

4900-ton magnet is finished, and the installation now of the more delicate parts of the apparatus requires shelter.

When finished, this machine will whirl deuterons, the central cores of heavy hydrogen atoms which are twice as heavy as the protons or central cores of ordinary hydrogen atoms, up to a velocity of 60,000 miles per second. It will also whirl alpha-particles, the central cores of helium atoms, up to the same velocity. But since these are twice as

heavy and have a charge twice as great as the deuterons, they will emerge with twice the energy or with 200,000,000 electron volts each.

If the new cyclotron is as efficient as those of the past have been, the issuing atomic beam will contain 3 to 5% of the electrical energy put into the machine. Simple steam engines, like those used for hoisting, do not do much better.

*Science News Letter, May 9, 1942*

#### PLANT PHYSIOLOGY

## New Synthetic Plant Hormones Induce Seedless Fruit Formation

**Addition of Halogens to Weak Organic Acids Produces Compounds With Unique Properties**

**N**EW synthetic growth-promoting substances, or plant hormones, many times more powerful than those now in use experimentally and by greenhouse-men, have been prepared at the Boyce Thompson Institute for Plant Research by Dr. P. W. Zimmerman and Dr. A. E. Hitchcock. Applied to plants in the form of vapor, spray, emulsion, lanolin paste, or added to the soil, they induce

profound changes in growth, and they can also induce the formation of seedless fruits from unpollinated flowers at points on the stem a foot or more from the place of application. Treated plants are so changed that sometimes they look like quite different species.

The new hormones are prepared from various mild organic acids, which have no effect on plants in their ordinary

state, by the addition of atom-groups containing chlorine, iodine or bromine, either singly or in combination. One very effective compound of this sort is known as dichlorophenoxyacetic acid. It has been found to be fully 300 times more effective in inducing formation of seedless fruit than indolebutyric acid, one of the synthetic plant hormones now widely used. Solutions as weak as 10 to 25 parts (by weight) in a million parts of water have been found most effective as seedless-fruit inducers.

In all, eleven different compounds of the new class have been prepared. All of them seem to share the same great power over the growth and development processes of plants, and all seem to depend on the addition of one or more of the chlorine-iodine-bromine triad of elements (halogens, the chemists call them) to weak organic acid foundations.

Drs. Zimmerman and Hitchcock warn against rushing into attempts at practical application without further experimentation: "Considering the activity of these new growth-modifying hormones and their capacity to cause extreme types of distortion, caution should be exercised in their practical application. In view of the tendency to include various types of hormones in fertilizers, fungicides, insecticides, and other commercial preparations, the use of these new compounds should be preceded by extensive experimentation to make sure that they will not be detrimental to crops. Phenoxy compounds are known to have insecticidal value and now that they are also known to be plant hormones there might be a tendency to incorporate them in commercial sprays and fertilizers. The idea would be good but the results might be disastrous."

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**EFFECTS BOTH BAD AND GOOD**

*The new halogenated compounds cause both abnormal leaf growth and the setting of seedless fruit from unpollinated flowers remote from point of application.*

#### PSYCHOLOGY

## War-Blinded Men Employed In British Aircraft Works

**B**LIND men, some of them war-blinded in this war, are making good on jobs in the British aircraft industry, it is revealed in a British journal, *Aeroplane*.

So great is the concentration of these men on their jobs, that they work faster than men with sight, it is reported. The men were employed by Philips and Powis Aircraft, Ltd., as an experiment. Now they are being kept on because they are doing really valuable work, and the employment of the blind is recommended to other aircraft concerns.

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