

THE CALIFORNIA Institute was among 45 universities throughout the country to receive a Du Pont post-graduate fellowship award in chemistry. The Du Pont Company Fellowship Plan is designed to encourage advanced study in the fields of chemistry, physics, chemical, mechanical, and electrical engineering, and metallurgy. Each post-graduate fellowship provides \$1200 for a single person or \$1800 for a married person, together with an award of \$1000 to the university. The selection of candidates for the awards is left to the universities.

DRS. JOHN A. SCHUTZ and Henry F. McCreery, assistant professors of history in the Humanities Division, recently won 1947 awards from the Pacific Coast Branch of the American Historical Association. Dr. McCreery received the award for his manuscript "German Opinion of the United States during the 1916 Submarine Crisis", and Dr. Schutz received his award for the paper "Thomas Pownall: an Early Champion of Anglo-American Cooperation". Dr. Schutz's award was shared with Professor Wilbur Jacobs of Stanford University.

C. I. T. BIOLOGISTS DEVELOP PLANT GROWTH INHIBITOR

FROM THE LEAVES of a low, dome-shaped desert plant which Americans call the Brittle Bush, the Mexicans and Indians call Incienso and known to science as *Encelia farinosa*, a new plant growth inhibitor, and possibly a weed killer, has been developed at the California Institute. Not only did biologists James Bonner and Reed Gray determine what the leaves of *Encelia* carried that inhibited the growth of other plants, but they also have been able to reproduce the inhibitor synthetically. Called AMB for short, its is 3-Acetyl-6 Methoxybezaldehyde, a new chemical compound.

Dr. Bonner's observations of *Encelia farinosa* plants growing on California and Arizona deserts led him into the investigation. He noted that while many desert plants apparently attract and favor growth of plants around them, *Encelia farinosa* had little, if any, such plant life about it. It was his curiosity about this occurrence that led to the development of the new plant inhibitor.

Tests of the growth inhibiting qualities of both the extract from *Encelia* leaves and the aromatic synthetic compound containing an aldehyde and ketone group on the same ring were made on tomato seedling plants in nutrient solutions (See Figures), sand cultures, and rich garden soil. Marked inhibition of growth was noted, and water and ether extracts of leaves fed to tomato seedlings in solution culture caused death within one day. Tests showed the extract to be almost as toxic to tomato seedlings grown in sand cultures but less effective in action on tomato plants grown in rich

garden soil. The explanation for this may be that bacteria of the soil reduce AMB's toxic effects.

Although Brittle Bush resin had been used as a pain-killer, an incense, and a varnish, it was in the leaves, not the stem or roots that the biologists found the plant growth inhibitor. Produced synthetically, it is a compound that has never before been reported.

Research on AMB as a spray to kill remains to be done—all information to date has been obtained through introducing the inhibitor into the root systems. It was found that if a plant took up as little as one milligram of AMB, growth was markedly inhibited. If it took up as much as two milligrams it died.

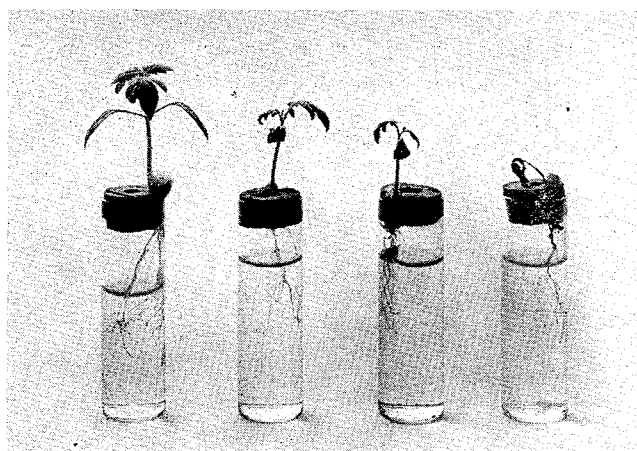


Fig. 1 Tomato seedlings grown in solutions containing various amounts of *Encelia* toxic substance (AMB) for two days. Left to right: (A) no toxic substance; (B) 0.5 mg per plant; (C) 1.0 mg per plant; (D) 2 mg per plant.

Fig. 2 Experimental setup for testing effect of AMB on tomato seedlings. The glass containers shown in Fig. 1 are placed in rows of 10 in wooden boxes so that the roots are in the dark. Left to right: (A) each plant receives nutrient solution but no toxic substance; (B) each plant receives nutrient and 0.5 mg per plant of AMB; (C) each plant receives nutrient and 1.0 mg per plant of AMB; (D) each plant receives nutrient and 2.0 mg per plant of AMB. The picture was taken two days after placing plants in solutions.

