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.

sterilization. Any tight container could have been used in place of such a chamber. The treatment was given during the first two weeks in June, and by the first of July all the treated trees were in partial or full leaf, while the untreated trees remained dormant. Although a number of the latter slowly came into activity a month later, indicating that they were not dead, their foliage was not fully developed in September.

By a similar treatment a number of chestnut seedlings were made to break their rest period three months in advance of the normal season. The concentration of ethylene chlorhydrin was the same as that used for the sugar maples above, but the time period was four instead of three days. This treatment, while successfully breaking their dormancy, killed back the ends of the upper branches to four inches from their tips, and evidently a shorter time period or a lower concentration of the chemical is to be recommended in order to avoid injury. These seedlings were treated during the second week of January, and by the first of February their buds were breaking into activity.

The results of the treatments indicate that the vapors of ethylene chlorhydrin may be successfully used to break the dormancy of some tree seedlings. The chemical seems to be toxic to young branches at higher concentrations, but when properly regulated it has proven to be very useful for breaking the rest period of both sugar maple and chestnut seedlings.

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DUST PARTICLES

THE mongrel mixture of detritus called "dust" in the household, is commonly found precipitated on walls (*e.g.*, where radiators or leaks in window casings or door jambs produce air currents), or on protected areas of floors (*e.g.*, under beds or other furniture). The phenomenon is something quite apart from the quiet settling of fine particles according to Stokes's law, which causes the ordinary layer of "dust." It seems to involve an electrical precipitation and/or aggregation, whereby particles which have specific surface charges or which have become charged by adsorption of atmospheric charges (electrons, ions or smaller particles), attach themselves to wall areas or to other particles having opposite specific or net charges.

It would be an interesting research to see to what extent (if any) dust becomes charged by metal or other radiating surfaces, by friction due to air currents, and by sunlight. That horror of efficient housewives, known in New England as "house-moss," appears to consist of a fluffy mat of adventitious fibers (cotton, wool, linen, silk), whose electrostatically active surfaces aid in holding them together and in fixing on them other kinds of dust particles.

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THE NERVOUS CONTROL OF HEMATOPOIESIS

SINCE the theories of hematopoietic control are still widely at variance, a series of tests was carried out to attempt to determine the rôle of the nervous system in the liberation of erythrocytes.

Periarterial sympathectomy was performed on the left femoral artery of each of three dogs, while the unoperated right leg was left as a control. The dogs were killed with chloroform, nineteen, fourteen, and twelve days after operation, respectively. The femora were dissected free, split lengthwise, and marrow from similar levels was fixed in formalin for subsequent histological section.

In each of five dogs, the sciatic nerve on the left side was injected with 5 cc. of freshly distilled alcohol. This was followed in each case by a subsequent unilateral paralysis. These dogs were killed one week later and the femoral marrow was prepared for examination.

Neither in the cases of periarterial sympathectomy, nor sciatic injection, were observable differences present between the marrows of the operated and the control sides.

These results are in keeping with the observations of Drinker, Drinker and Kreutzmann[1] (1917) who report that they found no outpouring of normoblasts after the complete section of sciatic and brachial plexuses.

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POSITION OF WOOD IN BEAVER DAMS

MR. CHARLES MACNAMARA brings up an interesting question in SCIENCE for December 18, 1931, with regard to the position of wood in beaver dams. At one time I did think that the most usual way for beavers to begin a dam was to lay the first sticks with the butt ends upstream. However, the more I study the construction of beaver dams the more evident is it to me that the animals have no set rules about it. I have seen dams that were just started where the butt ends of the sticks were laid upstream, and I have seen them where they were laid downstream. I have a photograph showing the latter condition where a dam was built across a stream and the beavers were extending it on to the gravelly shore or bank. Here it was plain that the willows were laid with the butt ends downstream.

In broken dams there are always the ends of many sticks projecting into the open gap, showing that they

[1] C. K. Drinker, K. R. Drinker and R. L. Kreutzmann, *J. Exp. Med.*, 27: 249, 1917.