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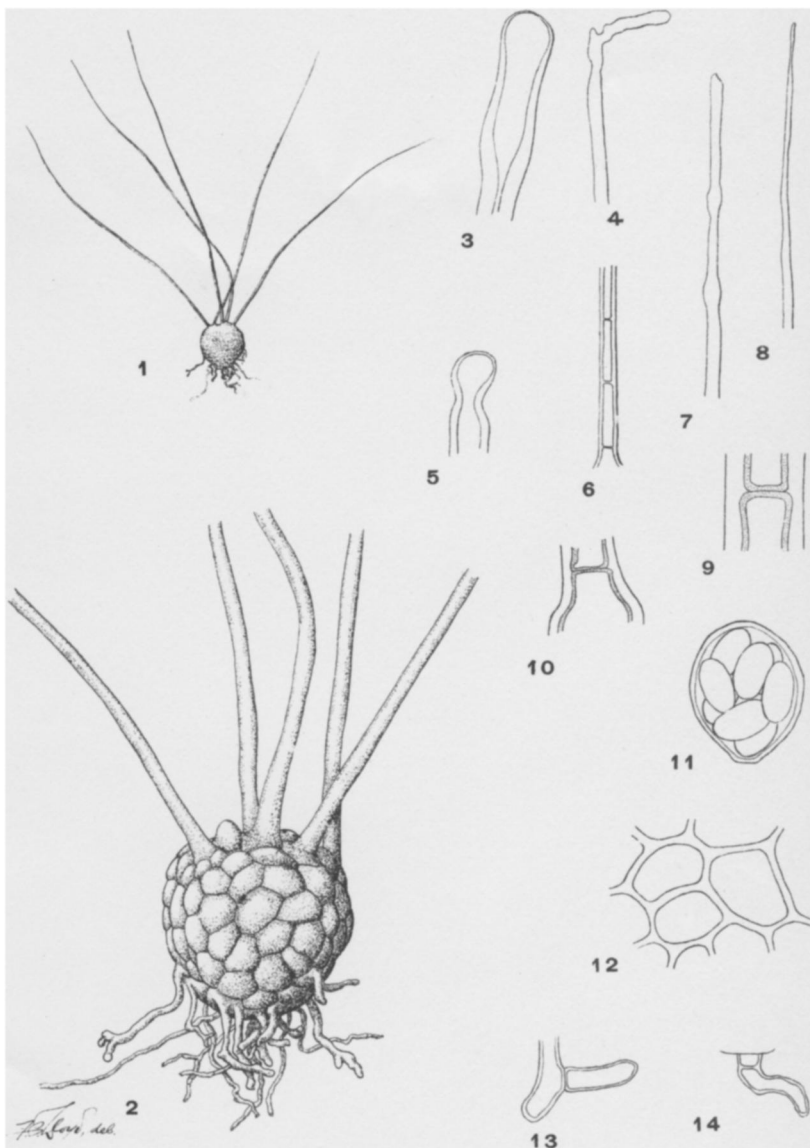
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**SPHAEROTHECA MALI (Duby.) Burrill.**

## A little-known Mildew of the Apple

BY A. J. GROUT

(WITH PLATE 364)

Late in the autumn of 1892 (November) a mildew was observed on a few belated leaves clinging to the adventitious shoots from the stump of a young apple tree in Newfane, Vt. The shoots were gathered and the leaves closely examined for perithecia, but none could be found. An accidental examination of the twigs showed that the mycelium had spread over the upper portions and here and there were darker spots covered with more closely matted mycelium. Under the microscope these spots were found to contain abundant perithecia, like those figured in plate 364, figs. 1 and 2. At that time I found no one in New England who knew this mildew. It was, however, described in Ellis and Everhart's North American Pyrenomycetes (then recently issued) as *Sphaerotheca mali* (Duby) Burrill. Prof. Burrill there remarked that he had not had access to any European material of this fungus that was at all satisfactory, but from the description and the fact that it was scarcely possible that the introduced *Pyrus Matus* should have an exclusively American parasite of this kind, he concluded that the American plant was the one described as *Erysiphe mali* Duby, Botan. Gall. 1: 869. 1830.

A careful examination of the exsiccati in the Harvard and Columbia herbaria, including the Ellis herbarium, failed to bring to light any European material of *Erysiphe mali* Duby which contained perithecia in condition to be of any use. The European exsiccati contained leaves only, while the perithecia in the American plant were invariably found on the young twigs.

In November, 1898, Dr. Magnus, of Berlin, published in the Berichte der Deutschen botanischen Gesellschaft a historical and descriptive account "Ueber einen in Südtirol aufgetretenen Melthau des Apfels" in which Professor Magnus completely confirms Professor Burrill's conclusions. As his article and plate will be accessible to comparatively few in America, this article and an en-

tirely new drawing by Prof. F. E. Lloyd, of the Teachers College, New York City, have been prepared to interest eastern collectors in this little known fungus.

In 1895 this mildew was again collected in Newfane, on adventitious shoots from a tree growing about fifty rods from the place of its first collection. This was distributed as no. 926 of Ellis & Everhart's *Fungi Columbiani*. It had previously been distributed as no. 3213 in their *N. Am. Fungi*, collected in Ames, Iowa, by Prof. Pammel. In the Ellis herbarium it is further represented from Missouri (Demetrio) and Kansas (Kellerman and Swingle). Prof. Burrill remarks of its distribution "Not apparently very frequent but exceedingly abundant at times. Mississippi Valley and probably eastward."

It seems probable that this mildew is not uncommon but is rarely collected because its perithecia are on the shoots instead of the leaves and also because the perithecia do not mature until very late in autumn when no one thinks of collecting mildews. The above mentioned peculiarities belong to the European plant also according to Professor Magnus and probably furnish the explanation of the poor European exsiccata and the comparative ignorance of the plant among European botanists.

SPHAEROTHECA MALI (Duby) Burrill ; Ellis & Everhart, *N. Am. Pyreno.* 7. 1892.

Mycelium growing on young shoots and upper side of leaves ; perithecia seldom or never found on the leaves. Mycelium on the leaves thin ; fruiting mycelium more dense. Perithecia densely aggregated in small dark brown patches, 75-95  $\mu$ , reticulations evident, appearing to be raised but in profile seen to be sunken ; appendages 4-12, clustered at the summit of the perithecia, septate, colored nearly the whole length, frequently nodulosely swollen near the tips, length 4-8 times the diameter of the perithecium, easily detached ; perithecia bearing on the under side an abundance of short irregular rhizoidal appendages the nature of which is doubtful. Asci single, almost globose, 42-48  $\times$  50-66  $\mu$ . Spores 8, elliptical, 13-21  $\mu$ .

On the upper parts of young twigs of *Pyrus Malus*, especially in nurseries of young trees, and on suckers or adventitious shoots from old branches.

The stiff rigid appendages are totally unlike the appendages of any other *Sphaerotheca* known to me and seem to me to constitute as good a generic distinction as the number of asci in a perithecium.

DESCRIPTION OF PLATE 364.

Figs. 1 and 2, camera lucida drawings of the perithecia,  $\frac{4^5}{1}$  and  $\frac{3^1 2}{1}$ , respectively; 3, 4, 5, 7 and 8, tips of appendages; 6, basal part of appendage to show the proportions of cells; 9, ends of two adjoining cells; 10, junction of basal and neighboring cells; 11, ascus and spores,  $\frac{3^1 2}{1}$ ; 12, walls of exosporic cells-reticulum; 13 and 14, rhizoidal appendages,  $\frac{6^0 0}{1}$ .