using plasmodia labelled with phosphorus-32. Plasmodia were made radioactive by being permitted to spread on agar in which phosphorus-32 had been incorporated as sodium hydrogen phosphate (10 μc. phosphorus-32 per 20 ml. agar), and were then transferred to non-radioactive agar on which non-radioactive plasmodia were also placed to test ability to fuse. Radioactive and non-radioactive *HH*, *BB*, and *HB* plasmodia were juxtaposed on non-radioactive agar in all combinations. In all tests, plasmodia of the same type fused almost immediately on contact and the radioactivity was transferred to the non-radioactive protoplasts. In no test did plasmodia of different types fuse, as determined both visually and by the radioactive test.

Thus, haploid protoplasts of *Didymium iridis* races *H* and *B* are compatible with each other, at least in certain clonal combinations, yielding hybrid plasmodia. Diploid protoplasts (multinucleate plasmodia with diploid nuclei), on the contrary, do not merge except with their own type. Hybrid plasmodia do not merge with plasmodia of either parent. This is the first record of hybridization in the Myxomycetes.

A detailed exposition of these experiments and the results obtained are being published elsewhere. This work was supported by National Science Foundation grant *G*–6382.

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Splash Dispersal of Spores of *Botrytis cinerea* Pers.

OBSERVATIONS on the release of spores of *Botrytis cinerea* in still air[1] have shown that the hygroscopic movements of the conidiophores do not eject many spores into the air, but merely dislodge them so that the majority come to lie in loose masses among the hyphæ.

When drops of water fall on to such masses or on to a layer of dry spores on a plane glass surface, spores are dispersed on air shock waves and turbulent air currents to form a characteristic cloud, and also in composite projectiles of splash droplets and spores. Splash droplets containing wet spores may be identified and their spores counted by catching them on microscope slides coated with naphthol green B, while dry spores may be caught when one half of each slide is coated with petroleum jelly[2]. It was thus found that of those spores dispersed with water, very few become wet enough to enter the droplets and that the majority are carried on the droplet surface as a dry coating. These composite projectiles, which vary in size up to about 2 mm. diameter, may travel horizontal distances of 1 m. or more and are remarkably stable. They frequently roll intact along a smooth surface and can be readily manipulated with forceps. When the water within the spore-coating evaporates, usually quite slowly, the mass of spores gradually invaginates and, when completely dry, collapses.

These projectiles may form an important and efficient means of spore dispersal among plants; failing rapid evaporation of the carrier droplet, some spores may become wet enough to enter the drop and begin germinating.

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Graft Transmission of Lettuce Big Vein

LETTUCE big vein disease, first described by Jagger and Chandler[1], causes a pale yellow vein banding on the leaves, sometimes accompanied by leaf puckering. The disease is soil borne and healthy lettuces planted into contaminated soil develop leaf symptoms, usually in 4–6 weeks. Fry[2] and Yarwood[3] isolated tobacco necrosis virus from the roots of affected plants, but plant or soil inoculation with the virus failed to reproduce the disease. Grogan *et al.*[4] showed that the roots of affected plants were invariably invaded by a fungus which they identified as *Olpidium brassicae* (Wor.) Dang., and they reproduced the leaf symptoms by adding zoospores of this fungus to the soil in which lettuce plants were growing.

The disease occurs in Britain[5], and work by us has confirmed the results of all the above investigations. Although there was reason to believe that the leaf symptoms were induced solely by the root infection with an *Olpidium* sp., attacks by *Olpidium* on a wide range of other hosts have not been reported to cause leaf symptoms. The symptoms of big vein are, however, similar to those induced by some plant virus infections. In view of this, attempts were made to determine whether the infectious agent could be transmitted, in the absence of *Olpidium* infection of the roots, by grafting together above-ground parts of the plants. From 1957 to 1961 six experiments were made, using bolting cos lettuce plants or a wild *Lactuca* sp., which formed a stem. Healthy plants growing in autoclaved soil and protected from accidental contamination were used as stocks, cut back to 6–9 in. and cleft-grafted with stems taken from plants infected with big vein, or with healthy stems (as controls). The originally healthy stocks produced side-shoots on their stems, and the leaves on these side-shoots were examined for symptoms. Lobjoit's Green cos lettuces were used in the first three experiments but their scions and side-shoots flowered and ceased growth shortly after grafting. The last three experiments, therefore, were made with a wild *Lactuca* sp. (U.S.A. Plant Introduction Service No. 177418), which formed a non-flowering stem. Vigorous side-shoots grew from the stocks and showed clear symptoms of the disease. To obviate surface contamination of the grafted stems with *Olpidium* zoospores, the scions taken from infected plants were dipped in a sodium hypochlorite solution ('Chloros', 20 per cent for 1 min. or 2 per cent for 60 min.) and then washed in water before use.

Some disease transmission occurred in all six experiments, after periods varying from 5 to 12 weeks, and the results are summarized in Table 1.

The roots of the lettuce stocks to which the disease had been transmitted in the last three experiments were examined for the presence of *Olpidium* but none was found. Sap inoculation tests to *Chenopodium amaranticolor* also showed that the symptoms on the lateral shoots were not caused by lettuce or