It is seen from the results given in Tables 1 and 2 that sulphanilamide produces a profound inhibitory effect on the production of citric acid by *A. niger* under growing, as well as resting, conditions. That this inhibition is not caused by an impairment in carbohydrate utilization is obvious from the fact that there is no decrease in the relative amounts of glucose consumed. In another set of experiments it has been found that the addition of *p*-aminobenzoic acid to the medium reverses the effect of the drug on the final weight of the mycelia under growing conditions but does not have any effect on citric acid formation. Indeed, it can be expected that the vitamin will have the same effect on the acetylating system as sulphanilamide and hence it is not surprising that it does not antagonize the effect of the drug on citric acid formation. Again, the inclusion in the medium of a mixture containing adenine, guanine and uracil and the amino-acids methionine and serine, compounds the biosynthesis of which involves the action of *p*-aminobenzoic acid, reverses the inhibition of growth but not the inhibitory effect on citric acid production.

It would seem that the inhibitory effect of sulphanilamide on formation of citric acid in *A. niger* is the result of the stress produced by the drug on the acetylase system. The present results, therefore, emphasize the importance of acetate in citric acid synthesis by the mould.

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[1] Kayser, F., and Metzinger, J., *C. R. Soc. Biol.*, **147**, 1460 (1954).
[2] Rajagopalan, K. V., and Sarma, P. S., *Biochem. J.*, **69**, 53 (1958).
[3] Saffran, M., and Denstedt, U. F., *J. Biol. Chem.*, **175**, 849 (1948).
[4] Somogyi, M., *J. Biol. Chem.*, **119**, 741 (1937).
[5] Chugtol, I. D., and Walker, T. K., *Biochem. J.*, **56**, 484 (1954).

A Chemical Effect of Ethylene during the Storage of Peas

In recent work[1] the author and others found that the crude lipid extracted from raw peas held in the pods in frozen storage (– 17·8 °C.) for periods of time, consistently developed much larger peroxide values than that extracted from raw peas of the same variety, harvested from the same plots at the same time, which were vined previous to placing in storage.

It occurred to me that this difference might be caused by ethylene in the atmosphere inside the pods.

The present experiment was designed to test this hypothesis. The peas used in this work were harvested from the same plot at the same time, and were of the Perfected Freezer variety. Raw peas were carefully shelled by hand to avoid injury and were packed in glass bottles filled with glass lead-in and exit tubes so that the bottles could be flushed with an atmosphere of known composition. These tubes were so constructed so that they could easily be sealed with a flame as soon as the flushing with the controlled atmosphere was completed. The following atmospheres were used for this purpose:

Gas I, 5 per cent carbon dioxide, 3 per cent oxygen, 92 per cent nitrogen
Gas II, 5 per cent carbon dioxide, 3 per cent oxygen, 91·98 per cent nitrogen, 0·02 per cent ethylene

Controls were run with raw peas held in the pods. A 7-month storage period at — 17·8°C. was employed for the results presented here.

The crude lipid was extracted and the peroxide numbers were determined as previously reported[2,3] (Table 1).

Table 1. Peroxide Values* of Extracted Crude Lipid

Storage conditions	Gas I	Gas II	Held in pods
Peroxide value	5·6	19·1	20·4

* Millimoles of peroxide oxygen per kgm. of lipid; average of determinations in triplicate.

It seems, therefore, that ethylene has an action on the lipid matter of peas stored in the presence of this gas. The peas stored in the atmosphere containing ethylene yielded crude lipid which gave a high peroxide value. It is interesting to note that the peroxide value of the lipid extracted from the peas held in the controlled atmosphere containing ethylene was almost identical with that obtained from the lipid extracted from the peas stored in the pods.

Since it was found in previous work[1] that storage in the pods retards the deterioration in flavour, it may be suspected that ethylene and possibly other gases have a part in bringing about this result.

It is possible, therefore, that the lipid fraction, small as it is, may be involved in the biochemistry of the normal ripening of fruits and certain vegetables.

The results of this work will be published in detail elsewhere.

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[1] Lee, F. A., Wagenknecht, A. C., and Graham, R., *Food Res.*, **21**, 666 (1956).
[2] Lee, F. A., *Food Res.*, **19**, 515 (1954).
[3] Lees, F. A., and Wagenknecht, A. C., *Food Res.*, **16**, 239 (1951).

Isolation of Fatty Alcohols with Plant-Growth Promoting Activity from Maryland Mammoth Tobacco

It has been reported previously that 3-indoleacetic acid could not be detected in leaves or apical tissues of Maryland Mammoth tobacco[1]. Consequently, further attempts have have been made to define more clearly the chemical factors responsible for the growth and development of this variety.

Leaves and apical tissues of two-month-old Maryland Mammoth tobacco plants were harvested, frozen rapidly in solid carbon dioxide, and ground in absolute ethanol. The subsequent extraction procedure was as described previously[1]. The final extracts were chromatographed on a Gryksbo chromatographic filter paper column (type *LKD*-3391) with a steady flow of solvent consisting of *iso*propanol: ammonium hydroxide: water (80:5:15 v/v/v). Successive 100-ml. fractions of percolate were removed at the bottom of the column until a total of three litres had been collected, and each fraction was stored at —20° C.

A light-coloured, oily precipitate separated in fractions 25–28 after a few days. This material was collected by centrifugation and dried over calcium chloride. The dry, tan solid then was subjected to a process of fractional crystallization from absolute ether which afforded finally several mgm. of a waxy solid exhibiting growth-promoting activity in the bioassay mentioned below.