

AGRICULTURE

Study Radioactive Cotton

► **RADIOACTIVE COTTON** bursting from its boll on a living plant at the greenhouses of the Department of Agriculture, Beltsville 1, Md., marks the culmination of a four-year attempt to learn how cellulose is formed.

Dr. Glenn A. Greathouse when at the Engineering and Industrial Experiment Station, University of Florida, began in 1949 to force the plant world to give up the secret of making cellulose, basic material of cotton and of wood. Radioactive carbon-14 was chosen as the tracer to learn where the material for cellulose comes from and how the plant builds it, he reports in *Science* (May 22).

Working with a team of scientists from several Washington laboratories, Dr. Greathouse, now with the National Research Council, made his first studies upon cellulose by a microorganism, *Acetobacter xylinum*. Food for this microorganism was radioactive sugar synthesized by Dr. H. S. Isbell of the National Bureau of Standards. Part of the work was done by the Harris Research Laboratories, a private research organization in Washington. The Atomic Energy Commission financed the basic research. This

program resulted in enough information on how the plant takes up carbon to justify the shift from microorganism to the cotton plant. Here Dr. Neil W. Stuart of the U. S. Department of Agriculture joined the team, to help feed the radioactive sugar to the plant.

Injecting sugar containing the radioactive carbon directly into the developing cotton boll was found less effective in producing radioactive cotton than was feeding the sugar solution into the juices of the plant stem at the time when the plant is using its own sugar most actively. By the feeding method, 99.97% of the radioactive sugar given to the cotton plant 21 days after fertilization of the flower reappeared in the cotton fibers when the boll opened 30 days after the feeding.

This first attempt to follow the building of cellulose from sugar in the cotton plant seems to prove that the cellulose is polymerized directly from the sugar by some chemical mechanism in the cotton boll. Further research will now be undertaken to learn more about this power of the cotton plant.

Science News Letter, June 20, 1953

ENTOMOLOGY

Poison Stops Army Worms

► **WHILE THE** army worm hordes are attacking grain fields in the worst and most widespread invasion in years, American farmers have better means of controlling the voracious caterpillars than at any time in history.

Any farmer that uses modern insecticide sprays properly should not lose a crop to the army worms, U. S. Department of Agriculture entomologists state.

However, if they continue to fight the insect pests as they did 10 or 15 years ago, using water-filled trenches, fire or poisoned baits, the farmers may as well prepare themselves for great losses.

The most effective insecticide used against the army worm is toxaphene, with DDT a close second. USDA experts are advising farmers, however, to use methoxychlor as a spray if the crop is to be used as forage for animals. This insecticide is an efficient killer of the army worm, while it will not affect the meat or milk of animals that accidentally eat it.

Spraying insecticides from the air is an especially effective means of controlling army worms. When great masses of the insect larvae are concentrated in a field, aerial spraying of the area with toxaphene, DDT or methoxychlor can wipe them out in quick order.

The army worms, which are spread over an unusually large area from Missouri eastward this year, are the young or larval

stage of a small brownish moth, *Cirphis unipuncta*. From the time the eggs hatch until the caterpillars change into moths, about three to four weeks, is when the army worms do their damage to crops, especially grasses and small grains.

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PSYCHOLOGY

Baby May Be Neurotic If Mother Is Disturbed

► **THE NEW** baby may be destined to be a neurotic child if his mother was the victim of disturbed feelings during the months before his birth, Dr. William S. Kroger of the Chicago, Ill., Medical School reported at the meeting of the American Medical Association in New York.

Or the expectant mother, if sufficiently upset, may lose her baby through spontaneous abortion.

"Embryologists have demonstrated that stimuli or stress on the growing embryo, resulting from the mother's physical and emotional health, may lastingly affect the individual, regardless of how much differentiation occurs later on," Dr. Kroger said.

Harmful emotions, he declared, are of more importance than hormonal imbalance in producing spontaneous abortion of healthy ova.

"This," he added, "is not surprising since endocrine therapy is grossly inadequate for habitual abortion of any type.

"The psyche has also been implicated in the early and late toxemias of pregnancy. Such entities may, in part, be due to the stress of modern living. For instance, nausea and vomiting of pregnancy are seldom seen in the stoic Oriental. Yet, when these same races become westernized, or acculturated, these conditions appear."

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