PROCEEDINGS

Meeting held at University College, London, 26 November 1938

The President, Miss K. SAMPSON, in the Chair

Dr W. R. S. WORTLEY (School of Agriculture, Cambridge). The effect of lithium on mildew and wheat. A summary.

The observation by Spinks (*J. Agric. Sci.* v, 231–47, 1913) that the addition of small quantities of lithium to the soil resulted in a decrease in the susceptibility of wheat to *Erysiphe graminis* DC. has been confirmed in pot-culture experiments with seedlings of two varieties of wheat. 50 c.c. of a 1% solution or 20 c.c. of a 2·5% solution of the nitrate, chloride or sulphate of lithium applied to the soil in a four-inch pot brought about a high degree of resistance to *E. graminis* without harming the seedlings.

A decrease of 40% in the number of lettuce seedlings attacked by *Marssonina Panattoniana* Berl. has been obtained in the same way, but the treatment brought about only a slight decrease in the susceptibility of wheat to *Puccinia triticina* Erikss., and this result was obtained only with amounts of lithium which were somewhat toxic to the seedlings.

A cytological investigation of the resistance of wheat to powdery mildew brought about by lithium has been carried out on epidermal strips taken from inoculated leaves and stained with cotton blue. The fungus shows no apparent toxic effects in attempting to penetrate the epidermis of the resistant plant. The cuticle is penetrated normally, but usually no haustorium becomes established. From a comparison of the staining reactions in the epidermal wall surrounding the point of penetration in the resistant and susceptible plants, it is deduced that the resistance brought about by lithium is probably due either to an alteration in the subcuticular part of the epidermal cell-wall or to the inactivation of an enzyme of the fungus.

Dr E. M. FRAENKEL (L.C.C. Southern Group Laboratory, Park Hospital, London, S.E. 13). Allergic diseases and moulds.

Among the air-borne causes of allergy in cases of asthma or rhinitis, moulds seem to play a considerable role, especially in countries with wet climates such as England or certain parts of the United States. This has been established by skin tests with mould extracts in hypersensitive patients. The skin tests showed much more frequent positive reactions than those from patients in continental countries.

A film illustrating such allergen extracts, the skin reactions obtained with them, and the method of protecting the patient from the inhalation of such air-borne inhalations by filter apparatus, was shown.

The question of moulds as the cause of allergic conditions has been studied, and attempts have been made to obtain cultures of the moulds from the patient's

own environment, and to use these moulds for the diagnosis and treatment of allergic conditions. With the help of Miss F. L. Stephens a number of moulds have been identified. Some of the moulds which were found in the patient's environment—e.g. house dust, pillow feathers, or mattress stuffings—were also found in the patient's excretions. In asthmatic patients, the sputum; in cases of rhinitis, the nasal swab; and in cases of eczema, the stool of the patient; were used for culturing the moulds.

It was assumed that moulds found in the excretion and in the environment were probably in closer contact with the patient, and therefore more likely to cause allergic changes in the patient. The number of patients examined is, however, not yet great enough to draw conclusions.

Dr RALPH EMERSON (Botany School, Cambridge). Life cycles in the Blastocladiales.

The phycomycetous order Blastocladiales embraces three genera of aquatic fungi, *Allomyces*, *Blastocladia*, and *Blastocladiella*. The types of sexual reproduction and the life cycles which have been discovered in certain members of this group are unique in the filamentous Phycomycetes. They are of particular interest because they have an important bearing on general problems of sexuality, and alternation of generations, and on phylogeny in the fungi.

The following life histories were described:

I. *Allomyces.*

(*a*) *Euallomyces*—alternation of equal sporophyte and gametophyte generations; discovered in *A. javanicus* by Kniep in 1929 and 1930 and confirmed in *A. arbuscula* by Hatch in 1933, by Sörgel in 1937 and by others.

(*b*) *Brachyallomyces*—without alternation of generations, the sexual stage apparently entirely lacking; found by Emerson to be the regular life cycle in certain isolates, and noted by Sörgel as a departure from the usual cycle in *A. arbuscula.*

(*c*) *Cystogenes*—without obvious alternation of generations but differing clearly from (*b*) in the regular encystment of swarmers from resistant sporangia; discovered in four of his isolates and in *A. moniliformis* by Emerson in 1938.

The nuclear behaviour in all species of *Allomyces* is still in question.

II. *Blastocladia.*

The complete life cycle is not yet demonstrated in any of the species. The importance of recent work on germination of resistant sporangia by Blackwell in 1937 and on the growth of *Blastocladia* in pure culture (by Emerson) was emphasized.

III. *Blastocladiella.*

(*a*) Short cycle, corresponding with *Brachyallomyces*, discovered by Matthews in 1937 in *B. simplex.*

(*b*) Long cycle, corresponding with *Euallomyces*, discovered by Harder and Sörgel in 1938 in *Rhopalomyces variabilis* = *B. variabilis.*

The similarities and probable relationships between members of the three genera were briefly discussed.

Miss P. E. THOMAS (University College, Cardiff). Studies of species of *Monoblepharis* occurring in South Wales.

An investigation of the species of *Monoblepharis* occurring in the vicinity of Cardiff was begun in 1935, and by February 1936 all six of the fully known species of the genus had been found, growing together in one locality. Subsequent collections from this and other localities in the same area have yielded these six species in great abundance.

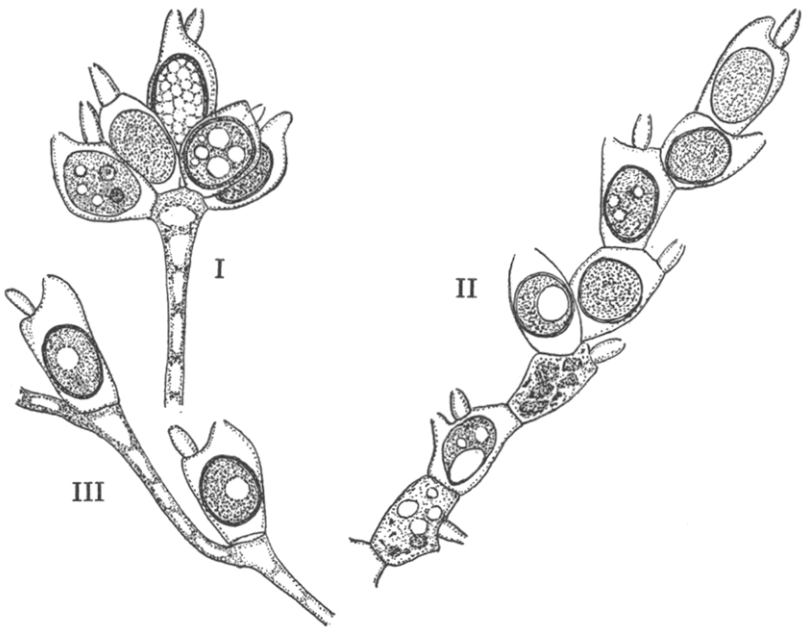

Fig. I. Fruiting tip of *Monoblepharis fasciculata* showing fasciculate arrangement of sex organs. ×264
Fig. II. *Monoblepharis insignis* showing characteristic basipetal growth. ×264
Fig. III. *Monoblepharis insignis* showing linear arrangement of sex organs. ×264

Although waterlogged, undecorticated twigs of the birch and ash were previously suggested as the most favourable substrata, the fungus was found to grow upon twigs from a great variety of trees, the most favourable among these being oak. It seems that the consistency of the wood is of greater importance than its species.

Monoblepharis has been found to show profuse visible growths in the field only during cold weather, and although when cultivated in the laboratory it will grow at room temperatures, a period of artificially produced cold conditions favours the production of active growth.

The taxonomy of the following six species was described: *Monoblepharis sphaerica*, *M. macrandra*, *M. polymorpha*, *M. brachyandra*, *M. fasciculata*, and *M. insignis*. Particular attention was paid to *Monoblepharis fasciculata* and *M. insignis* because these two species have not been recorded anywhere, since they were originally described by Thaxter from North America in 1895.

Miss ENID MORGAN (University College, Cardiff). Studies on the Saprolegniaceae of Glamorgan.

During the years 1934 to 1936 an investigation was carried out on the relative occurrence of species of the Saprolegniaceae in soil samples from two areas in Glamorgan, concurrently with another study of the species occurring in the drainage water from these soils.

Samples of soil were taken each month over a period of two years from wet and dry pasture and from garden soil in two districts in the county. Twenty-eight species of the Saprolegniaceae were isolated.

Nine species of *Saprolegnia* and four species of *Isoachlya* were found; these occurred most frequently in wet pasture soil. Nine species of *Achlya* were isolated; they were more common in dry pasture soil than were the species of *Saprolegnia*.

Certain species with monoplanetic zoospores, e.g. *Pythiopsis Humphreyana* and *Thraustotheca clavata*, occurred more frequently in dry than in wet pasture soil. These results may indicate a relationship between the behaviour of the spores and the occurrence of the species. It is suggested that those species in which there is a reduced planetic phase may be more adapted to drier soils than those in which a diplanetic condition obtains.

Temperature seems to be a contributing factor in distribution, some species favouring a low average temperature, others a higher one. It was found that certain species are characteristic of the spring months, others the summer, while still others occur most commonly in the autumn and winter.

In certain species it is suggested that soil and water may form an alternate habitat. *Saprolegnia lapponica* was abundant in water in July, but reached its greatest frequency in soil in April and May.

The identification of species according to the existing standards of classification presents certain problems. It has been found that in different monospore cultures of the same species, the morphological features may exhibit considerable variation, and that characteristics of a particular culture may change radically in the course of a few months. This has led to the suggestion that, as our knowledge of the group increases, it may become necessary to employ physiological as well as morphological characters for taxonomic purposes.