NOTES

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A MEDIUM FOR THE RAPID CULTIVATION OF SOIL ACTINOMYCETES

ELIZABETH J. BOTTCHER AND H. J. CONN

New York State Agricultural Experiment Station, Geneva, New York

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Soil Actinomycetes have recently been receiving special attention, partly because of antibiotic substances produced by them and partly because of the indicator properties of some of their pigments. Large scale production of these organisms, however, presents difficulties due to: (1) their slow growth in ordinary media; (2) the fact that they prefer solid to liquid media, and at present agar is quite expensive. A search has been made for a substitute for agar in such cultures; and in doing so a medium has been obtained which not only contains no agar, but allows very rapid growth of the organisms.

Four substitutes for agar were investigated: sand, glass beads, gypsum blocks, and cotton. Of these the last mentioned proved by far the most satisfactory. It can be saturated with a culture fluid; and although it does not form a gel, it gives the organisms a point of attachment and allows good aeration. Growth on such a medium is surprisingly rapid. Certain pigment-producers show more growth and pigment in three days than in two weeks on an agar medium of the same composition. A further advantage is that the cotton is not strongly adsorptive, and growth products can be easily extracted from it.

The composition of the liquid medium in which the cotton is bathed can of course be modified to suit the individual species under investigation. A very satisfactory formula for miscellaneous soil types proves to be: water 1000 ml.; glycerol, 5 ml.; yeast extract (Difco) 2 g.; K_2HPO_4, 1 g. On this medium a series of eleven cultures of soil Actinomycetes including *Actinomyces violaceus*, *A. antibioticus*, *A. coelicolor*, *A. californicus* and *A. cellulosae* (all obtained from Dr. S. A. Waksman), have been found to make very rapid growth.