Three years ago, A. G. Lowndes published[5] a very beautiful method for obtaining the volume of living marine organisms, estimating by titration the amount of chlorides in a specific gravity bottle filled with sea water and comparing it with the amount in the same bottle filled with sea water containing a Nereis: the difference gives the amount of chlorides displaced by the Nereis and hence the volume of sea water displaced. The filled specific gravity bottle is in each case weighed, and the difference between the weights is the difference between the weights of that volume of sea water and that volume of Nereis.

Since then, Mr. Lowndes has been kind enough to show me, from time to time, the results of similar measurements in which I was interested. They are remarkably consistent and in his hands the method seems very perfect.

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Feb. 20.

[1] NATURE, Feb. 8, 1941.
[2] *J. Exp. Biol.*, 56–70 (1937).
[3] *Quart. J. Mic. Soc.*, **38**, Pl. 2 (1895).
[4] *Quart. J. Mic. Soc.*, **57**, 315 (1923).
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Symbiosis in Larval Siricidæ (Hymenoptera)

THE presence of a symbiotic basidiomycete fungus in the adult females of the woodwasp *Sirex gigas* L. was first described by Buchner[1]. Subsequent work by Cartwright[2,3] and Francke-Grossmann[4] has shown that the fungi in this and other species can exist independently and are, in fact, common wood-destroyers. Each egg as it passes into the ovipositor is coated with oidia of the fungus, which grows into the wood in advance of the tunnelling larva and may be the insect's source of food. Francke-Grossmann[4] could find no fungus in the larva, except in the alimentary canal, and decided that the immature female wasp becomes infested by hyphæ growing from the wall of the tunnel into the special intersegmental pouches very soon after the pupal skin is shed.

During a re-investigation of the whole subject, my observations on *S. gigas* L. and *S. cyaneus* F. have confirmed those of the above authors. In addition, fungus has been located in the larva in special organs arising from a modification of the integument on the posterior side of the hypopleural folds on the first abdominal segment. The cuticle is deeply pitted in a characteristic way, and the underlying hypodermal cells are greatly enlarged and probably have a special secretory function. In sections, the fungus can be clearly seen in the pits. The organs were found in a proportion of the larvæ corresponding approximately to the sex ratio of the adults and pupæ cut from the same section of log, suggesting that they are present in female larvæ only. The fungus in these larval organs has been isolated into pure culture and found to be *Sterum sanguinolentum* (A. and S.) Fr.; this species has been shown by Cartwright to be present both in larval tunnels and the intersegmental pouches of the adult female woodwasp.

The significance of these organs in the larvæ has yet to be explained, particularly in relation to the absence of fungus from the pupal stage of the insect. The problems of the part they play in the symbiotic cycle and of their fate during ecdysis are extremely interesting, since the structures are external. The work has now had to be suspended, but an account of the progress to date is being prepared for publication elsewhere.

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[2] Cartwright, K. St. G., *Ann. Appl. Biol.*, **26**, 184–87 (1929).
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Staining of Bacteria and Certain Fungi

THE usual method for staining bacterial and yeast spores requires three operations: the staining of both spores and vegetative cells by applying heat to the slide bearing the dye; the removal of stain from the vegetative cells with a decolorizing agent; and counterstaining the vegetative cells with a dye of a different colour. The same treatment is used to differentiate acid-fast bacteria from others.

A solution has been developed for staining spores and vegetative cells differentially in one operation. Fixed films of bacteria or yeasts are stained for one minute over steam with a solution consisting of malachite green 0·5 per cent, basic fuchsin 0·05 per cent, in distilled water; the film is then washed and dried. Spores are stained greenish blue, other cells violet or, in older cultures, pink. Acid-fast bacteria retain the greenish-blue tinge, and may show the presence of violet granules; all non-acid fast bacteria so far tested are stained violet.

A saline dilution of the staining solution has been developed especially for differentiating the hyphæ and conidia of certain fungi in agar plate cultures.

A paper giving other details will shortly appear in the *Canadian Journal of Research*.

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Jan. 17.

An American Message

THE Editor and staff of *Bell Laboratories Record* present their compliments to the Editors of NATURE and congratulate them on the continued regularity and high quality of the publication, under extraordinary difficulties. They are happy to report the strong public sentiment here, as to aid for Britain.

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