



### Chemical Controls

➤ **CHEMICAL** magic with plants, written so that the ordinary garden variety of gardener can work it, is described by two U. S. Department of Agriculture plant physiologists, Dr. John W. Mitchell and Ruby R. Rice, in a new Department publication, *Plant-Growth Regulators*.

It tells how growth-promoting substances, indole acetic acid and related chemical compounds, can be used to insure the rooting of slips and cuttings, to keep trees from dropping their fruit before it is ripe, to make holly berries form from unpollinated flowers, to induce the production of seedless tomatoes, and a number of other useful things that plants are unlikely to do if left to their own devices.

Many of the experiments listed in the

publication were performed in the greenhouses and experimental plots of the Bureau of Plant Industry at Beltsville, Md., others at government, state and university laboratories all over the country. Published results of these experiments are scattered through many volumes of scientific literature, and for the most part are too technical for the use of the average gardener.

The compounds used in plant growth control are rather expensive, but the concentrations in which they are applied, as sprays, dips, dusts or ointments, are so dilute that a very little goes a long way. Directions for preparation are given in terms of parts per million.

Since that does not readily visualize itself, the authors suggest that to make a one-part-per-million solution you take as much of the chemical as you can pick up on an eighth of an inch of the end of a flat toothpick, dissolve in a teaspoonful of grain alcohol, then mix that in a quart of water.

The new publication, listed as U. S. Department of Agriculture Miscellaneous Publication No. 495, can be obtained from the Superintendent of Documents for 20 cents.

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The Chinese have practiced *inoculation* for smallpox since the eleventh century.

Eight pounds of *butadiene rubber* per bushel of grain is the optimum expected from current extraction methods.

### RESOURCES

## Russia Far From Out

➤ **RUSSIA** is still far from being knocked out, and will be able to stay in the ring as a powerful contender even if the Nazis overrun all the Caucasus region, if claims regarding Soviet preparations, made in a new book by Maurice Edelman (*Penguin*) are correct. Titled "How Russia Prepared," the book is about the USSR in and beyond the Urals. The author is a British subject who has spent much time in Russian travel for British commercial firms.

In overrunning the Ukraine and partly paralyzing the production centers around Leningrad the German hordes have put only about a fourth of Russian industrial capacity out of action, Mr. Edelman estimates. Thirty per cent of the Soviet industrial strength lies in the Moscow region, still behind the Red defense lines—and the rest is far to

the east of the war. It is concentrated mainly in two great groups of new factory cities, one in the Magnitogorsk-Sverdlovsk area in the southern Urals, the other grouped around Novosibirsk on the headwaters of the Irtysh, Ob and Yenesei rivers, near the borders of Outer Mongolia.

The least optimistic part of Mr. Edelman's frankly admiring picture of Soviet preparedness concerns oil. Russian geologists and oil operators have been hard at work locating new sources to the north and east of the gravely threatened oil regions between the Black and Caspian seas, but the best that can be claimed for the extra-Caucasian oil fields is that they might yield only a sixth as much as the great petroleum areas around Maikop and Baku.

*Science News Letter, August 29, 1942*

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### INVENTION

## Rifling of Gun Barrels Improved by New System

➤ A **NOVEL** system of grooves and lands in rifle barrels, the invention of Roy E. Carter of Niles, Ohio, is the subject of patent no. 2,293,114. Instead of the alternation of sharp-edged grooves and lands, or ridges, Mr. Carter's rifling system calls for very wide, shallow grooves with smoothly rounded bottoms, and low, obtuse-edged lands. They are more like fixed waves in the metal than like the "gear-tooth" pattern of the conventional rifle's cross section.

As advantages for the new rifling system, the inventor claims greatly reduced fouling of the barrel, less likelihood of rupturing or stripping the bullet jacket metal, and higher velocity and greater accuracy for the smoother projectile.

*Science News Letter, August 29, 1942*

Thirty-six inches is the approximate mean annual *rainfall* of the world.

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