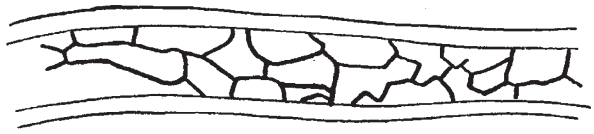

Fig. 1. *Mycelium radicis atrovirens* hyphæ forming a 'net' structure in the lumen of a cotton fibre; drawing by Abbé camera (× 600)

materials employed, cotton fibres were observed to be a good substrate; acetylated cotton cellulose, however, did not encourage net formation.

None of the large number of 'trivial' soil fungi tested, for example, *Alternaria*, *Stemphyllium*, *Pullularia*, *Chaetomium*, etc., although growing vigorously on the surface of the cones, has been observed to produce a net structure within the fibres. Neither was net formation recorded for true mycorrhiza-formers grown under the cultural conditions described.

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Use of Ultra-violet Fluorescent Substances for Observations on Dispersal of *Phytophthora palmivora* Sporangia

Observations have been continued on the take-off of *Phytophthora palmivora* sporangia from cacao (*Theobroma cacao*) pods affected by this fungus. The technique of using 'Vaselined' disks of 'Cellophane' (3 mm. diameter) mounted on pins above the surface of an infected pod has already been described and the take-off of sporangia thereby demonstrated[1].

No information was available as to the number of stray sporangia in the air around a pod. Therefore, the need arose for a method of distinguishing between the sporangia from a particular pod and those which might be merely constituents of what Gregory has referred to[2] as the air 'spora'.

The marking of sporangia was discussed with Dr. A. B. Hadaway, Colonial Insecticide Research Unit, who suggested the possibility of applying a substance such as salicyl aldazine, which fluoresces in ultra-violet light, as a means of recognizing sporangia from a particular source. Tests were started in which a saturated solution of salicyl aldazine in water was sprayed on to the sporangia-bearing surface of an affected pod in the field. Disks were then placed above the pod as already described. The disks were afterwards examined under the microscope with an illumination source rich in ultra-violet light. Preliminary attempts were unproductive, apparently because salicyl aldazine is insufficiently soluble to give an adequate deposit on the sporangia *in situ*. It seemed desirable to use a more soluble substance in order to obtain a greater concentration on the sporangia. However, before the use of salicyl aldazine was abandoned, this substance was applied to sporangia in the dry form, using a small hand bellows. Later, when the disks were examined, a few sporangia were found with particles of salicyl aldazine adhering. This procedure suffered from the disadvantage of introducing an extremely artificial condition, in that the take-off and dispersal of a sporangium would be affected in an unknown way by the accompanying particle. In seeking a suitable soluble substance for use in these studies, I am greatly indebted to Mr. J. A. Radley, Industrial Research and Development Laboratories, Reading, who suggested and supplied samples of three substances (primuline *A*.150 (I.C.I.) (C.I. No. 812); rhodamine 6 *GDN* 500 (I.C.I.); stilbene derivative) for trial in Nigeria. In the course of preliminary but not exhaustive tests, it was decided that primuline *A*.150 would be the most suitable of the three substances supplied. It was used exclusively in further experiments and is later referred to here as primuline, for the sake of brevity. This substance is soluble in water (5 per cent by weight at 30° C.) and gives a greenish-yellow fluorescence. When a saturated solution was sprayed on to sporangia *in situ*, they were readily stained by the primuline and became very conspicuous in ultra-violet light. Incidental observations indicated that primuline did not exert any toxic effect.

Sporangia showing the characteristic primuline fluorescence have been observed on disks exposed in rainless periods when take-off apparently occurred in 'dry' air. The number of sporangia per disk has averaged 0·3 per 12-hr. period. Larger numbers of sporangia (average 1·4 per disk per 12-hr. period) were observed on disks exposed during periods when rain fell, suggesting that rain-splash take-off had occurred. It has already been suggested that sporangia are commonly dispersed in splash-droplets[1]. Non-fluorescent sporangia were observed on some of the disks examined; these sporangia may have come from the air 'spora'; but it is also possible that they may have been sporangia from the primuline-treated pod which had escaped treatment.

The procedure used for these observations on dispersal of *Phytophthora palmivora* by marking sporangia with primuline has served satisfactorily to confirm the phenomenon of take-off in 'dry' air. It is possible that this technique can be usefully applied to similar studies with other fungi. Detailed results will be published elsewhere.

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[1] Thorold, C. A., *Nature*, **170**, 718 (1952).
[2] Gregory, P. H., *Nature*, **170**, 475 (1952).

Somatic Selection in Fungi

In a recent communication, Calpouzos[1] reported that prolonged selection of sporulating material from recent single or mass spore isolates of the fungus *Cercospora musae* gradually increased the intensity and uniformity of sporulation in later cultures even though the spores selected were always of asexual origin. He suggested that if the original isolates had been heterokaryotic this observation was in agreement with the gradual sorting out, by selection, of a nuclear type having a greater spore-producing potential. Although this is a possibility in the case reported by Calpouzos, a similar situation has been