

Bulletin will be limited to technical treatments of subjects of advanced research. This will make most of the articles of that publication also beyond the comprehension of the average pupil of the above grades of schools, and make the bulletin only appropriate for the libraries of colleges and universities.

#### SPECIAL ARTICLES

##### THE PERFECT STAGE OF LEAF-SPOT OF PEAR AND QUINCE

It is well known that the "leaf-spot" of the pear and quince is caused by an "imperfect fungus" called *Entomosporium maculatum* Lév. The perfect stage, however, is not so well known, although it is probably very common in both Europe and this country, but may be easily overlooked. It occurs quite abundantly on the leaves of the pear and quince, affected with the disease, which have lain on the ground during the winter. Such leaves are very commonly affected in the spring with species of *Sphærella*, as *S. sentina* and *S. pyri*. These two species are also "perfect" stages of fungi, but very different from the perfect stage of the leaf-spot caused by *Entomosporium*. Their fruit bodies are black and project slightly from the surface of the dead leaves and thus are quite conspicuous objects even on the dry leaves when examined with the pocket lens.

The fruit bodies of the perfect stage of *Entomosporium* are, however, usually very inconspicuous and are not easily, if at all, recognized with the aid of a pocket lens, in the dry state, because they are collapsed. When the leaves are wet, however, and the fruit bodies are mature, their contents are swollen and thus crowd apart the thin wall and expose the white tips of the asci in a more or less elliptical area. This character of the fruit body shows that the fungus is one of the Discomycetes. The asci are eight-spored, the spores hyaline and two-celled, while the asci are accompanied by paraphyses. Sorauer<sup>1</sup> first called attention to the perfect stage of *Entomosporium* on leaves of *Cotoneaster*

<sup>1</sup> "Pflanzenkrankheiten," Zweite Auflage, 2, 372-377, 1886.

*tomentosa* and *Pirus communis* silv., but placed the fungus in the genus *Stigmatea*, one of the Sphæriales closely related to the *Sphærella* but differing chiefly in the possession of paraphyses.

Twelve years ago I called attention to this perfect stage which I found on quince leaves at Ithaca, and identified as *Fabræa*,<sup>2</sup> at the same time pointing out how easy, under certain conditions, it might be to mistake it for a *Stigmatea*. The connection of the fungus with the *Entomosporium* by Sorauer was assumed because it follows the *Entomosporium* during late autumn and in the spring in the same tissues of the leaf. While I have several times grown the *Entomosporium* from quince fruit in pure cultures, I have never obtained the perfect stage in these cultures. I have, however, carried the cultures in the opposite direction, by obtaining the *Entomosporium* in pure cultures from ascospores of the *Fabræa*.

I hope before long to publish a full account of these studies, but in the meantime it seems desirable to indicate the name of the fungus in its new position. Sorauer's studies were concerned with *Entomosporium mespili* (DC.) Sacc., and he employed the name *Stigmatea mespili*<sup>3</sup> (DC.) Sor. This fungus would therefore be *Fabræa mespili* (Sor.) while the one I have worked with (*Entomosporium maculatum* (Lév.)) becomes *Fabræa maculata* (Lév.). There is a strong probability that these two species are identical, since the only difference between *Entomosporium maculatum* Lév., and *E. mespili* (DC.) Sacc., aside from differences in size of the spores and these will not, it appears, hold, as given in the descriptions, is that the lateral cells of the spore are depressed in the former, while they are a little larger and more rotund in the latter.

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<sup>2</sup> "Leaf-spot of Pear," *Garden and Forest*, 10, 73-74, 1897.

<sup>3</sup> *L. c.*, p. 371. See also Sorauer, P., "Handbuch du Pflanzenkrankheiten," Dritte Auflage, 2, 237, 1908, where the perfect stage is given as *Stigmatea mespili* Sor.