such materials studied was petroleum. An attempt to find cellulose destroying organisms in petroleum, by inoculating the latter into a cellulose medium, yielded an organism which apparently has no power to decompose cellulose but which has an extraordinary physiology. It was isolated from petroleum derived from a well over 8,700 feet deep owned by the Standard Oil Company of California. The organism is a coccus or cocco-bacillus, variable in size and somewhat so in shape. It grows very well under strictly autotrophic conditions in an inorganic salt medium with ammonium sulphate or potassium nitrate as the source of nitrogen. It oxidizes ammonia directly to nitrate without passing it perceptibly through the intermediate step of nitrite formation, as do the group of bacteria known as nitrifying bacteria. The nitrate-producing power, moreover, is manifest very quickly under such conditions—much more so than is true of the nitrifying bacteria. It is apparently a facultative aerobe and a facultative autotroph. In addition it possesses the power of completely decomposing petroleum without apparent gas formation aside from the end-product gas-carbon-dioxide.

We have noticed in the literature two or three cases in which organisms isolated from soil were described as possessing the power to oxidize ammonia directly to nitrate. These reports have never been confirmed and the other powers attributed to our organism above have not been indicated in such earlier reports. A full account of our investigation with this remarkable organism will be published elsewhere, together with a comparison of our results with those of Kaserer, Söhngen and others whose work has a bearing on the subject under discussion.

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GROWTH INHIBITION OF POTATO SPROUTS BY THE VOLATILE PRODUCTS OF APPLES

VOLATILE substances from ripe apples have been found to inhibit the normal sprout development of germinating potatoes. Potted germinating seed pieces, held under favorable conditions for growth and placed in closed containers or in closed rooms with ripe apple fruits, have uniformly produced sprouts which failed to develop normally. Apical growth of the sprouts is practically stopped and small stem-tubers instead of normal sprouts may develop. When non-germinated seed pieces are placed under the influence of these volatile substances, bud dominance in potato eyes is largely overcome and abortive multiple sprouting results.

Inhibited growth due to the volatile products from apple fruits has been observed with the following six potato varieties obtained from six different states: Irish Cobbler, Bliss Triumph, Russet Burbank, Spaulding Rose No. 4, Early Ohio and an undetermined variety. The volatile substances from the four apple varieties, Winesap, Stayman, Jonathan and Ben Davis, have caused the inhibition. The inhibitory effect was obtained from peeled apples as well as from the unpeeled fruits.

No growth inhibition has resulted from the volatile substances of oranges, bananas, decayed apples or from iso-amyl-valerate (apple oil). Immature apples did not produce normal growth arrestment, but these same fruits, after ripening, produced the inhibition. In a single test where ripe Kieffer pear fruits were used with germinating potatoes, growth inhibition similar to that produced from ripe apple fruits resulted.

The effect of the volatile products of apples is transitory, and normal sprout development takes place after potatoes are removed from their influence.

In a preliminary test, potato tubers stored with apples in closed containers until June remained firmer and of better quality than did the control tubers.

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BREAKING THE DORMANCY OF TREE SEEDLINGS BY CHEMICAL TREATMENT

IN connection with the ethylene chlorhydrin treatment used by Deuber and Bowen[1] to shorten the rest period of sugar maple seedlings, it may be of interest to report a similar treatment recently given to both sugar maple (*Acer saccharum*) and chestnut (*Castanea dentata*) seedlings.

A dozen sugar maple seedlings, four feet in height, were potted and brought into the greenhouse during the early fall before there was any change in their summer foliage. They were kept under warm greenhouse conditions, where they did not experience the normal seasonal changes during the fall and winter. When spring came and the outside trees began growth these greenhouse seedlings remained dormant, and, it became evident that it would be necessary to substitute some artificial treatment for the normal winter exposure in order to break their dormancy. This was accomplished by keeping them exposed for a period of three days to the vapors from 25 milliliters of ethylene chlorhydrin diffused in 450 liters of air space. One half of the potted seedlings were so treated and the remainder left as checks. In making this treatment, the chemical was absorbed by a small piece of cotton and placed with the seedlings in a tightly sealed, metal chamber of the type used for seed

[1] C. G. Deuber and P. R. Bowen, "Chemical Treatment to Shorten the Rest Period of Sugar Maple Trees," SCIENCE, July 26, 1929.