium*, associated with it and growing on parts of the leaf that have been dead for some time. This fungus is easily distinguished from the other by its spores which are shorter and comparatively thicker and divided into cells by short, longitudinal as well as transverse partitions.

*Puccinia Maydis*, *Potsch*. Indian corn Brand. (Plate 3, figs. 7-11.) Frequently in the latter part of the season the corn leaves are affected by a fungus called the Indian corn Brand. Small pustules or tubercles, technically called *sori*, appear on one or both sides of the leaf. Sometimes they are accompanied by a discolored spot, but often there is scarcely any discoloration. The pustules may be few and scattered or numerous and more or less crowded, or even confluent, in which case they form lines or irregular patches. At first these pustules are covered by the thin epidermis of the leaf, but at length this is ruptured, and then the fungus beneath is revealed. Some of the pustules, especially at the time of the earliest appearance of the fungus, are filled with rusty-red globular spores about one one-thousandth of an inch in diameter. This is the *Uredo*-form or early state of the fungus, for some fungi have different states or forms of development, just as insects do. Other pustules, and a little later in the season all the pustules, contain the true *Puccinia* or brand-spores. These are nearly or quite black, and before the covering epidermis is ruptured the pustule-containing them have a peculiar livid or lead color. The covering of the pustules usually ruptures in a longitudinal direction, that is, lengthwise of the leaf, either through the middle or near one side of the pustule. In the latter case the broad fragment of the epidermis forms a kind of flap that remains and partly covers the cluster of spores. Each pustule contains many spores closely packed together in an upright position. When highly magnified they are found to be two or three times as long as broad, and to have a single transverse partition which divides each spore into two cells nearly equal in size. A pale pedicel of variable length is also attached to the base of each spore. The spores themselves vary in length from sixteen to twenty ten-thousandths of an inch, exclusive of the pedicel. They are very persistent and may still be found in the pustules of old leaves in the Spring of the next year. Thus it appears to be the office of these brand-spores to carry the fungus through the Winter.

The species of *Puccinia* are very numerous and all inhabit living plants. Most of them, as in the present species, are known to have two or more forms of development. They do more or less injury to their supporting plants, according to the greater or less abundance of the parasite, though they do not usually kill the plant they attack. By interfering with the office of the leaves and abstracting therefrom nourishment that should go to the support of the plant, they must necessarily impair its strength and vigor. Experiments are greatly needed

to indicate the best methods of preventing the attack of these fungi on cultivated plants.

Another name, *Puccinia Sorghi*, Schw., is sometimes applied to the fungus under consideration, but as Schweinitz employed it to designate also a fungus found on the leaves of Sorghum, and as I have not been able to ascertain positively whether the Sorghum fungus is really identical with the Indian corn Brand, I have thought it best to employ for this the name *Puccinia Maydis*.

The three fungi already noticed as inhabitants of Indian corn are by no means all the species that attack it in the living state, but they are the most common ones that infest it in this vicinity. One or all of them can be found in almost every corn field in the latter part of the season. Many other species occur on the dead stalks and leaves, especially when left lying in damp places.

*Ramularia Fragariæ*, *Pk.* Strawberry *Ramularia*. (Plate 3, figs. 12-15.) It is by no means an unusual thing to find the leaves of strawberry vines, both cultivated and wild, marked with nearly circular spots. These spots have a pale or whitish center in which the leaf tissues appear to be dry and dead. They are not ordinarily much more than an eighth of an inch in diameter, but they are surrounded by a broad border which is dark-red or brownish-red. When the spots are numerous these colored borders run into each other and form discolored patches on the leaf. Sometimes the discoloration runs out to the margin of the leaf in a broad stripe. On the lower surface of the leaf the central part of the spot is not usually as pale as on the upper surface. To an ordinary observer the spots alone are seen. The cause of them remains a mystery. Some have supposed them to be produced by the scalding heat of the sun, others by the stings of insects, and others have intuitively imagined that possibly they might be caused by a fungus, and have alluded to them as the "strawberry rust." A fungus indeed does produce them but it is not a true "rust-fungus." It is one so small and so well protected from observation by the similarity between its own color and the color of the spot that untrained eyes will scarcely detect it. If, however, the white or central part of the spot be examined with a magnifying glass it will generally be found to be frosted over with minute white flocculent tufts or mealy-looking particles. This is the fertile condition of the fungus. It may not always be found in fertile condition. If sterile, nothing but the spot will be seen. The fungus consists of three parts: first, the creeping filaments which permeate the cells of the leaf, destroying their vitality and natural color; second, the minute tufts of short, upright stems, usually simple, but sometimes branched; and third, the long, narrow spores which are borne at the top of the stems. The spores are cylindrical, and about eight or ten times as long as broad. They are generally straight and simple, but occasionally one occurs which is slightly curved or which may be divided near the middle by one or two obscure transverse partitions. The spores and stems make up the minute white flocculent masses seen upon the surface of the spot. The latter are usually a little thicker than the former, but there is not much difference in the length of the two. They are found on both surfaces of the leaf, but are more abundant on the upper surface. The fungus occurs

throughout the season, and, so far as my observation goes, it attacks especially those plants that grow in exposed, sunny places, or on dry, light or sandy soils. To what extent the productiveness of the plants is diminished or the quality of the fruit is deteriorated by the attacks of this fungus, I have no data for determining.

The generic name *Ramularia* is derived from the Latin *ramulus*, a little branch, and has reference to the disposition of the stems to bear branches occasionally. The species inhabit the living leaves of plants and produce spots on them which at once indicate the presence of the fungus. In some species several spores occur on one stem, they being attached end to end like the links of a chain. A species of *Ramularia* occurs in Europe on the leaves of the Indian strawberry, *Fragaria Indica*, but I have seen no specimens of it. The figure of it in "Fungi Italici" indicates that it has thicker stems than our plant and that they are swollen in the middle and narrower toward each end.

*Mucor inaequalis*, *Pk.* Black Squash Mold. (Plate 3, figs. 16-18.) This mold attacks squashes and pumpkins in Autumn, or even in Winter, if kept in a warm place. It does not require a very high temperature for its development. The mycelioid threads of the fungus permeate the cells of the squash or pumpkin, producing soft pulpy rotten spots in the flesh. These threads are comparatively coarse and they send off numerous branches in every direction. If their progress is not interrupted they continue to extend themselves until the whole squash is rendered worthless. On the surface or exposed part of the affected places numerous thread-like stems grow up about one-twelfth of an inch high, each one of which bears a minute globose head. These stems and their swollen tips are at first of a milky-white color, the tips shining and appearing somewhat like a drop of dew; but they gradually assume a darker hue and finally become blackish or bluish-black. The growth is often so dense and extensive that to the naked eye it appears like a black felty patch. The stems are generally undivided, but occasionally one is found separating near the base into two branches. The heads contain the spores of the fungus. These are nearly black in color and very unequal in size, a character which suggests the specific name *inaequalis* which has been given to the fungus. The spores vary from two to six ten-thousandths of an inch in length. They are also very variable in shape, some being nearly globose, others broadly elliptical, and others, especially the larger ones, more or less angular or irregular as if they had been so closely crowded in the head as to be pressed out of proper shape. This variable character of the spores, together with the dark color of the plant, serves to distinguish this mold from all other species known to me. Another somewhat similar species attacks the pumpkin occasionally, but its stems are longer and permanently white and its spores are more uniform in size and shape. Several other species attack melons and gourds but all are readily distinguished from the present one. The growth of this mold is very rapid. A piece was cut from a pumpkin infected by the mycelium of its fungus and placed in a warm room. The next day the cut surface was covered with a black patch of the mature mold. It is probable, however, that in a lower temperature its development is less rapid. Obvious methods of checking the spread of the fungus are: first, remove

all affected pumpkins or squashes at once from the vicinity of the unaffected ones; second, cut out and destroy all the affected spots as soon as detected; third, keep in as low a temperature as possible without freezing.

Mycologists have instituted two genera of molds that are very closely related. In one, which they call *Mucor*, the globose head that contains the spores bursts irregularly when mature. In the other, which they call *Ascophora*, it collapses or falls down over the top of the stem, and then presents an appearance similar to that of a miniature spread parasol, or of a saucer inverted and supported on a slender stick. In the black squash mold both these characters exist, for sometimes the head collapses and sometimes it bursts irregularly. If young specimens, while yet white, are placed in a warm dry place their further development is sometimes checked and then especially the heads collapse as in *Ascophora*. Thus it will be seen that satisfactory generic characters and generic limits have not yet in all cases been ascertained.

*Fusicladium dendriticum*, Wallr. Apple peel Fungus. (Plate 4, figs. 1-3.) Probably every one has observed the small, round, blackish spots common on apples, but perhaps not every one is aware of the cause of them. These spots are not always uniform in color, but are varied by lighter and darker patches or circles. They often have a cracked or scaly appearance. Sometimes they are bare and nearly smooth and then they have a dull reddish tint, but generally they have a blackish or blackish-brown color, more or less tinged with gray or dark-green. They are generally from one-eighth to one-fourth of an inch in diameter, but sometimes they are even larger. There may be but one or two on an apple, but usually they are more numerous, sometimes even so numerous and close that two or more run together. When examined microscopically it is found that they are produced by a fungus, whose dense stratum of threads and spores gives a somewhat velvety appearance to the surface. The fungus develops beneath the epidermis or thin outer skin of the apple, which at length ruptures, breaking up in small flakes or fragments which remain attached for some time, giving a grayish tint to the spot. The margin is generally well defined but minutely irregular. It may be either darker-colored or paler than the center. The threads and spores are colored and very variable, scarcely any two being exactly alike. Some of the threads are long and prostrate, others short and upright. The spores vary from subglobose to elliptical, fusiform, oblong or narrowly pyriform. They are generally simple, but sometimes when old they are divided by a single transverse septum or partition. Occasionally they contain one or more nuclei or shining oil globules. The fungus does not affect the apple deeply, its injury being limited to the surface. It is all taken off with the peel and does not detract materially from the weight or quality of the flesh. Still it injures the appearance of the fruit, and possibly in this way affects the sale of it. It is said that it sometimes opens the way for the attack of other fungi by cracking the epidermis of the apple, but this is not a common result. All varieties of apples are not equally subject to its attacks. Common fruit and especially that growing on trees in the borders of woods seems more liable to its attacks than fruit on thrifty, well-cultivated trees. This

fungus with us occurs most frequently on apples, but its habitat is not limited to them. It sometimes appears also on apple leaves, and on pears and pear leaves and young twigs which it sometimes seriously injures. It has also been found in Europe, on thorns, particularly the evergreen thorn, *Crataegus pyracantha*. In consequence of this variety in its habitat it is not surprising that it has received a variety of names. *Spilocæa Pomi*, Fr., *Helminthosporium Pyrorum*, Desm., *Cladosporium Pyrorum*, Berk., *Cladosporium dendriticum*, Wallr., *Cladosporium orbiculatum*, Desm., *Actinonema Cratægi*, P. & A., *Actinonema Pomi*, Lev., and *Phlyctidium Cratægi*, Wallr., are some of the synonyms that have been at one time or another applied to the forms of this fungus.

*Penicillium glaucum*, Grev. Crustaceous Mold. (Plate 4, figs. 4-10.) Soft decaying spots, of a peculiar brown color, somewhat resembling that of dead leaves, often make their appearance on apples, especially if they are stored in a warm place. Frequently a species of mold develops on these spots. At first minute white tufts appear but they soon acquire a pale bluish-green color, which is indicated botanically by the word "glaucous." These tufts are usually about as large as the head of an ordinary pin. Generally they become so numerous and so closely crowded together that they form a continuous patch or crust, which would render the name "crustaceous mold" appropriate, although this name was probably suggested originally by the patches, sometimes formed by the sterile threads of the fungus. If the decayed portion of the apple be examined microscopically, numerous slender fungoid filaments will be found running through it in every direction. These are the mycelium of the fungus, the immediate cause of the rot. As the roots of a tree absorb nourishment from the soil that surrounds them, so the threads of this fungus absorb their nourishment from the apple cells that surround them. They spread more or less rapidly till the whole apple is rendered worthless. When they come to the surface or reach an air cavity, such as exists about the seeds, they send up fruiting stems if the conditions are favorable. These stems are delicate jointed threads which give out near the top one or more pairs of short opposite branches, which are themselves once or twice forked. Each ultimate branchlet bears at its tip a string of spores, looking much like a string of minute beads. The branches are so short that they are scarcely visible unless highly magnified. They with their strings of spores resemble a minute inverted tassel. The strings of spores are so numerous that they give a dusty appearance to the fungus and often hide from view the threads that support them. Their attachment to the branchlets and to each other is very slight and easily broken. Even a drop of water spreading itself on the slide of the microscope will separate them if it comes in contact with them. A slight breath of wind is enough to scatter them far and wide. The separate spores are globular and range from twelve to twenty one-hundred thousandths of an inch in diameter. Five thousand of the largest ones could be placed in a line in the space of one inch.

As has already been intimated, the fertile threads often grow in clusters or tufts. Sometimes these tufts are so compact and the threads

that compose them are so closely united that it is not possible to distinguish them easily. They appear to form a single white stem crowned with a mass of spores. This form of the fungus is represented in fig. 7. It was at one time thought to be, not merely a distinct species, but a distinct genus, and was named *Coremium leucopus* (the white stemmed *Coremium*) by Persoon. It was also called *Floccaria glauca* by the celebrated Greville. It is now regarded simply as a variety of the crustaceous mold and takes the name variety *Coremium*. Sometimes the fertile threads go to the other extreme and become excessively loose and elongated in their mode of growth and send off a few fertile branches as represented in fig. 8.

Although so commonly found on decaying apples, this fungus is not limited to that habitat. It occurs also on pears and other fruits and various decaying vegetable substances.

Besides the synonyms already given, *Byssus scoparia*, Fl. Dan., and *Penicillium crustaceum*, Fr., may be mentioned.

*Oidium fructigenum*, *Kuz. and Schm.* Fruit Oidium. (Plate 4, figs. 11-15.) Small, mealy-looking cushions or pustules sometimes occur on the surface of apples. Single ones are scarcely larger than the head of an ordinary pin, but sometimes two or more occur so near each other that they appear to run together and form larger and irregular masses. Their color is not very decided, but it is generally a dingy-white or grayish-yellow or a brownish-yellow, with a slight tinge of red. When very old they sometimes assume a blackish tint. They break out over a part or even over the whole surface of the apple, and are said to be more abundant in dry than in wet seasons. The external visible part of the fungus consists of short more or less densely tufted threads, each one surmounted by a string of spores. These are somewhat elliptical or egg-shaped, from which feature the generic name appears to have been derived. As in most species whose spores are produced in necklace-shaped strings the spores readily separate from each other. In this fungus they are much larger than in the crustaceous mold already noticed. The fungus attacks also pears, peaches, plums, etc., and is therefore appropriately called the "fruit Oidium." With us it is especially common on plums. It does not always wait for the fruit to fall from the tree, but often attacks it while yet attached to the branches. Dried and withered plums yet dotted with the fungus cushions may sometimes be found still hanging on the trees in the spring of the year. It is even claimed by one writer that fruit is preserved by this fungus rather than destroyed. But my observations indicate that it does not preserve in an uninjured and pure condition. It first produces a kind of rot in the fruit, a "dry rot" perhaps it may be called. It is perhaps less pulpy and soft than the rot produced by some fungi, but the flesh becomes discolored and changed under the influence of the mycelium. Some experiments illustrative of this were made by the writer with peaches.

On September 25th spores of the fungus were planted on a sound peach in three places; on the rind, on the scar that marks its place of attachment to the branch, and on the flesh which had been exposed by cutting away a minute portion of the rind. Those planted on the scar were at the same time moistened by a drop of water.

On the next day there was a slight discoloration about the scar. A

small portion of the exposed flesh being examined it was found that the spores had germinated and had commenced sending out their threads or mycelium. No change was observed where spores had been sown on the rind.

On the 27th the discoloration about the scar had increased in extent, and the spot where the spores had been planted on the flesh was surrounded on all sides by a rot-discoloration one-fourth of an inch broad. Nothing has yet come of the spores planted on the rind, nor did they appear afterward to produce any effect. On the 28th both rot spots had increased in size, and the flesh wound where the spores were planted was covered with a fine crop of the Oidium. On the 30th the two rot spots had run together and the scar was also covered with the oidium. Oct. 1st, nearly the whole peach was discolored. Oct. 2d, the whole peach was discolored and the Oidium had broken out in one new spot.

Sept. 27. A hard, sound peach was inoculated in two places by making slight incisions under the rind, inserting in them the spores of the Oidium and then pressing down the rind closely in its original place, to shut off as much as possible exposure to the external air. Spores were also planted on the uninjured rind and moistened with water. On the next day the places of inoculation were surrounded by discolored rot spots. No change appeared where the spores were planted on the rind, nor did these spores afterward produce any effect. Sept. 30th. The two rot spots about the places of inoculation have run together and now occupy about one-half the peach. Oct. 1st. The rot has extended and reached the stem-scar of the peach, and there a nice crop of the Oidium has made its appearance. No Oidium has appeared in the two places of inoculation. Oct. 2d. The rot has extended and the Oidium has broken out in a new place on the part of the peach opposite the stem-scar.

Sept. 27. A hard, sound peach was cut into halves and the Oidium spores were planted in a small spot in the cut flesh of one of the halves. On the 28th there was a discolored spot about the place where the spores were planted, but not elsewhere. The 29th, being Sunday, no observation was taken. On the 30th about one-third of the cut surface was discolored, the discoloration being only on the side where the spores were planted. Also the Oidium has appeared. Oct. 1st. The discoloration has extended and more Oidium has developed. Oct. 2d. The discoloration has extended but little, probably from lack of moisture, as the peach is becoming dry. The unplanted side is still unharmed, though considerably dried.

From these three simple experiments the following deductions are made: First, the Oidium does produce a kind of rot in the peach; Second, the spores do not affect the peach when planted on the uninjured skin or rind; Third, when planted on the freshly-exposed flesh they germinate most readily and reproduce themselves in about three days. These results might possibly be somewhat modified if the experiments were made on other fruits, but essentially I believe they would only be confirmed.

The names that have been applied to this fungus by mycologists at different times are numerous. Among them are *Torula fructigena*,

Pers., *Oospora candida*, Wallr., *Oidium Wallrothii*, Thum., *Monilia fructigena*, Sacc., *Acrosporium fructigenum*, Pers., and *Oidium laxum*, Ehr.

*Sphæropsis malorum*, Berk. Apple Sphæropsis. (Plate 4, figs. 16-21.) It is not an uncommon thing to find apples in Autumn lying under the trees of the orchard and discolored by an incipient decay. Sometimes this discoloration is seen in them while yet hanging on the trees. It is the work and earliest manifestation of the presence of a fungus, distinct from those already noticed. It has the usual brown hue of decay produced by the mycelium of some other apple-infesting fungi, and it is not easy to say just what fungus is causing the decay until the fertile condition of the parasite makes its appearance. In this case the discoloration is soon followed by the appearance of numerous minute black pimples or pustules. These are at first covered by the thin epidermis, but soon this is ruptured and the black, somewhat conical protuberance beneath is revealed. This is the spore-case of the fungus. In due time it contains a cluster of spores which are generally about twice as long as broad, and which range from eight to twelve ten-thousandths of an inch in length. They are at first pale in color and supported on a short stem or pedicel, but when mature they become black or blackish-brown, separate from their pedicels and escape through a minute aperture at the apex of the spore-case. The spores are not always developed as soon as the spore-cases appear. Sometimes fertile spore-cases are found in Winter or even in the following Spring. The specific part of the name of this fungus, *Sphæropsis malorum*, is derived from the Latin *mala*, a word meaning apples.

The generic name is suggested by the resemblance these fungi have to species of *Sphæria*. There is another genus called *Diplodia* which scarcely differs from *Sphæropsis* in any respect except that its spores are divided in the middle by a transverse septum. In some instances this mark of distinction between the two genera fails, for both divided and undivided spores may be found in the same spore-case. And even both so-called genera are now regarded by excellent mycologists as mere forms or states of more highly developed fungi. For other remarks concerning this fungus see Thirty-first Report, page 20.

(1.)

## PLANTS MOUNTED.

*Not new to the Herbarium.*

<i>Thalictrum dioicum</i> .....	<i>L.</i>	<i>Proserpinaca palustris</i> .....	<i>L.</i>
<i>Actæa alba</i> .....	<i>Bigel.</i>	<i>Cornus circinata</i> .....	<i>L'Her.</i>
<i>Viola Selkirkii</i> .....	<i>Goldie.</i>	<i>Dipsacus sylvestris</i> .....	<i>Mill.</i>
<i>Hypericum mutilum</i> .....	<i>L.</i>	<i>Aster dumosus</i> .....	<i>L.</i>
<i>Linum striatum</i> .....	<i>Walt.</i>	<i>A. ericoides</i> .....	<i>L.</i>
<i>Vitis riparia</i> .....	<i>Mx.</i>	<i>A. Tradescanti</i> .....	<i>L.</i>
<i>Euonymus Americana</i> .....	<i>L.</i>	<i>Solidago altissima</i> .....	<i>L.</i>
<i>Trifolium repens</i> .....	<i>L.</i>	<i>S. gigantea</i> .....	<i>Ait.</i>
<i>Lespedeza reticulata</i> .....	<i>Pers.</i>	<i>Polymnia Canadensis</i> .....	<i>L.</i>
<i>Desmodium rotundifolium</i> ...	<i>D. C.</i>	<i>Hieracium venosum</i> .....	<i>L.</i>
<i>Ribes hirtellum</i> .....	<i>Mx.</i>	<i>Vaccinium Pennsylvanicum</i> ..	<i>Lam.</i>
<i>R. rotundifolium</i> .....	<i>Mx.</i>	<i>Gerardia tenuifolia</i> .....	<i>Vahl.</i>

- Monarda fistulosa..... *L.*  
 Lophanthus nepetoides..... *Benth.*  
 Lycopus Europæus..... *L.*  
 Polygonum Hartwrightii..... *Gr.*  
 Quercus prinoides..... *Willd.*  
 Potamogeton natans..... *L.*  
 P. amplifolius..... *Tuckerm.*  
 P. hybridus..... *Mr.*  
 P. gramineus..... *L.*  
 Pogonia verticillata..... *Nutt.*  
 Triglochin palustre..... *L.*  
 Juncus Canadensis..... *J. Gay*  
 Cyperus dentatus..... *Torr.*  
 Eleocharis olivacea..... *Torr.*  
 Carex polytrichoides..... *Muhl.*  
 C. straminea..... *Schk.*  
 C. tentaculata..... *Muhl.*  
 C. lagopodioides..... *Schk.*  
 C. intumescens..... *Rudge.*  
 Hordeum vulgare..... *L.*  
 Spartina alterniflora..... *Loisel.*  
 Danthonia compressa..... *Aust. \**  
 Panicum proliferum..... *Lam. §*  
 P. sanguinale..... *L.*  
 Tricuspis seslerioides..... *Torr.*  
 Equisetum arvense..... *L.*  
 Woodsia obtusa..... *Torr.*  
 Pellæa atropurpurea..... *Lk.*  
 Cladonia papillaria..... *Hoffm*  
 Polyporus hirsutus..... *Fr.*  
 P. zonatus..... *Fr.*  
 P. vulgaris..... *Fr.*  
 Irpex lacteus..... *Fr.*  
 Clavaria aurea..... *Schæff.*  
 Thelephora terrestris..... *Fr.*  
 T. laciniata..... *Pers.*  
 Stereum ochraceoflavum..... *Schw.*  
 Puccinia Menthæ..... *Pers.*  
 Uromyces solida..... *B. & C*  
 Peronospora alta..... *Fckl.*  
 Microsphaeria Vaccinii..... *C. & P.*  
 Helotium citrinum..... *Batsch.*  
 Triblidium hiascens..... *B. & C.*  
 Hypoxylon concentricum..... *Grev.*  
 Diatrype quadrata..... *Schw.*  
 Valsa leucostoma..... *Fr.*  
 V. rugiella..... *C. & E.*  
 Sphærella spleniata..... *C. & P.*
- New to the Herbarium.*
- Ranunculus Ficaria..... *L.*  
 Lechea racemulosa..... *Mr.*  
 L. tenuifolia..... *Mr.*  
 Portulaca grandiflora..... *Hook.*  
 Fragaria Indica..... *L.*  
 Ribes Grossularia..... *L.*  
 Diodia teres..... *Walt.*  
 Eclipta procumbens..... *Mr.*  
 Rudbeckia triloba..... *L.*  
 Tecoma radicans..... *Juss.*  
 Veronica Buxbaumii..... *Tenore.*  
 Mentha rotundifolia..... *L.*  
 Salvia Sclarea..... *L.*
- Heliotropium Europæum..... *L.*  
 Rumex maritimus..... *L.*  
 Alnus glutinosa..... *Gærtn.*  
 Potamogeton Robbinsii..... *Oakes.*  
 Spiranthes simplex..... *Gr.*  
 Epipactes helleborine v. viridans..... *Irm.*  
 Hemerocallis fulva..... *L.*  
 Tripsacum dactyloides..... *L.*  
 Glyceria obtusa..... *Trin.*  
 Muhlenbergia sobolifera..... *Trin.*  
 Asplenium Bradleyi..... *Eaton.*  
 Cladonia Boryi..... *Tuckerm.*  
 Vaucheria velutina..... *Ag.*  
 Agaricus solitarius..... *Bull.*  
 A. strobiliformis..... *Vitt.*  
 A. rhagadiosus..... *Fr.*  
 A. candicans..... *Pers.*  
 A. vilescens..... *Pk.*  
 A. compressipes..... *Pk.*  
 A. trullisatus..... *Ellis.*  
 A. confluens..... *Pers.*  
 A. Iris..... *Berk.*  
 A. scabrinellus..... *Pk.*  
 A. curvipes..... *Fr.*  
 Cortinarius subsiccus..... *Pk.*  
 C. tophaceus..... *Fr.*  
 C. pulchrifolius..... *Pk.*  
 C. rubrocinerus..... *Pk.*  
 C. uliginosus..... *Berk.*  
 C. croceoconus..... *Fr.*  
 C. sericipes..... *Pk.*  
 C. basalis..... *Pk.*  
 Russula fragilis..... *Fr.*  
 Cantharellus brevipes..... *Pk.*  
 Panus lævis..... *B. & C.*  
 P. dealbatus..... *Berk.*  
 Boletus Frostii..... *Russ.*  
 Polyporus chioneus..... *Fr.*  
 P. floccosus..... *Fr.*  
 Stereum neglectum..... *Pk.*  
 Clavaria miniata..... *Berk.*  
 Cyphella caricina..... *Pk.*  
 Hymenula hysteroides..... *Pk.*  
 Simblum rubescens..... *Ger.*  
 Physarum mirabile..... *Pk.*  
 Cribraria argillacea..... *Pers.*  
 Leptothyrium punctiforme..... *B. & C.*  
 L. dryinum..... *Sacc.*  
 Phoma lineolatum..... *Desm.*  
 P. hysteriellum..... *P. & C.*  
 P. longipes..... *B. & C.*  
 P. Phytolacæ..... *B. & C.*  
 Sphæropsis phomatella..... *Pk.*  
 S. cerasina..... *Pk.*  
 S. abundans..... *Pk.*  
 S. celastrina..... *Pk.*  
 S. seriatus..... *Pk.*  
 S. smilacina..... *Pk.*  
 S. brunneola..... *B. & C.*  
 Hendersonia abnormalis..... *Pk.*  
 H. Coluteæ..... *P. & C.*  
 Cytispora minuta..... *Thum.*  
 Asterosporium betulinum..... *Pk.*

Coryneum pustulatum.....	<i>Pk.</i>	Cercospora zebrina.....	<i>Sacc.</i>
Melanconium cerasinum.....	<i>Pk.</i>	C. Smilacis.....	<i>Thum.</i>
Synphragmidium effusum....	<i>Pk.</i>	C. squalidula.....	<i>Pk.</i>
Gymnosporium variabile....	<i>Pk.</i>	C. Sanguinariæ.....	<i>Pk.</i>
Torula uniformis.....	<i>Pk.</i>	C. althæina.....	<i>Sacc.</i>
Glæosporium Hepaticæ.....	<i>Pk.</i>	Peronospora obducens.....	<i>Schr.</i>
G. salicinum.....	<i>Pk.</i>	Microstroma leucosporum....	<i>Niessl.</i>
G. Laportææ.....	<i>Pk.</i>	Fusisporium Solani.....	<i>Mart.</i>
Septoria pastinacina.....	<i>Pk.</i>	Helvella palustris.....	<i>Pk.</i>
S. increscens.....	<i>Pk.</i>	Peziza multipuncta.....	<i>Pk.</i>
S. Gei.....	<i>R. &amp; D.</i>	P. mycogena.....	<i>Ellis.</i>
S. Ostryæ.....	<i>Pk.</i>	P. floriformis.....	<i>Pk.</i>
S. Aceris.....	<i>B. &amp; Br.</i>	P. regalis.....	<i>C. &amp; E.</i>
S. Mori.....	<i>Lev.</i>	P. luteodisca.....	<i>Pk.</i>
S. Ludwigia.....	<i>Cke.</i>	P. subvernalis.....	<i>Pk.</i>
S. lythrina.....	<i>Pk.</i>	Patellaria Hamamelidis.....	<i>Pk.</i>
S. Urticæ.....	<i>Desm.</i>	Helotium pallescens.....	<i>Fr.</i>
S. atropurpurea.....	<i>Pk.</i>	H. vitigenum.....	<i>De Not.</i>
S. hedeomina.....	<i>Pk.</i>	H. affinissimum.....	<i>Pk.</i>
S. cornicola.....	<i>Desm.</i>	Cenangium Viburni.....	<i>Schw.</i>
Protomyces fuscus.....	<i>Pk.</i>	Caliciopsis pinea.....	<i>Pk.</i>
Puccinia Ellisiana.....	<i>Thum.</i>	Taphrina alnitorqua.....	<i>Tul.</i>
Melampsora Hartigii.....	<i>Thum.</i>	Hysterium gramineum.....	<i>M. &amp; N.</i>
Cronartium asclepiadeum....	<i>Fr.</i>	Nectria dematiosa.....	<i>Schw.</i>
Ræstelia Ellisii.....	<i>Pk.</i>	Xylaria bulbosa.....	<i>Pers.</i>
Æcidium cimicifugatum....	<i>Schw.</i>	Hypoxylon Blakei.....	<i>B. &amp; C.</i>
Stilbum pruinipes.....	<i>Pk.</i>	Eutypa subtecta.....	<i>Fr.</i>
Periconia parasitica.....	<i>Pk.</i>	Diatrype nigrospora.....	<i>Pk.</i>
Tubercularia Celastri.....	<i>Schw.</i>	D. strumella.....	<i>Fr.</i>
Helicosporium cinereum....	<i>Pk.</i>	Valsa compta.....	<i>Tul.</i>
Helminthosporium pruni....	<i>B. &amp; C.</i>	V. aurea.....	<i>Fckl.</i>
Alternaria chartarum.....	<i>Preuss.</i>	V. paucispora.....	<i>Pk.</i>
Macrosporium Meliloti.....	<i>Pk.</i>	V. Prunicola.....	<i>Pk.</i>
Polyactis Streptothrix.....	<i>C. &amp; E.</i>	V. tessera.....	<i>Fr.</i>
Pyricularia grisea.....	<i>Sacc.</i>	V. Carpini.....	<i>Pers.</i>
Oidium irregulare.....	<i>Pk.</i>	V. Abietis.....	<i>Fr.</i>
Ramularia Armoraciæ.....	<i>Fckl.</i>	V. acrocystis.....	<i>Pk.</i>
R. Dulcamaræ.....	<i>Pk.</i>	Cucurbitaria longitudinalis...	<i>Pk.</i>
R. Celastri.....	<i>Pk.</i>	Sphæria pulveracea.....	<i>Ehrh.</i>
R. Mitellæ.....	<i>Pk.</i>	S. pulviscula.....	<i>Curr.</i>
Cercospora Nymphæacea....	<i>C. &amp; E.</i>	S. capillifera.....	<i>Curr.</i>
C. elongata.....	<i>Pk.</i>	Sphaerella recutita.....	<i>Fr.</i>
C. Caulophylli.....	<i>Pk.</i>	S. conigena.....	<i>Pk.</i>
C. Eupatorii.....	<i>Pk.</i>	S. depressa.....	<i>Pk.</i>
C. griseëlla.....	<i>Pk.</i>		

(2.)

## PLANTS COLLECTED.

*Not new to the Herbarium.*

Clematis verticillaris.....	<i>D. C.</i>	Malva rotundifolia.....	<i>L.</i>
Ranunculus Pennsylvanicus..	<i>L.</i>	Vitis æstivalis.....	<i>Mx.</i>
Nuphar advena.....	<i>Ait.</i>	Acer Pennsylvanicum.....	<i>L.</i>
N. lutea.....	<i>Sm.</i>	Rubus odoratus.....	<i>L.</i>
Nymphæa odorata.....	<i>Ait.</i>	R. villosus.....	<i>Ait.</i>
Cardamine hirsuta.....	<i>L.</i>	Rosa Carolina.....	<i>L.</i>
Sisymbrium officinale.....	<i>Scop.</i>	R. lucida.....	<i>Ehrh.</i>
Lepidium ruderales.....	<i>L.</i>	Ribes rotundifolium.....	<i>Mx.</i>
Raphanus sativus.....	<i>L.</i>	R. prostratum.....	<i>L'Her.</i>



Septoria microsperma.....	<i>Pk.</i>	Ramularia rufomaculans.....	<i>Pk.</i>
S. Pileæ.....	<i>Thum.</i>	R. sambucina.....	<i>Pk.</i>
Septoglœum Apocyni.....	<i>Pk.</i>	R. Inpatientis.....	<i>Pk.</i>
Vermicularia circinans.....	<i>Berk.</i>	R. Rudbeckii.....	<i>Pk.</i>
Morthiera Thumenii.....	<i>Cke.</i>	Monilia Harknessii.....	<i>Pk.</i>
Pestalozzia Stevensonii.....	<i>Pk.</i>	Colletotrichum lineola.....	<i>Cd.</i>
Puccinia Thalictri.....	<i>Chev.</i>	Sporocybe nigriceps.....	<i>Pk.</i>
P. Cirsii.....	<i>Lusch.</i>	Macrosporium concinnum.....	<i>Berk.</i>
P. simplex.....	<i>Pk.</i>	Helminthosporium Tiliæ.....	<i>Fr.</i>
Protomyces polysporus.....	<i>Pk.</i>	H. inconspicuum.....	<i>C. &amp; E.</i>
Ræstelia penicillata.....	<i>Rabh.</i>	H. arbusculoides.....	<i>Pk.</i>
Aspergillus phæocephalus.....	<i>D. &amp; M.</i>	H. septemseptatum.....	<i>Pk.</i>
A. clavellus.....	<i>Pk.</i>	Zygodemus bicolor.....	<i>C. &amp; E.</i>
Fusisporium tenuissimum.....	<i>Pk.</i>	Rhinotrichum subalutaceum.....	<i>Pk.</i>
Diplocladium minus.....	<i>Bon.</i>	Periconia sphærophila.....	<i>Pk.</i>
Verticillium candidum.....	<i>Pk.</i>	Graphium gracile.....	<i>Pk.</i>
Septocylindrium Ranunculi.....	<i>Pk.</i>	Peziza hydrophila.....	<i>Pk.</i>
Cercospora reticulata.....	<i>Pk.</i>	P. fusarioides.....	<i>Berk.</i>
Cercospora clavata.....	<i>Ger.</i>	P. atrata.....	<i>Fr.</i>
C. venturioides.....	<i>Pk.</i>	P. balsamicola.....	<i>Pk.</i>
C. Bœhmeriæ.....	<i>Pk.</i>	Hypoxyton marginatum.....	<i>Schw.</i>
C. Acalyphæ.....	<i>Pk.</i>	Diatrypella angulata.....	<i>Fr.</i>
C. circumscissa.....	<i>Sacc.</i>	Dothidea melanoplaca.....	<i>Desm.</i>
C. beticola.....	<i>Sacc.</i>	Valsa myinda.....	<i>C. &amp; E.</i>
C. Violæ.....	<i>Sacc.</i>	Lophiostoma angustilabrum.....	<i>B. &amp; Br.</i>
C. depazeoides.....	<i>Sacc.</i>	Meliola balsamicola.....	<i>Pk.</i>
Ramularia Spirææ.....	<i>Pk.</i>	Sphærella Leersia.....	<i>Pass.</i>

(3.)

## CONTRIBUTORS AND THEIR CONTRIBUTIONS.

Julia S. Hoag, Albany, New York.

Euthora cristata.....	<i>Ag.</i>	Delesseria alata.....	<i>Lamour.</i>
Ptilota serrata.....	<i>Harv.</i>		

Professor J. Hall, Albany, New York.

Polyporus squamosus.....	<i>Fr.</i>		
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Professor J. S. St. John, Albany, New York.

Thalictrum anemonoides.....	<i>Mx.</i>	Nelumbium luteum.....	<i>Willd.</i>
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Professor A. N. Prentiss, Ithaca, New York.

Geaster mammosus.....	<i>Chev.</i>	Helicomyces mirabilis.....	<i>Pk.</i>
Stemonitis Morgani.....	<i>Pk.</i>	Peziza aurelia.....	<i>Pers.</i>
Arcyria macrospora.....	<i>Pk.</i>	Diatrype punctulata.....	<i>B. &amp; R.</i>
Lamproderma iridea.....	<i>Cke.</i>	Zasmidium cellare.....	<i>Pers.</i>

Isaac Coles, Glen Cove, New York.

Triosteum angustifolium.....	<i>L.</i>	Trillium er. var. declinatum..	<i>Gr.</i>
Galium verum.....	<i>L.</i>		

E. C. Howe, M. D., Yonkers, New York.

Carex Sullivantii.....	<i>Boott.</i>	Polypogon Monspeliensis....	<i>Desf.</i>
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W. R. Gerard, New York City, New York.

Æcidium pedatatum.....	<i>Schw.</i>		
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I. C. Martindale, Camden, New Jersey.

Quercus heterophylla.....	<i>Mx.</i>		
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W. Barbeck, Philadelphia, Pa.

Chondrioderma floriforme....	<i>Bull.</i>	Cribraria dictydioides ...	<i>Cke. &amp; Balf</i>
Physarum leucophæum.....	<i>Fr.</i>		

C. J. Sprague, Boston, Mass.

Hirneola Auricula-Judæ . . . . . Berk. |

E. W. Holway, Decorah, Iowa.

Æcidium Periclymeni . . . . . D. C. |

Æ. albescens . . . . . Grev. |

Æcidium Xanthoxyli . . . . . Pk.

J. B. Ellis, Newfield, N. J.

Sporidesmium Rauii . . . . . Ellis. |

Cercospora graphioides . . . . . Ellis. |

Menispora glauconigra . . . . . C. &amp; E. |

Dendryphium Harknessii . . . . . Ellis. |

Penicillium repens . . . . . C. &amp; E. |

Zygodemus bicolor . . . . . C. &amp; E. |

Helicosporium auratum . . . . . Ellis.

H. thysanophorum E. &amp; H.

Gonytrichum subroseum . . . . . Ellis.

Arthrosporium compositum . . . . . Ellis.

Ascomyces anomalus . . . . . E. &amp; H.

Rev. H. Wibbe, Oswego, N. Y.

Coreopsis discoidea . . . . . T. &amp; G. |

Lamium maculatum . . . . . L. |

Eleocharis quadrangulata . . . . . B. Br.

Geo. Martin, M. D., Westchester, Pa.

Agaricus laccatus . . . . . Scop. |

A. subochraceus . . . . . Pk. |

A. sapineus . . . . . Fr. |

Lenzites sepiaria . . . . . Fr. |

Trametes hydroides . . . . . Fr. |

Polyporus sanguineus . . . . . Fr. |

Stereum complicatum . . . . . Fr.

Peridermium Pini . . . . . Chev.

Uromyces Martinii . . . . . Far.

Cryptosporium acicolum . . . . . Thum.

Meliola amphitricha . . . . . Fr.

Capnodium elongatum . . . . . B. &amp; D.

J. D. Trask, M. D., Astoria, N. Y.

Agaricus spectabilis . . . . . Fr.

H. W. Harkness, M. D., Sacramento, Cal

Daedalea vorax . . . . . Hark. |

Monilia Ellisii . . . . . Hark. |

Helicosporium Mulleri . . . . . Cd. |

Rhinotrichum repens . . . . . Preuss. |

Trichægum atrum . . . . . Preuss. |

Coniothecium irregulare . . . . . Pk.

Zygodemus granulosus . . . . . Pk.

Z. atroruber . . . . . Pk.

Patellaria indigotica . . . . . C. &amp; P.

Hypoxyton discretum . . . . . Schw.

Prof. W. G. Farlow, Cambridge, Mass.

Podisoma macropus . . . . . Schw. |

P. clavariæforme . . . . . D. C. |

P. fuscum . . . . . Duby. |

Gymnosporangium biseptatum Ellis.

Basidiospora entospora . . . . . Cornu.

(4)

## PLANTS NOT BEFORE REPORTED.

*Triosteum angustifolium*, L. Manhasset and Glen Cove, Long Island. I. Coles.

*Coreopsis discoidea*, T. & G. Borders of Lily pond near Oswego. Rev. J. H. Wibbe.

*Lamium maculatum*, L. Roadsides west of Oswego. Wibbe.

*Potamogeton rufescens*, Schrad. Edmonds ponds, Adirondaek mountains. July. A few plants were found growing in water one to two feet deep, but most of them grow where it was three or four feet deep. In the latter the leaves are more distant than in the former. A few of the lower ones are obtuse, the others are acute. They are

brownish-green in color and have two or three faint veins each side of the midrib. These are connected by transverse veinlets. The stems were not at all branched but in some instances they had sent out runners from the base and had thus given rise to new plants. Neither petiolate nor floating leaves were seen. The dry fruit has a deep impression or pit on each side. This is *Potamogeton obrutus*, Wood.

*Eleocharis quadrangulata*, *R. Br.* "Paddy lake," South Scriba, Oswego county. *Wibbe*. This is a rare plant. In the Manual the outlet of Oneida lake is given as a station for it and in the Beck Herbarium a specimen is labeled N. Salem pond, Westchester county.

*Carex adusta*, *Boott*. Rocky woods, Stissing mountain, Dutchess county. June. In some of the specimens all the spikes were sterile.

*Carex glaucoidea*, *Tuckerm.* Stissing mountain. June.

*Carex Sullivantii*, *Boott*. Yonkers. *E. C. Howe*. Dr. Howe informs me that he regards this plant as a hybrid between *C. pubescens* and *C. arctata*.

*Polypogon Monspeliensis*, *Desf.* Yonkers. *Howe*.

*Triticum violaceum*, *Hornem.* Rocky places and mountain precipices. Stissing mountain and Adirondack mountains. June and July I have seen no specimens with purplish or violet-tinged spikes. The lower sheaths are sometimes slightly hairy or downy. The awns vary in length and when long they sometimes curve outward.

*Nitella lycopoda*, *Ag.* Edmonds ponds. July. The specimens are referred to this species because of their diœcious character. Their general appearance is remarkably like that of *N. flexilis*. But few fertile plants were seen.

*Nitella intermedia*, *Nordst.* Sandy shore of Lake Sanford, Adirondack mountains. Aug. The specimens are small but apparently belong to this species.

*Agaricus spectabilis*, *Fr.* Long Island. *J. D. Trask*.

*Agaricus (Hypholoma) ornellus*, *n. sp.* Pileus convex or nearly plane, slightly squamose, reddish-brown tinged with purple, the margin paler, floccose-appendiculate; lamellæ moderately close, yellowish or pallid, becoming brown; stem equal or slightly thickened upward, solid, squamulose, pale-yellow, sometimes expanded at the base into a brownish disk margined with yellowish filaments; spores brown, elliptical, .00025 in. to .0003 in. long, .00016 in. to .0002 in. broad. Plant 1 in. to 2 in. high, pileus about 1 in. broad, stem 1 line to 1.5 lines thick. Decaying wood. South Ballston, Saratoga county. Oct. The scales of the pileus are sometimes arranged in concentric circles. The purplish tint is not always uniform but in some instances forms spots or patches.

*Hygrophorus limacinus*, *Fr.* Thin woods and open places. North Greenbush. Oct.

*Polyporus croceus*, *Fr.* Decaying oak wood. Catskill mountains. Aug.

*Polyporus undosus*, *n. sp.* Effuso-reflexed, carnose-fibrous, soft but rather tough; pileus thin, undulate, narrow, rugose-tomentose, obscurely sulcate-zonate, whitish or alutaceous; pores long, medium size, unequal, angular, white, the dissepiments thin, dentate, in oblique situations elongate, lacerate; mycelium white. Decaying trunks of

hemlock, *Abies Canadensis*. Catskill mountains. Aug. This *Polyporus* is apparently related to *P. destructor*. It is often entirely resupinate. The pileus is narrow, scarcely exceeding half an inch in breadth, but it is frequently two or three inches long. It is generally distinctly wavy or almost complicate after the manner of *Stereum complicatum*. The substance is soft when fresh but becomes hard in drying. The pores are much longer than the thickness of the pileus which is at first slightly fibrillose-tomentose.

*Polyporus semipileatus*, *n. sp.* Suborbicular, narrowly reflexed above, subvillose, whitish or alutaceous; pores short, minute, rotund, white, with thin acute dissepiments. Bark of dead maple, *Acer spicatum*. Catskill mountains. Aug. Related to *P. semisupinus*, B. & C. The effused or resupinate part of the fungus is usually about one inch in diameter. The pileus or reflexed part is scarcely half an inch broad. The pores are so minute that they are scarcely visible to the naked eye. Both this and the preceding species belong to the section *Anodermei*.

*Irpex viticola*, *C. & P. n. sp.* Resupinate, suborbicular or confluent in long patches, the margin usually definite and slightly reflexed, subcinereous; teeth compressed, subincised, acute or obtuse, whitish or pallid. Dead grape vines. North Greenbush. July.

*Grandinia crustosa*, *Fr.* Decaying wood and bark. Helderberg mountains. Nov.

*Pterula densissima*, *B. & C.* Decaying wood. Helderberg mountains. Nov.

*Tremella epigæa*, *B. & Br.* Catskill mountains. The habitat of this species is the ground, but our specimens were growing on the hymenium of and old *Polyporus* near the ground.

*Tremella subochracea*, *n. sp.* Small, two to four lines in diameter, forming interrupted or anastomosing lines or patches, gyrose-plicate, pale-ochraceous, becoming darker in drying; spores oblong or oblong-pyriform, slightly curved at the small end, colorless, .0004 in. to .0005 in. long, .00016 in. to .0002 in. broad. Decorticated wood of poplar, *Populus monilifera*. Albany. Sept. A peculiar feature of this species is its tendency to grow in lines which run together in a reticulate manner. The color is a dingy-yellow or subochraceous.

*Hymenula vulgaris*, *Fr.* Dead stems of herbs. Albany. Sept.

*Geaster mammosus*, *Chev.* Ithaca. *Prof. A. N. Prentiss.*

*Stemonitis Morgani*, *Pk.* Decaying wood. Ithaca. *Prentiss.*

*Lamproderma arcyrioides* var. *iridea*, *Cke.* Decaying wood. Ithaca. *Prentiss.*

*Arcyria macrospora*, *n. sp.* Sporangia short, oval or ovate-oblong, crowded, stipitate, the persistent basal part smooth or finely striate; stem short, reddish-brown or chestnut color; capillitium and mass of spores red, the filaments .0002 in. to .0003 in. thick, rough with numerous spines and spiny bands; spores large, globose, nearly smooth, .0004 in. to .0005 in. in diameter. Decaying wood. Ithaca. *Prentiss.* Copake. Oct. The large size of the spores in this fungus induces me to separate it from *A. puniceus* which it closely resembles. When viewed with a glass of high power the spores appear minutely rough.

*Cribraria dictydioides*, *Cke & Bulf.* Decaying wood. Adirondack

mountains. Aug. This fungus differs but slightly from *Cribraria tenella*. The persistent cup or basal part of the sporangium in that species is entirely wanting in this, hence its resemblance to species of *Dictydium*. This character appears to be constant, but should it fail this fungus could scarcely be regarded as any thing more than a variety of *C. tenella*. When this report was written this fungus was deemed an unpublished species. Prof. Wm. Barbeck, then of Philadelphia, had detected it, pointed out its distinctive character, and given it the name *Cribraria dictyloides*, but before its publication it was distributed in Cooke and Ravenel's *Fungi Americani Exsiccati* under the name, which, owing to the delay in the publication of the report and to avoid synonymy, I am permitted to here insert.

*Hendersonia Cydoniæ, C. & E.* Living leaves of pear, crab-apple and apple. Catskill mountains and Sandlake. Aug. and Sept.

*Phyllosticta Sambuci, Desm.* Living or languishing elder leaves. Catskill mountains. Aug.

*Phyllosticta Grossulariæ, Succ.* Living leaves of red currant. Sand lake. Sept.

*Phyllosticta Nesææ, n. sp.* Spots suborbicular, scattered or somewhat confluent, pale-rufous; perithecia hypophyllous, numerous, very minute; spores oblong, straight or slightly curved, colorless, .0003 in. to .0004 in. long, about .0001 in. broad. Living leaves of swamp loose-stripe, *Nesaea verticillata*. South Ballston. Sept.

*Septoria Galeopsidis, West.* Living leaves of hemp-nettle, *Galeopsis Tetrahit*. Catskill mountains. Aug.

*Septoria Hydrocotyles, Desm.* Living leaves of water pennywort, *Hydrocotyle Americana*. Catskill mountains. Aug.

*Septoria Violæ, West.* Living leaves of violets. Catskill mountains. Aug.

*Septoria Cucurbitacearum, Sacc.* Living pumpkin leaves. Catskill mountains. Aug.

*Septoria corylina, n. sp.* Spots suborbicular, scattered, brown or reddish-brown, with a darker margin; perithecia few, epiphyllous, minute, blackish-brown, opening widely when moist; spores filiform, curved, colorless, .0015 in. to .0018 in. long. Living leaves of hazelnut, *Corylus rostrata*. Millerton. June. The spots are usually one and a half to three lines broad. They are darker on the lower than on the upper surface.

*Septoria betulicola, n. sp.* Spots small, often large by confluence, angular, reddish-brown above, paler below: perithecia hypophyllous, very minute, blackish; spores filiform, curved, colorless, .0012 in. to .0018 in. long. Living leaves of birch, *Betula lutea*. Catskill mountains. Aug. This is distinct from *S. Betulæ*, both in the color and character of the spots and in the length of the spores. The perithecia are so minute that they are scarcely distinguishable by the naked eye. In variety *marginalis* the spots are marginal and confluent.

*Septoria microsperma, n. sp.* (Plate I. figs. 3-5.) Spots indefinite, brown, sometimes confluent, perithecia hypophyllous, numerous, small, irregular, brown, wrinkled when dry, rupturing irregularly; spores allantoid, colorless, .00035 in. to .0005 in. long. Fading leaves of birch, *Betula lenta*. Knowersville. Oct. The leaves bearing the fungus

had assumed their autumnal tints, but in some instances the green color had been retained about the margin of the spots.

*Septoria Pileæ, Thum.* Spots small, scarcely one line in diameter, scattered, angular or suborbicular, definite, whitish, perithecia few, one to four, epiphyllous, minute, brown or blackish-brown; spores filiform, colorless, .0009 in. to .0015 in. long, about .00008 in. thick. Living leaves of the stingless nettle, *Pilea pumila*. Sandlake. Sept. The spots are numerous but very small and the perithecia are scarcely visible to the naked eye. On the lower surface the spots are sometimes tinged with red or reddish-brown.

*Septoglœum Apocyni, n. sp.* (Plate 1, figs. 1-2.) Spots few, large, irregular, brown or blackish-brown; nuclei few; spores large, subcylindrical, rounded at the ends, colorless, .0016 in. to .002 in. long, .0003 in. to .0004 in. broad, three to seven-septate, each cell nucleate. Living leaves of Indian hemp, *Apocynum cannabinum*. North Greenbush. Sept. The spots at length become thick, brittle and almost black. The surrounding tissue fades to a yellowish hue. The septa of the spores are not always distinct but the nuclei in all the specimens examined are plainly visible.

*Vermicularia circinans, Berk.* Surface of onions. Albany. Jan.

*Morthiera Thumenii, Cke.* Living leaves of thornbush, *Crataegus coccinea*. Sandlake. Sept. The specimens have the spores of this species but the perithecia are few and scattered as in *M. Mespili*.

*Pestalozzia Stevensonii, Pk. (P. strobilicola, Spg.)* Cone scales of Norway spruce. *Abies excelsa*. Albany. September.

*Puccinia Thalictri, Chev.* Living leaves of tall meadow rue, *Thalictrum Cornuti*, and early meadow rue, *Thalictrum dioicum*. Albany and Center. The spores of this species are scarcely distinguishable from those of *P. Anemones* to which species I formerly referred our specimens.

*Puccinia Cirsii, Lasch.* Living leaves of thistles, *Cirsium lanceolatum*. Knowersville. October.

*Puccinia simplex, n. sp.* Spots small, orbicular, scattered, brown or grayish-brown, with a purplish margin; sori hypophyllous, hemispherical or depressed, compact, central, one on a spot, dark-brown; spores fragile, oblong-clavate, slightly constricted at the septum, pale-brown, .0016 in. to .002 in. long, .0004 in. to .0005 in. broad; pedicel very short. Living leaves apparently of some species of Genm. Albany. Sept. Though the spots are numerous, it is seldom that more than one sorus occurs on a single spot.

*Protomyces polysporus, n. sp.* Spots orbicular, thickened, generally convex on the upper surface, concave on the lower, pale-green or yellowish-green, becoming brown when old, two to four lines broad; spores numerous, crowded, globose or subglobose, subhyaline, or slightly tinged with green, .0005 in. to .0006 in. in diameter. Living leaves of the great ragweed, *Ambrosia trifida*. Albany. September. Leaves spotted by this fungus may be found from June till the close of the season. Usually the upper surface of the spot is convex and the lower concave, but sometimes this order is reversed. Late in the season many of the spots are found to have assumed a brown or blackish-brown color. The spores are generally globose, but from their crowded mode of

growth some of them appear to be pressed into a somewhat angular ovate or broadly elliptical shape. The host plant does not suffer materially from the attacks of the fungus, the affected ones growing as large as the unaffected and their leaves retaining their ordinary green color except in the affected spots. Occasionally a *Peronospora* is found on the spots, an indication, perhaps, that the supposed *Protomyces* spores may be after all only the resting spores (oöspores) of a *Peronospora*.

*Ræstelia penicillata*, *Rabh.* Leaves and unripe fruit of the shad bush, *Amelanchier Canadensis*. Highlands. June.

*Æcidium pedatatum*, *Schw.* Living leaves of violet, *Viola pedata*. New Dorp, Staten Island. *W. R. Gerard.*

*Helicomyces mirabilis*, *n. sp.* (Plate 2, figs. 6-10.) Forming dense tufts or irregular whitish patches one line or more in diameter; flocci slender, branched, colorless, the fertile ones sometimes coiled and slightly thickened near the spore; spores abundant, large, spirally or irregularly coiled in two or more volutions, multiseptate, the cells about as broad as long, either filled with a granular endochrome or containing a single large nucleus; coils .0016 in. to .0025 in. in diameter; spores .0005 in. to .0006 in. broad. Old corn cobs lying in water. Ithaca. *Prentiss.* The tufts or masses occur mainly on the erect scales of the cob. In the dry state they are rather firm and compact. The septa of the spores are variable in number, ranging from six to sixteen or more. Unlike typical *Helicomyces*, this species has the threads long and well-developed.

*Septocylindrium Ranunculi*, *n. sp.* Spots oblong or irregular, brown; flocci hypophyllous, very short; spores oblong or subcylindrical, usually narrowed in the middle, obtuse, colorless, simple or one to three-septate, .0008 in. to .0016 in. long. Living leaves of buttercups, *Ranunculus acris*. Sandlake. Sept. This species is ambiguous between *Cylindrium* and *Septocylindrium*. Many of the spores are simple, others are obscurely uniseptate and others still show three septa. Possibly the simple spores are immature, and on this supposition I have referred the species to *Septocylindrium*; otherwise this fungus would obliterate the distinction between *Cylindrium* and *Septocylindrium*.

*Ramularia Spirææ*, *n. sp.* Spots indefinite, scattered or confluent, brown or blackish-brown; spores hypophyllous, concatenate, oblong or cylindrical, colorless, variable in length, .0003 in. to .001 in. long, .00012 in. to .00016 in. broad, generally with a minute nucleus near each end. Living leaves of nine-bark, *Spiræa opulifolia*. Albany. Sept. The strings of spores are well-developed, and in some instances branched.

*Ramularia rufomaculans*, *n. sp.* Spots numerous, often confluent and occupying nearly the whole leaf, dull-red; flocci very short, hypophyllous tufted; spores concatenate, variable, elliptical oblong or cylindrical, colorless, .0003 in. to .0006 in. long, .00012 in. to .00016 in. broad. Living leaves of *Polygonum amphibium* var. *terrestre*. Albany. Sept. The chains of spores are sometimes branched. The species is closely related to *R. Bistortæ*, from which it is separated because of the different character of the spots and the different and variable character of the spores. Sometimes the spots have a paler or

greenish-yellow margin. When very confluent the leaf at a little distance presents the general dingy red hue of the spots.

*Ramularia sambucina*, *n. sp.* Spots small, orbicular, scattered, pallid or reddish-brown, surrounded by a blackish-brown border; flocci hypophyllous, tufted, short, irregular above, colorless; spores oblong or subcylindrical, slightly narrowed at the extremities, colorless, .0009 in. to .0013 in. long, .0002 in. to .00025 in. broad, sometimes concatenate, rarely uniseptate. Living leaves of elder, *Sambucus Canadensis*. Catskill mountains. Aug.

*Ramularia Impatientis*, *n. sp.* Spots few, suborbicular, reddish-brown, the margin subindeterminate; spores epiphyllous, oblong, subacute, colorless, .0006 in. to .0009 in. long. Living leaves of touch-me-not, *Impatiens fulva*. Catskill mountains. Aug. This is a very obscure fungus, scarcely visible to the naked eye. The flocci and spores are generally more abundant near the margin of the spot, but this is not always well defined.

*Ramularia Rudbeckii*, *n. sp.* Spots variable in size, frequently confluent, angular, included by the veinlets, brown; flocci hypophyllous, tufted, short; spores subcylindrical, rounded at the ends, colorless, .0012 in. to .002 in. long, sometimes concatenate and obscurely septate. Living leaves of the cut-leaved cone-flower, *Rudbeckia laciniata*. Catskill mountains. Aug. The flocci are even shorter than the spores.

*Cercospora reticulata*, *n. sp.* (Plate 2, figs. 14-16.) Spots large, irregular, brown; flocci amphigenous, short, tufted, nearly colorless; spores numerous, very variable in length, bacillary or subcylindrical, colorless, .0016 in. to .0045 in. long, .00025 in. to .0003 in. broad, with three to seven septa. Living leaves of the tall goldenrod, *Solidago altissima*. Catskill mountains. Aug. The large spots sometimes occupy nearly half of the leaf. They are dry and brittle. The pure white color of the fungus contrasts beautifully with the dark brown color of the spots. The spores are usually more abundant along the veinlets than elsewhere, and they thus give a reticulate appearance to the spot. I have referred the species to the genus *Cercospora*, between which and *Cercospora* there appears to be scarcely any difference, except that of color.

*Cercospora depazeoides*, *Sacc.* Living leaves of elder, *Sambucus Canadensis*. Sandlake. Sept.

*Cercospora circumscissa*, *Sacc.* Living leaves of choke cherry, *Prunus Virginiana*. Catskill mountains. Aug.

*Cercospora beticola*, *Sacc.* Living leaves of beets, *Beta vulgaris*. Albany. Sept.

*Cercospora Violæ*, *Sacc.* Living leaves of violets. Catskill mountains. Aug.

*Cercospora venturioides*, *n. sp.* Spots generally large, irregular, sometimes confluent, dark-brown or cinereous with a broad blackish-brown margin; flocci epiphyllous, tufted, short, subflexuous, generally one or two-septate, united at the base, colored; spores cylindrical or bacillary, at length three to five-septate, colorless, .0015 in. to .005 in. long. Living leaves of silkweed, *Asclepias Cornuti*. Albany. Sept. The spots have a very dark or smoky-brown color which often becomes centrally cinereous on the upper surface. Sometimes there

are but one or two on a leaf, in other instances they are so numerous that nearly all the leaf is discolored. The flocci usually occur on the cinereous part of the spot. They are so compactly united in a mass at the base that when viewed through a handglass they appear like some minute species of *Venturia*.

*Cercospora clavata*, Ger. Spots small, numerous, irregular, indefinite, often confluent; flocci hypophyllous, minutely tufted, abundant, short, thick, subflexuous, subnodulose, colored, .001 in. to .0015 in long; spores very unequal in length, cylindrical or bacillary, slightly colored, .0015 in. to .005 in. long, three to seven-septate. Living leaves of *Asclepias incarnata*. Albany. Sept. This species is very closely related to the preceding one. The flocci and spores are nearly alike in both, but the external appearance of the two is quite different. In this species the spots are small and numerous and have no cinereous center; the flocci are on the lower surface of the leaf and the tufts are so numerous and crowded that, with the spores, they form a continuous velvety stratum. It is *Helminthosporium clavatum*, Ger.

*Cercospora Bœhmeriæ*, n. sp. Spots small, numerous, often confluent, angular, limited by the veinlets, brownish, sometimes becoming arid and grayish; flocci hypophyllous, tufted, short, subflexuous, colored; spores subcylindrical or bacillary, generally curved, four or five-septate, colored, .0016 in. to .0035 in. long. Living leaves of the false nettle, *Bœhmeria cylindrica*. South Ballston. Sept. The tufts are very numerous but so minute that they are scarcely visible to the naked eye. They are compactly united at the base in a sort of sclerotoid mass as in *C. venturioides*. The spots, though numerous, are not very conspicuous because of their dull, pale color.

*Cercospora Acalyphæ*, n. sp. Spots very small, orbicular, arid, whitish with a narrow purplish-brown border; flocci epiphyllous, tufted, subflexuous, septate, colored; spores slender, bacillary, five to seven-septate, colorless, .002 in. to .003 in. long, .00016 in. broad in the widest part. Living leaves of three-seeded mercury, *Acalypha Virginica*. Albany. Sept.

*Verticillium candidum*, n. sp. (Plate 2, figs. 11-13.) White; fertile flocci erect, septate, branched, the branches opposite or verticillate, sometimes with verticillate ramuli; spores terminal, globose, colorless, .00016 in. to .0002 in. in diameter. Decaying wood and bark in damp secluded places. Helderberg mountains. Oct. and Nov. It forms more or less extensive thin, white patches. The sterile flocci are usually thicker than the fertile.

*Diplocladium minus*, Bon. Decaying Agarics and Polypori. Helderberg mountains. Nov. It forms dense felty patches of intricate white filaments on the soft decaying substance of the matrix. It is distinguished from *Verticillium epimyces* by its clear white color and uniseptate spores.

*Fusisporium tenuissimum*, n. sp. Tufts superficial, very minute, lax, forming thin subpulverulent whitish patches; flocci branched, colorless, subconglutinate at the base; spores fusiform, straight or curved, three to five-septate, colorless, .0008 in. to .0016 in. long, .00016 in. to .0002 in. broad. Dead stems of herbs. Schenectady. Sept. The tufts are so minute that they appear to the naked eye like patches

of mere flocculent dust. The spores are at first short and simple, but they soon become uniseptate and then longer and mostly triseptate.

*Aspergillus phæocephalus*, D. & M. "Spanish onions." Albany. Oct.

*Aspergillus clavellus*, *n. sp.* (Plate 2, figs. 1-5.) Sterile flocci creeping, abundant, soft, white; fertile flocci erect, gradually enlarged above into an oblong-elliptical or clavate head; head at first white, then glaucous-green; spores globose or broadly elliptical, smooth, .00016 in. to .0002 in. long. Cooked squash. Albany. Oct. This species, by the clavate apices of the fertile flocci, is related to *A. mollis*, but that species is white and has the fertile flocci branched and the spores large. In color, our plant resembles *A. glaucus*, but that has the apices of the fertile flocci globose, and the spores, according to Corda, much larger and rough.

*Monilia Harknessii*, *n. sp.* Flocci tufted, slender, tawny, breaking up into elliptical or lemon-shaped spores, .00025 in. to .0004 in. long, about .0002 in. broad. Decaying wood. Helderberg mountains. Nov. This fungus is related to and congeneric with such species as *Oidium aureum*, *O. fulvum* and *O. pulvinatum*, but if the genus *Oidium* is to be limited to such fungi as grow on living vegetable tissues, as some mycologists hold, then the species just mentioned and the one just described must be referred to the genus *Monilia*.

*Colletotrichum lineola*, *Cl.* Old corn stalks. Chatham, Columbia county. June. Sometimes this fungus is so abundant that the patches surround the whole stem and appear to clothe it with a thin blackish pubescence, though the flocci have a tendency to arrange themselves in parallel lines. It is this tendency apparently which suggested the specific name. The gelatinous subiculum which is said to exist is not at all apparent in our specimens. The spores vary somewhat, being in some instances about equally pointed at both ends, in others they are much more pointed at one end than at the other. *Psilonia apalospora*, B. & R., and *Vermicularia velutina*, B. & R., according to my Curtisian and Ravenelian specimens are very closely related to each other and to this species if indeed they are really specifically distinct.

*Sporocybe nigriceps*, *n. sp.* (Periconia of some authors.) Plant black, .025 in. to .03 in. high; stem erect, shining, smooth, septate, sometimes with one or two short thick branches at the top; head globose or elliptical; spores globose, minutely rough, colored, .00025 in. to .00035 in. in diameter. Dead leaves of sedges and carices. Albany and Adirondack mountains. July and Aug. Two forms occur, sometimes growing on the same leaf. In one the head is larger, elliptical in outline and nearly as long as its stem, which has but one or two septa. In the other the head is smaller and nearly or quite globose and the proportionally longer stem has several septa. *Sporocybe nigrella* is said to inhabit dead leaves of grass, and *S. cholorocephala*, dead leaves of carices. I am not acquainted with either species, but as both are described as having smooth spores our plant cannot well be referred to either of them. An unfortunate disagreement exists among European mycologists in the application of the generic names *Sporocybe* and *Periconia*. The English mycologists employ the former

term to designate those species that have simple septate stems, and the latter those that have the stems made up of several compacted or coalescing filaments. This application of these terms is exactly reversed by some of the continental mycologists. We have thought best to follow the English mycologists in our use of these generic names.

*Periconia sphaerophila*, *n. sp.* (Sporocybe of some authors.) (Plate 2, figs. 17-20.) Stem slender, cylindrical, about .03 in. high, black, growing like a rostrate ostiolum from Sphaeriaceous perithecia; spores few, loose, scarcely forming a head, subglobose or broadly elliptical, colored, .0003 in. to .00035 in. long. On perithecia of *Sphaeria morbosa*. Adirondack mountains. July. This fungus usually occupies patches of perithecia. In the places where it occurs nearly every perithecium supports a fungus, but other parts of the same excrescence will be wholly free from it. It is not often that the fungus occupies all the excrescence. Growing, as it does, from the apex of the perithecium, it, with its matrix, simulates the appearance of a Ceratostomaceous Sphaeria, the *Periconia* answering to the rostrate ostiolum. The stems are scarcely half a line high and are composed of densely compacted filaments. They are often coated by a pellucid membrane. It is not a rare fungus in elevated localities in the Adirondack mountains, where *Sphaeria morbosa* is plentiful on the wild red cherry, *Prunus Pennsylvanica*. So intimate is its connection with the Sphaeria that it is difficult to believe that it is a distinct fungus rather than a second form of development of the Sphaeria. But the spores are clearly produced at the apex of the pseudo ostiolum just as in *Periconia* and it has therefore seemed to me a distinct fungus, but one of very singular character. I find no fruit of the Sphaeria in any of the attacked perithecia. It may be that this *Periconia* is one of nature's antidotes to the too rapid multiplication of this noxious Sphaeria, but before this can be positively affirmed the specimens should be examined in winter or spring when the Sphaeria matures its spores.

*Graphium gracile*, *n. sp.* (Plate 1, figs. 11-13.) Spots large, irregular, reddish-brown; stems hypophyllous, slender, attenuated upwards, black or blackish-brown, pale at the tips where the component filaments diverge and are colorless, subnodulose or rarely slightly branched; spores oblong, colorless, .0005 in. to .001 in. long, .0002 in. to .00025 in. broad. Living leaves of red raspberry, *Rubus strigosus*. Catskill mountains. Aug. The slender subulate stems of the fungus are so scattered that they are easily overlooked. They are, however, more easily seen because of the whitish tomentum of the leaf through which they grow. The spores fall off easily. They sometimes contain a small nucleus near each end.

*Macrosporium concinnum*, *Berk.* Dead twigs of striped maple, *Acer Pennsylvanicum*. Catskill mountains. Aug.

*Helminthosporium Tiliae*, *Fr.* Dead branches of bass wood, *Tilia Americana*. Helderberg mountains. Nov. This was associated with *Exosporium Tiliae*, from which it is distinguished by its narrower spores with more numerous septa and by the absence of the hard stroma which belongs to the *Exosporium*. The tufts in our specimens are almost wholly made up of spores.

*Helminthosporium septemseptatum*, *Pk.* Out surface of maple stump. Helderberg mountains. Nov. The young spores are colorless, adhere firmly to the tips of the flocci and are either simple or one to three-septate. When mature they are colored, easily separated from the flocci and six or seven-septate. The species is allied to *H. fusisporum*, but in that the spores are described as narrower than the flocci, in our plant they are broader than the flocci.

*Helminthosporium inconspicuum*, *C. & E.* Living or languishing leaves of Indian corn. Sandlake and Albany. July and Sept.

*Helminthosporium arbusculoides*, *n. sp.* Flocci rather slender, long, simple, subflexuous, often decumbent at the base, multiseptate, opaque, black, forming extensive blackish patches; spores terminal, oblong or narrowly elliptical, colored, triseptate, .00065 in. to .00085 in. long, about .0003 in. broad, the terminal cells sometimes paler. Bark of living white birch, *Betula populifolia*. West Albany. Oct. The species is apparently allied to *H. arbuscula*, from which it is distinguished especially by its septate flocci. The articulations are numerous, being once or twice as long as broad, but owing to the opaque character of the flocci the septa are not always distinctly seen. The decumbent flocci present a very straggling appearance. They form extensive patches which sometimes entirely surround the trunks of small trees, especially near the base.

*Zygodemus bicolor*, *C. & E.* Decaying leaves and fungi. Helderberg mountains. Nov. The margin is sometimes nearly uniformly colored with the rest of the stratum.

*Rhinotrichum subalutaceum*, *n. sp.* Flocci elongated, branched, creeping, intricate, septate, forming brownish-alutaceous tomentose patches, fertile branches commonly short, narrowed and minutely roughened with spicules at the apex; spores globose, colored, minutely roughened or echinulate, .0003 in. to .0004 in. in diameter. Decaying wood. Helderberg mountains. Nov. The fertile branches are generally short and without septa. They are usually abruptly narrowed at the apex and there rough with minute spicules on which the globose spores are borne.

*Zasmidium cellare*, *Pers.* Decaying wood in damp shaded places. Ithaca. *Prentiss.* The specimens are without fruit but apparently belong here.

*Peziza (Humaria) hydrophila*, *n. sp.* Cups scattered, sessile, expanded, nearly plane or even convex, reddish-brown when moist, black when dry, two to four lines broad; asci cylindrical; spores uniseriate, elliptical, generally binucleate, .0009 in. to .001 in. long, .0006 in. to .0007 in. broad, paraphyses numerous, thickened above, brown, closely compacted and adhering to each other. Decaying wood lying in water. Adirondack mountains. July. Externally this fungus has the general appearance of some species of *Bulgaria*, but its softer fleshy substance requires its reference to the genus *Peziza*. The numerous colored coalescing paraphyses constitute a distinctive feature.

*Peziza atrata*, *Fr.* Dead stems of herbs. Albany. May.

*Peziza fusarioides*, *Berk.* Dead stems of nettles. Albany. June.

*Peziza aurelia*, *Pers.* Decaying wood. Ithaca. *Prentiss.*

*Peziza (Tapezia) balsamicola*, *n. sp.* (Plate 1, figs. 14-21.) Sub-

iculum thin, appressed, gray, one to two lines broad, composed of filaments of two kinds, one kind, coarse, branching, septate, blackish-brown, bearing numerous short ramuli, each of which is terminated by a large colored three to four-lobed spore-like body, .0006 in. to .0009 in. long and broad, the other kind, delicate colorless, bearing narrowly fusiform colorless conidia; cups minute, .012 in. to .016 in. broad, sessile, glabrous, immarginate, waxy, whitish, subpellucid; asci enlarged upwards, broad and obtuse at the apex, .0015 in. to .0002 in. long; spores oblanecolate, crowded, .0006 in. to .0008 in. long, .0002 in. to .0003 in. broad, generally three or four-nucleate; paraphyses filiform.

Living or languishing leaves of balsam fir, *Abies balsamea*. Stony Clove, Catskill mountains. Aug. The presence of two kinds of filaments in the subiculum suggests the question whether both belong to the Peziza. In a few instances the perithecia of a sphaeriaceous fungus were found on the subiculum, and in one case both this fungus and the Peziza were occupying the same patch of filaments. The delicate whitish filaments appear to overrun and adhere to the coarse brown ones as if parasitic on them. This commingling of the two gives the general gray hue to the subiculum. It is probable that the delicate filaments belong to the Peziza and are parasitic on the other which probably belongs to the following fungus.

*Meliola balsamicola*, *n. sp.* (Plate 1, figs. 22-27.) Perithecia few, gregarious, minute, ovate or subconical, free, black, seated on a small blackish-brown spot-like subiculum; asci generally oblong, rarely subcylindrical and elongated; spores mostly crowded or biseriata, rarely uniseriate, uniseptate, colorless, .00035 in. to .00045 in. long, generally two to three-nucleate and one cell a little narrower than the other. Living or languishing leaves of balsam fir, associated with *Peziza balsamicola*. Catskill mountains. Aug. The subicula on which this fungus occurred were a little darker colored than those which bore the Peziza the whitish filaments being less abundant. From this it is inferred that the colored filaments are properly the subiculum of the *Meliola*. *M. ganglifera* and some South African species of *Asterina* are said to have similar bodies on the threads of the subiculum. Our fungus does not fully meet the requirements of the genus *Meliola*, neither is it a good *Asterina* nor *Dimerosporium*. It needs further investigation.

*Hypoxylon marginatum*, *Schw.* Oak fence posts. Albany. Sept.

*Diatrype punctulata*, *B. & R.* White oak wood. Ithaca. *Prentiss.* The specimens are sterile, but evidently belong to this species, which, though first published as a *Hypoxylon*, was afterward described as a *Diatrype*.

*Diatrypella angulata*, *Fr.* Dead branches of ash and poplar. North Greenbush. Oct.

*Valsa myinda*, *C. & E.* Dead branches of maple, *Acer spicatum*. Knowersville. Oct.

*Dothidea melanoplaca*, *Desm.* Languishing or dead leaves of white hellebore, *Veratrum viride*. Catskill and Adirondack mountains. July and Aug. The specimens are not in fruit; neither has it been found in fertile condition in Europe so far as I am informed. Possibly it perfects its fruit in Winter or early Spring.

*Lophiostoma angustilabrum*, *B. & Br.* Decorticated sticks. North Greenbush. June.

*Sphærella Leersiaë*, *Pass.* Dead leaves of grass, *Leersia oryzoides*. North Greenbush. Sept.

## REMARKS AND OBSERVATIONS.

*Thalictrum anemonoides*, *Mx.* A double-flowered form with the stamens transformed into oval greenish petaloid leaflets was detected near Coeymans, Albany county. *Prof. J. S. St. John.*

*Nuphar advena*, *Ait.* A variety (near var. *variegata*) with large partly purplish flowers is not rare in the lakes and sluggish streams of the Adirondack wilderness. The flower when pressed open is nearly three inches in diameter. A very noticeable variety occurs in Forked lake, Adirondack mountains, where it was first detected by *Prof. P. A. Puissant*. It may be characterized thus: *Var. hybrida*. Sepals six, rarely five, subequal, the three exterior often tinged with red; petals twelve to fourteen, generally thirteen, about as long as the contiguous stamens; stigmatic disk red, umbilicate, ten to thirteen-rayed, the margin slightly crenate; leaves small, with a paler greenish dash beneath on each side of the midrib, the sinus usually open; petioles flattened on the upper side. This variety grows in water four to eight feet deep in close proximity to a patch of *Nuphar lutea* var. *pumila* (*N. Kalmiana*, Pursh.) In size and character it is intermediate between this and the ordinary form of *N. advena*. It is smaller in all its parts than the latter and larger than the former and appears very much as if it might be a hybrid between them. The number of the sepals connects it with *N. advena*, but the disk of the stigma allies it more closely with *N. Kalmiana*. The flowers when outspread are nearly two inches across. When fresh they have an agreeable spicy or aromatic odor. In this respect they differ from our common forms of both species.

*Nymphaea odorata*, *Ait.* In stony ponds, Adirondack mountains, a small form was found in which the outspread flowers are scarcely two inches in diameter. Also a form in which the outer petals are tinged with pink.

*Cardamine hirsuta* v. *sylvatica*, *Gr.* Thin dry soil covering rocks. Edmonds ponds.

*Vitis aestivalis*, *Mx.* A form with the leaves deeply and angularly five-lobed occurs in Sandlake. The foliage at first sight appears as if it had been eaten by insects.

*Prunus pumila*, *L.* Sandy shore near the outlet of Long lake, Adirondack mountains; the prostrate trailing form fruiting abundantly.

*Rosa lucida*, *Ehrh.* To this species I refer a very marked form occurring on the slopes of Mt. Defiance and near Westport, Essex county. The stems are armed, especially toward the base, with very numerous unequal, bristly prickles, the calyx lobes are scarcely glandular-bristly and the smooth fruit is ovate or elliptical.

*Ribes rotundifolium*, *Mx.* Mt. Defiance. A form with leaves mostly about half an inch broad, as if starved and unthrifty, yet fruiting abundantly.

*Myriophyllum tenellum*, *Bigel.* Not uncommon in the Adirondack region. On the miry shores of Mud-pond, a shallow sheet of water about one mile south-west of Edmonds ponds, it is so plentiful that its peculiar yellowish hue is visible at a long distance. It grows both in and out of water.

*Epilobium angustifolium*, *L.* A form with flowers nearly white, occurs occasionally in the Adirondack region. White flowered forms of the following species have been observed the past season; *Verbascum Thapsus*, *Echium vulgare*, *Mimulus ringens*, *Scutellaria lateriflora*, *Origanum vulgare*. The last-named plant is very plentiful about Phœnicia, Ulster county, where it monopolizes some of the pastures and hillsides.

*Epilobium coloratum*, *Muhl.* A small form with unbranched stems six to ten inches high was observed in the Catskill mountains. It resembles *E. alpinum*, from which it may be distinguished by its acute leaves.

*Lythrum alatum*, *Pursh.* Bank of Oswego river opposite Battle Island. *Wibbe.*

*Conioselinum Canadense*, *T. & G.* Moist cliffs, Catskill mountains.

*Galium verum*, *L.* Glen Cove. *Coles.*

*Aster corymbosus*, *Ait.* In the Catskill mountains three forms occur which are readily distinguished from each other by the flowers. A small form in open grassy places has a dense corymb of small heads with short broad close rays; a large form in shaded moist places along streams has a loose corymb of larger heads with long narrow distant rays; a third form, intermediate between these two, grows in thin woods and has rays about midway between the other two in length, breadth and relative position. In all the forms the rays sometimes exceed nine in number. The flowers of the large form resemble those of *A. macrophyllus*, but the involucre is shorter.

*Aster Tradescanti* v. *fragilis*, *T. & G.* (*A. fragilis*, *Willd.*) Long lake and Raquette falls, Adirondack mountains. It is one of the earliest flowering Asters of this region, being in flower the latter part of July.

*Aster longifolius*, *Lam.* A form with the stem leaves broadly lanceolate and strongly serrate in the middle was found at Phœnicia.

*Aster acuminatus*, *Mx.* Two well-marked forms occur. In one the leaves are crowded on the upper half of the stem, the lower half being nearly or quite destitute of foliage. In cold, elevated localities, as in the Stony Clove of the Catskills, this form has but few heads; generally from one to six. The other form has a stouter stem, leafy throughout its entire length, and numerous heads of flowers.

*Artemisia Canadensis*, *Mx.* Sandy banks along the railroad near Thurman station, Warren county.

*Rudbeckia laciniata*, *L.* Plentiful in the Catskill mountains, following the streams far up toward the Stony Clove.

*Lactuca Canadensis* v. *sanguinea*, *T. & G.* Fields and cleared places. North Elba. Plants with yellow flowers and those with reddish or orange-colored flowers were associated in the same station.

*Campanula rotundifolia*, *L.* A small form with solitary flowers grows at Edmonds ponds.

*Mentha piperita*, *L.* Along streams at Phœnicia a singular form was observed. Its flowers were in axillary whorls or clusters as in *M. sativa*, *M. Canadensis*, etc.; not in terminal spikes as in the ordinary form. This marked variation from the usual mode of inflorescence gives such a peculiar aspect to the plant that it seems worthy of a name and might be called var. *interrupta*.

*Mentha Canadensis*, *L.* Very variable. The stems are simple or branched; the leaves are ovate or elliptical, tapering at the base or abruptly narrowed, grayish-green or purplish; the flowers may have the stamens all exerted or all included, or some exerted and some included even on the same plant. Besides, the plant varies from nearly smooth to very hairy.

*Lycopus Virginicus*, *L.* The small few-flowered form (*L. pumilus*, *Vahl.*) with a thickened tuberous root occurs in the Adirondack region.

*Polygonum amphibium* v. *aquaticum*, *Willd.* Common in still or slow-flowing water of the Adirondack region. The elongated stems creep on the bottom and send up, at intervals, flowering branches which bear the thick, smooth, glossy, floating leaves and the brilliant red spikes of flowers which enliven and beautify the lonely waters of the wilderness. Each node of the submerged stem gives rise to a cluster of rootlets.

*Sparganium simplex* v. *angustifolium*, *Gr.* The terrestrial form, with shorter, erect leaves, occurs at Edmonds ponds.

*Sparganium minimum*, *Bauh.* Colby pond. Adirondack mountains.

*Potamogeton Oakesianus*, *Robbins.* In the slow-flowing streams of the Adirondack region there is a slender *Potamogeton* which I refer to this species. I have not seen it with mature fruit, its fruiting season being very late, if indeed it matures its fruit at all. Its stem is not at all or only sparingly branched, its floating leaves are very narrow or even lanceolate, and borne on slender petioles many times longer than the leaves, and the phyllodia or submerged leaves are exceedingly long and slender, even capillary.

*Potamogeton Claytonii*, *Tuckerm.* A dwarf form resembling *P. lucens* v. *minor*, grows on mud in an exsiccated pond-hole in the Stony Clove. It fruits freely but seldom has any phyllodia. The stems are but a few inches long and yet they are sometimes much branched. Its appearance is very unlike the ordinary floating forms of the species.

*Potamogeton gramineus* v. *graminifolius*, *Fr.* Stony ponds, Adirondack mountains. It is sometimes destitute of floating leaves. The var. *heterophyllus* was collected in Raquette river. This also occurs without floating leaves, as at Westport, and yet fruiting freely.

*Potamogeton amplifolius*, *Tuckerm.* One of the most common pond-weeds in the Adirondack waters. It is a large, fine-appearing plant and fruits abundantly. Like other species it is more slender in waters with a strong current than in still waters. In such localities the leaves are more diseant and even the spikes elongated and more loosely flowered. In still water the spikes are very compact and the flowers are regularly arranged in six ranks.

*Potamogeton lucens*, *L.* Raquette river. The var. *minor* in the Normanskill near Albany.

*Potamogeton pusillus*, *L.* Both var. *vulgaris* and var. *tenuissimus*

occur in Lower Saranac lake. In this lake are also *P. amplifolius*, *P. Claytonii*, *P. gramineus*, *P. hybrideus*, *P. compressus*, *P. perfoliatus* and *P. natans*. In the inlet between this lake and Round lake, *P. amplifolius*, *P. Claytonii* and *P. gramineus* v. *heterophyllus* abound in a luxuriant growth. Pond-weeds, water-lilies and aquatic plants generally are more abundant in and near the inlets of the lakes of this region than in other parts of the waters. Probably the sediment brought down by the streams and accumulating in the parts of the lakes adjacent to their inlets affords a soil especially favorable to the production and support of water-plants.

*Trillium erectum* v. *declinatum*, *Gr.* Long Island. *Coles.* Some of the flowers are white, others are variously tinged with pink. In one specimen two flowering stems grew from the same rootstock.

*Lilium Philadelphicum*, *L.* This commonly has but one or two flowers on a stem, but in rare instances as many as five flowers occur.

*Carex flava*, *L.* A large form with three or four fertile spikes and the staminate spike, nearly all fertile, was collected at Millerton. The numerous large fertile spikes give the plant an unusual appearance. Sometimes the lowest spike is compound.

*Carex triceps*, *Mx.* A form with oblong spikes. Mt. Defiance.

*Carex gynandra*, *Schw.* Not rare in the Adirondack region, but passing into *C. crinita* by such insensible gradations that it is difficult to keep them separate.

*Carex scoparia*, *Schk.* Of this species we have three forms. In one, the spikes are arranged in a somewhat racemose manner. This is usually found in dry, sandy soil. In another the spikes are more or less aggregate in a cluster or head. This is the common form usually found in wet places. In the third form, the var. *minor*, the spikes are small and aggregate. This occurs in the Adirondack mountains. The whole plant is smaller than usual.

*Carex debilis*, *Mx.* A large, thrifty form is found in the Adirondack region. It has five fertile spikes, the lowest one usually bearing near its base a branch about an inch in length.

*Carex tentaculata*, *Muhl.* At Edmonds ponds starved specimens occur which have but a single short subglobose fertile spike. They were in company with var. *gracilis*.

*Carex oligosperma*, *Mx.* Stony ponds. A slender form with the fertile spikes but three or four-flowered.

*Agrostis scabra*, *Willd.* In thin woods in the Catskills there is a small leafy form of this grass with green panicles.

*Muhlenbergia Mexicana*, *Trin.* A very variable grass. A tall, slender, slightly branched variety was found on damp shaded cliffs in Stony Clove. A much branched form with short erect leaves and a rigid aspect occurs on the banks of the Hudson near Albany. Growing with it and scarcely to be distinguished from it, except by the awned flowers, is a very similar form of *Muhlenbergia sylvatica*.

*Glyceria fluitans*, *R. Br.* Edmonds ponds. In this locality the spikelets are short, three to four lines long, and usually about five-flowered.

*Setaria viridis*, *Beauv.* A singular form was found at West Albany on the banks of the railroad. The spikes are more slender than usual,

and the bristles are shorter, stouter and purplish. These give a purplish tint to the appearance of the spike whereby this form can be readily distinguished from the ordinary one. The flowers make an approach to a verticillate arrangement toward the base of the spikes after the manner of *S. verticillate*.

*Aspidium fragrans*, Sw. This rare fern was found in limited quantity on the rocks at Edmonds ponds. This is the second locality in the Adirondacks in which it has been found. Here also, as at Lake Avalanche, it was associated with *Woodsia hyperborea*, a fern of no common occurrence in our State. *Aspidium aculeatum* v. *Braunii* also occurs sparingly in this locality.

*Pellaea gracilis*, Hook. At Edmonds ponds, about half way up the cascade opposite the Cascade House, is a limited mass of calcite surrounded by the ordinary rock of the mountains. The limestone affords a congenial habitat for this dainty little fern and here it grows in great luxuriance and profusion. This mass of calcite appears to render this limited locality inhabitable by the fern, for I did not find it extending beyond this isolated station which is the only one in the interior mountain district in which I have observed this fern.

*Phegopteris polypodioides*, Fee. A dwarf yet fertile form of this fern with the frond only two or three inches long was found growing in crevices of rocks in the Adirondack mountains.

*Cheilanthes vestita*, Sw. A second station for this fern in our State has been found near Poughkeepsie. The one on New York Island is said still to exist but the plants occupy a very limited area.

*Agaricus virescens*, Pk. (Report 25, p. 74.) The name of this species being preoccupied I would substitute for our plant the name *Agaricus viriditinctus*.

*Polyporus radiatus*, Fr. One form of this species has the margin yellow, in another form the pileus is uniform in color.

*Polyporus lucidus*, Fr. Specimens sometimes occur in which there are two distinct strata of pores.

*Septoria Rubi*, B. & C., var. *alba*, Pk. In this variety the spots are small and white, and bear but few perithecia. It occurs on *Rubus villosus* and *R. Canadensis*.

*Sporocybe Persicæ*, Fr. This fungus should be placed in the genus *Sphæronema*. The spores are produced at the base, not at the apex of the fungus.

*Haplographium apiculatum*, Pk. This species was first found inhabiting an insect gall on leaves of witch hazel, *Hamamelis Virginica*. It has since been found on the lower surface of the leaves themselves, on dry suborbicular brown spots. The flocci often have two or three swollen nodules in the upper part, from which strings of spores grow. In such cases the strings of spores appear to be in verticils when viewed with a low magnifying power.

*Sphæria Coryli*, Batsch. var. *spiralis*, Pk. This variety differs from the ordinary form only in having the ostiola spirally coiled in about two volutions. All the ostiola on the perithecia of a host plant are affected in the same way, that is, I do not find on any given leaf or leaves of an affected plant some ostiola straight and some coiled, but all are straight or all are coiled.

*Sphæria callista*, B. & R. Bark of mountain maple bush, *Acer spicatum*. Catskill mountains. This fungus should be referred to the genus *Chilonectria*. The perithecia, which are seated on a brown tomentum or subiculum, are blackish and membranous and at length collapse or become saucer-shaped. The asci contain numerous allantoid hyaline spores, .0003 in. long.

In the preceding pages, names added to the station of a plant indicate the collector or contributor. When no name is added the plant was collected by the writer. Dates signify the time when the specimens were collected, and indicate, to some extent, the time of the occurrence of the plant.

Grateful acknowledgments are rendered to those botanists whose names appear in the preceding pages. They have kindly co-operated with me and generously contributed desired specimens.

Respectfully submitted,

CHARLES H. PECK.

ALBANY, *January 6*, 1881.



EXPLANATION OF PLATE 1.

SEPTOGLÆUM APOCYNI, *Pk.*

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- FIG. 1. A leaf with two spots produced by the fungus.  
FIG. 2. Three spores x 400.

SEPTORIA MICROSPERMA, *Pl*

Page 44.

- FIG. 3. A leaf bearing three groups of the fungus.  
FIG. 4. A fragment of a leaf with a perithecium magnified.  
FIG. 5. Four spores x 400.

ASPERGILLUS GLAUCUS, *Lk.*

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- FIG. 6. A fragment of Polyporus bearing a patch of the fungus.  
FIG. 7. A young plant magnified.  
FIG. 8. Two mature plants magnified.  
FIG. 9. Upper part of a plant with most of the spores removed, more highly magnified.  
FIG. 10. Four spores x 400.

GRAPHIUM GRACILE, *Pk.*

Page 50.

- FIG. 11. Part of a leaf with spots produced by the fungus.  
FIG. 12. A fragment of a leaf and four plants magnified.  
FIG. 13. The upper part of a plant with spores x 400.

PEZIZA BALSAMICOLA, *Pk.*

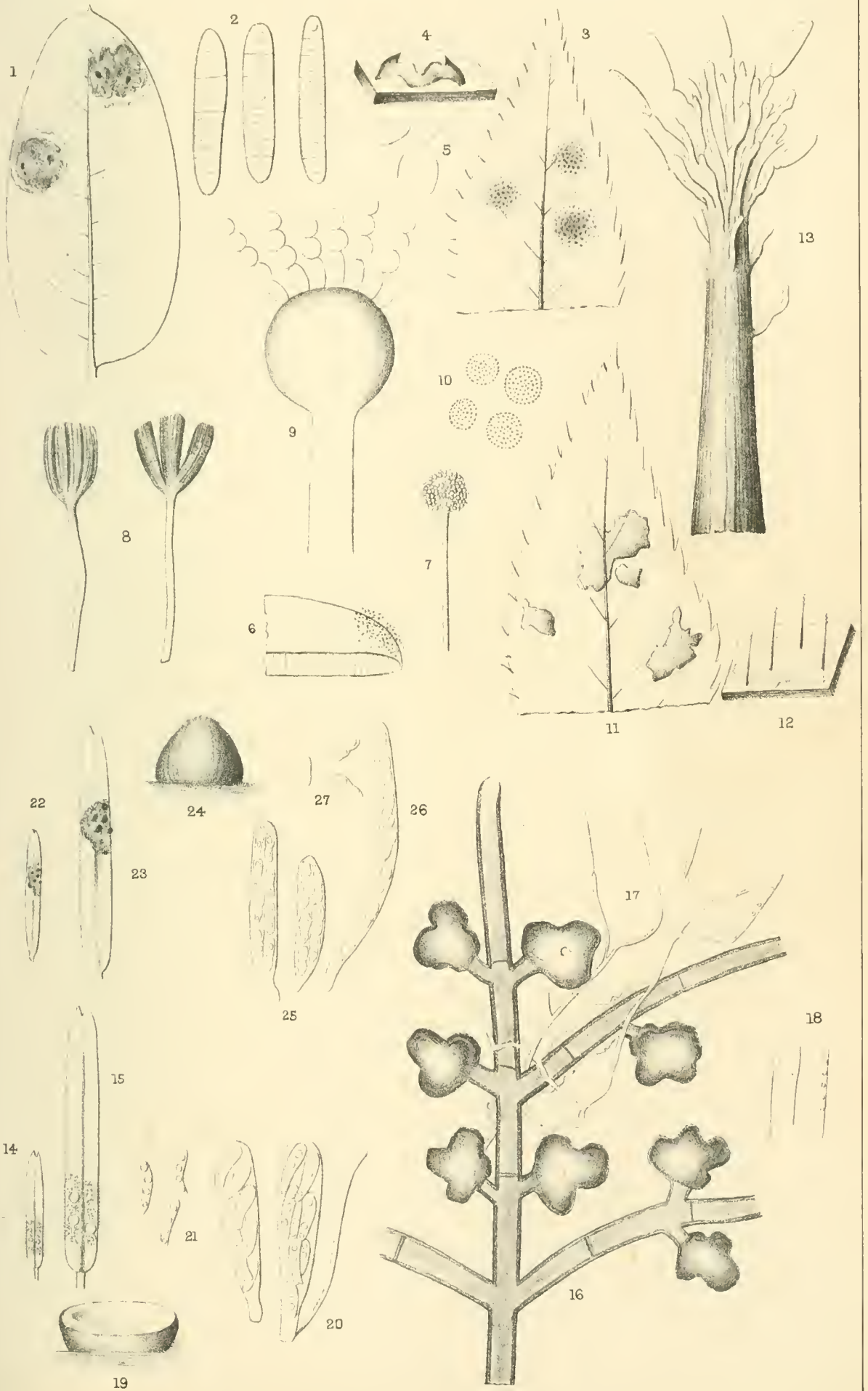
Page 51.

- FIG. 14. A leaf with the subiculum and three cups of the fungus.  
FIG. 15. The same slightly magnified.  
FIG. 16. Part of one of the coarse colored threads of the subiculum with its spore-like bodies x 400.  
FIG. 17. Delicate colorless threads of the subiculum with their fusiform conidia X 400.  
FIG. 18. Three conidia x 400.  
FIG. 19. A cup magnified.  
FIG. 20. A paraphysis and two asci containing spores x 400.  
FIG. 21. Three spores x 400.

MELIOLA BALSAMICOLA, *Pk.*

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- FIG. 22. A leaf with the subiculum and five perithecia of the fungus.  
FIG. 23. The same slightly magnified.  
FIG. 24. A perithecium more highly magnified.  
FIG. 25. Two asci of usual form, with their spores x 400.  
FIG. 26. An ascus of unusual form, with its spores x 400.  
FIG. 27. Three spores x 400.







EXPLANATION OF PLATE II.

ASPERGILLUS CLAVELLUS, *Pk.*

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- FIG. 1. A tuft of the fungus with its matrix.  
FIG. 2. Three plants magnified.  
FIG. 3. Upper part of a plant with most of the spores removed, more highly magnified.  
FIG. 4. A group of spores x 400.  
FIG. 5. A string of spores with its basidium more highly magnified.

HELICOMYCES MIRABILIS, *Pk.*

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- FIG. 6. A piece of a corn cob bearing the fungus.  
FIG. 7. Threads of the fungus x 400.  
FIG. 8. A coiled spore x 400.  
FIG. 9. A spore partly uncoiled x 400.  
FIG. 10. A fragment of a spore x 400.

VERTICILLIUM CANDIDUM, *Pk.*

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- FIG. 11. A piece of wood bearing a patch of the fungus.  
FIG. 12. A plant with spores x 400.  
FIG. 13. Six spores x 400.

CERCOSPORELLA RETICULATA, *Pk.*

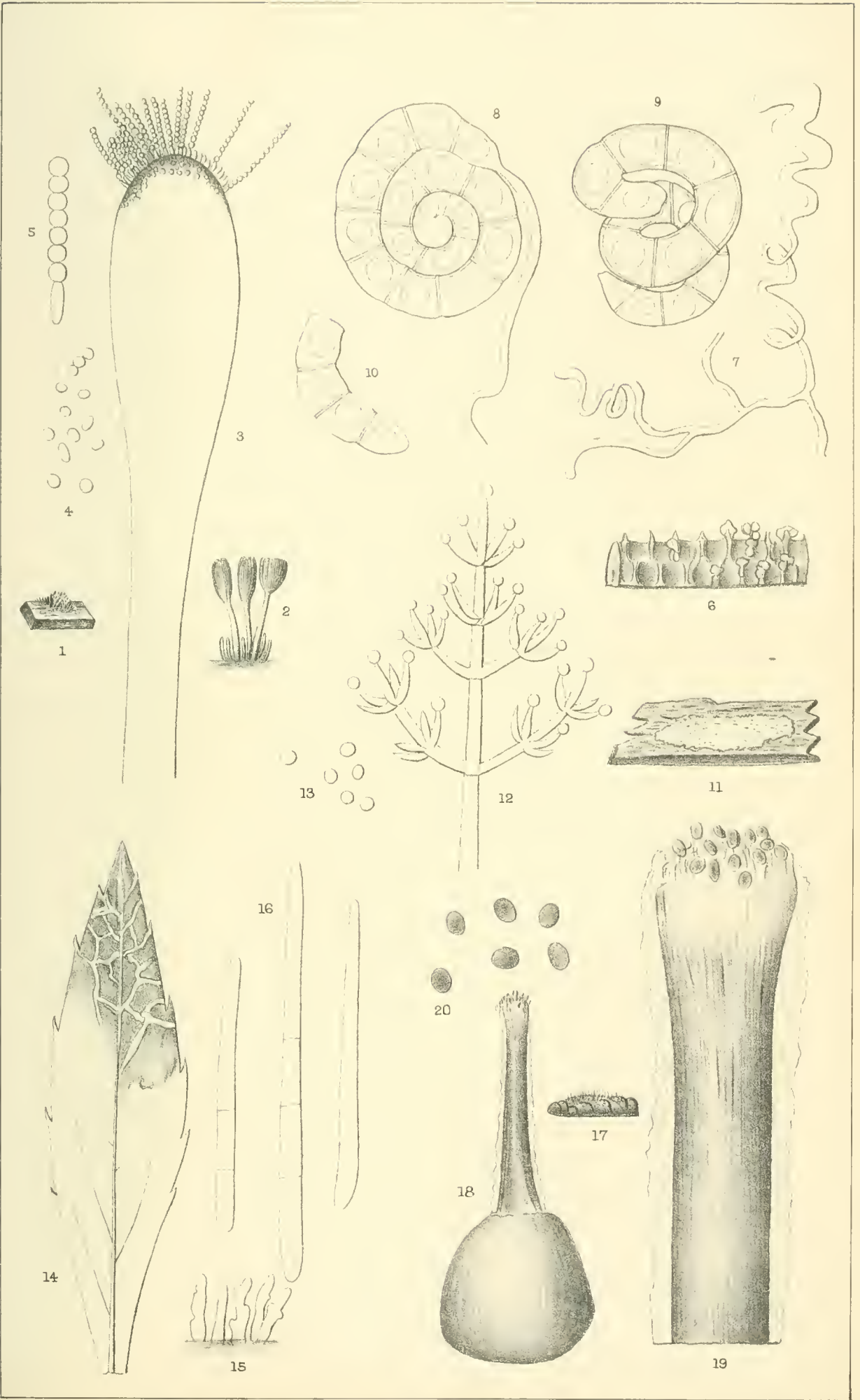
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- FIG. 14. A leaf discolored at the apex by the fungus.  
FIG. 15. A group of flocci x 400.  
FIG. 16. Three spores x 400.

PERICONIA SPHEROPHILA, *Pk.*

Page 50.

- FIG. 17. A patch of the fungus with its matrix.  
FIG. 18. A plant and the perithecium from which it grows magnified.  
FIG. 19. Upper part of a plant with spores more highly magnified.  
FIG. 20. Six spores x 400.







EXPLANATION OF PLATE III.

USTILAGO MAYDIS, *Lev.*

Page 26.

- FIG. 1. Part of the "tassel" of Indian corn affected by the corn smut.  
FIG. 2. Part of a cob of corn affected by the corn smut.  
FIG. 3. Five of the spores x 400.

HELMINTHOSPORIUM INCONSPICUUM, *C. & E.*

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- FIG. 4. Part of a leaf of Indian corn with its terminal part discolored and spotted by the fungus.  
FIG. 5. A small fragment bearing six plants moderately magnified.  
FIG. 6. Three plants bearing spores x 400.

PUCGINIA MAYDIS, *Potsch.*

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- FIG. 7. Pustules of the fungus on the leaf of Indian corn.  
FIG. 8. Four pustules of the early state of the fungus.  
FIG. 9. Vertical sections through two pustules of the fungus, moderately magnified; the one at the left the early state.  
FIG. 10. Four of the early spores x 400.  
FIG. 11. Three spores x 400.

RAMULARIA FRAGARIA, *Pk.*

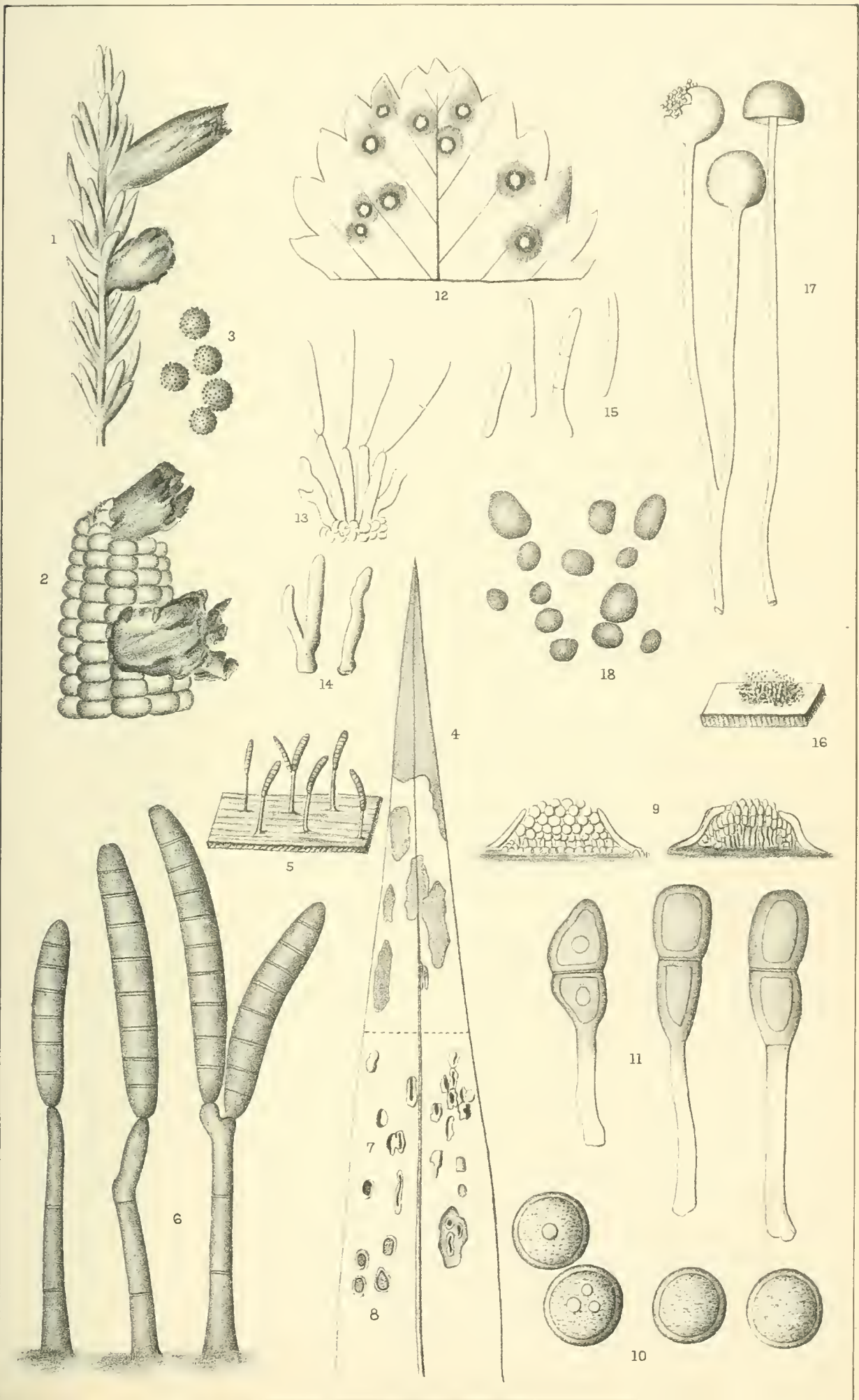
Page 30.

- FIG. 12. Part of a leaf spotted by the fungus.  
FIG. 13. A tuft of the fungus bearing four spores x 400.  
FIG. 14. Two separate stems of the fungus, one of them branched, x 400.  
FIG. 15. Four spores x 400.

MUCOR INÆQUALIS, *Pk.*

Page 31.

- FIG. 16. A tuft of the fungus.  
FIG. 17. A branched and an unbranched stem of the fungus with their spore-cases, moderately magnified; the one at the left ruptured irregularly and discharging its spores, the one at the right collapsed and the other yet unchanged.  
FIG. 18. Several spores x 400.







EXPLANATION OF PLATE IV.

FUSICLADIUM DENDRITICUM, *Wallr.*

Page 32.

- FIG. 1. Fungus spots on an apple.  
FIG. 2. Threads of the fungus x 400. The three lower much elongated.  
FIG. 3. Twelve spores of various shapes x 400; two still attached to the threads.

PENICILLIUM GLAUCUM, *Lk.*

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- FIG. 4. Decayed fungus spot on an apple, with tufts of the fungus in the center.  
FIG. 5. A small fragment of the apple with seven tufts of the fungus.  
FIG. 6. A few plants magnified.  
FIG. 7. A tuft of the variety *coremium* magnified.  
FIG. 8. An elongated branched plant magnified.  
FIG. 9. A plant x 400.  
FIG. 10. Six spores 400.

OIDIUM FRUCTIGENUM, *Pers.*

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- FIG. 11. Tufts of the fungus on an apple.  
FIG. 12. A fragment of the apple, with six tufts of the fungus.  
FIG. 13. A tuft of the fungus magnified.  
FIG. 14. Three threads of the fungus bearing strings of spores x 400.  
FIG. 15. Three spores x 400.

SPHÆROPSIS MALORUM, *Berk.*

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- FIG. 16. Part of the surface of an apple dotted by the fungus.  
FIG. 17. A fragment of the apple with a single perithecium bursting through the epidermis magnified.  
FIG. 18. A perithecium magnified.  
FIG. 19. A vertical section through the center of a perithecium magnified.  
FIG. 20. A tuft of spores taken from the perithecium magnified; some of them immature.  
FIG. 21. Five spores x 400; one of them with its pedicel still attached.

