54. *Homothallism in Sphaerotheca fuliginea* (Schlecht.) Pollacci.

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On the development of the male and female organs in Erysiphaceae, R. A. Harper¹⁾ reported in 1905 that the oogonia and antheridia arise as lateral branches from separate hyphae, though it seems fairly clear, from the circular shape of the infected spots in most cases in Phyllostictia, that both these hyphae belong to a single mycelium, which in all probability is the product of the growth of a single spore. In 1907, P. A. Dangeard²⁾ noted that the male and female cells of Erysiphe arise from separate hyphae and these hyphae may come from separate mycelia.

All these statements are based on simple assumption. They need verification by experiments. For this purpose the following experiments were undertaken.

The single spore inoculation was made with the conidium. The young shoots of *Taraxacum ceratophorum* planted in the pots were covered with the large glass-tubes whose upper opening was closed with cotton plug, as shown in the accompanying figure.

1) R. A. Harper: Sexual Reproduction and the Organization of the Nucleus in Certain Mildew. p. 9, 1905.

2) P. A. Dangeard: L'origine du périthèce chez les Ascomycètes. p. 226-243, 1907.

The matured conidia were quickly transferred as little as possible to the slide-glass from the leaf of the infected host plant, and a single spore was picked up by means of a fine glass needle under the microscope, and it was gently inoculated on the leaf in the glass-tube. The 4 pots out of the 23 inoculated were infected, and the perithecia appeared on the mycelial patches. The mycelial hyphae from the periphery of the circular spots were stripped off from the epidermis with the needle, and they were placed on the slide-glass kept under a suitable moisture. After being dried several minutes in the air, they were stained with iron-aceto-carmin. The presence of the antheridial and the ascogonial hyphae was readily recognized. The former is more slender than the latter. Both hyphae always run side by side, or coil about each other. The ascogonium and antheridium are formed at the place where the ascogonial and antheridial hyphae cross each other and touch.

From the above facts, it was made clear that the ascogonial and antheridial hyphae are formed on a single mycelium derived from the monosporic infection. We have thus proved that *Sphaerotheca fuliginea* parasitic on *Taraxacum ceratophorum* belongs to the fungus of the homothallic reproduction.