The Effect of Tobacco Smoke and of Methyl Iodide Vapor on the Growth of Certain Micro-Organisms.

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The work here abstracted was carried out under the direction of Prof. F. C. Newcombe at the University of Michigan and was supplementary to a similar investigation in which illuminating[1] gas and its constituents were employed.

The organisms used in the case of tobacco smoke included 14 species of bacteria and 2 of fungi, and in that of methyl iodide vapor 13 species of bacteria and 2 of fungi. The cultures were on glucose nutrient agar slants. The culture chambers were tubulated glass bell jars set in crystallizing dishes and sealed with paraffin.

The methyl iodide was introduced into the chamber on a pledget of cotton attached to the end of a glass rod fastened in a stopper. The stopper, in turn, was used to close the tubulature in the bell jar.

When smoke was used it was introduced by means of a tube through a two-hole stopper in the tubulature. The suction was provided by an aspirator connected with the interior of the bell jar by a tube through the second hole in the stopper. The tobacco was burned in a cob pipe. In some tests the smoke was used without being treated in any way; in others it was passed through one or two wash bottles of water.

The results indicated that tobacco smoke is toxic to the organisms tested but not so extremely toxic as to some phanerogams. In view of the large number of compounds in smoke it is hardly worth while to venture an opinion as to what substances caused the results observed. The wash smoke, however, showed less toxicity than the unwashed smoke. This would suggest that something capable either of being condensed or of being dissolved in water has some part in causing the results.

The effect of methyl iodide vapor was to kill the cultures where the concentration was great enough. Where the concentration was less it resulted in an initial great retardation in the development of the streaks followed later by a very vigorous growth.

[1] The influence of illuminating gas and its constituents on certain bacteria and fungi. Am. Jour. Bot. 5: 1918.