

BACTERIOLOGY

Bacteria Kill Insect Pests

Experiments with live bacteria show they killed 99% of the alfalfa caterpillars infesting a California field within 24 hours. The bacillus acts as a stomach poison to insects.

➤ BACTERIOLOGICAL warfare against insect pests is proving successful in California.

Scientists at the University of California in Riverside have reported using living bacteria, *Bacillus thuringiensis*, to kill off within 24 hours 99% of the alfalfa caterpillars infesting a field in the Imperial Valley.

The alfalfa caterpillar is one of the most serious pests of California's principal forage crop. The pest causes damage and control expense amounting to more than \$1,000,000 yearly.

They had previously reported success with the bacillus against two pests of cauliflower and cabbage, the cabbage looper and the imported cabbageworm.

Last December, the U. S. Food and Drug Administration gave the go-ahead sign for experimental use of insecticides containing these living microbes to eliminate plant pests. Studies had shown that such insecticides would not adversely affect warm-blooded animals. Human volunteers ate

and inhaled the bacillus without ill effects.

Bacillus thuringiensis is the first microbial pesticide compound in commercial production, though none is yet available for general grower use. For one year it will be applied as a dust or spray in various parts of the country to protect crops against certain insect pests.

The bacillus acts as a stomach poison. When insects swallow it, they sicken and die. The poisoning effect seems to be caused by toxic crystals that are formed by the bacillus during spore production. Crystals and spores are ingested when an insect feeds on treated foliage.

The nature of the toxin is not yet known. But if its chemical composition can be determined, it might eventually be synthesized. This could lead to a potent, highly specific insecticide.

Insects so far have shown no ability to develop resistance to the attacking bacillus. Furthermore, use of the material makes it unnecessary to use chemicals, some of which might harm beneficial insects.

The bacillus has also shown promise in limited tests on the cotton leaf perforator, and it may prove effective against the celery leaf tier, an insect that has caused some crop damage in the county of Ventura.

It may also help combat the housefly, the avocado leaf roller, the Egyptian weevil, the salt-marsh caterpillar and the cotton bollworm, the scientists reported.

Science News Letter, March 7, 1959

ARCHAEOLOGY

Ice-Age Mammoth Bone Resembles Elephant Bone

➤ SCIENTIFIC EXAMINATION of a bone from an ice-age mammoth has shown it to be remarkably well-preserved and very similar to corresponding specimens from modern elephants.

The spongy marrow cavity was found to be infiltrated with dirt, hair and small pebbles, but the outer surface resembled fresh bone in that it was shiny and smooth.

The bone had the characteristic odor of fresh bone, but was yellowish brown in color. There was no evidence of loss by leaching, and the typical bone pattern was remarkably intact.

Total nitrogen and acid-extractable carbonate were found to be at levels of fresh bone.

The particular bone fragment examined was probably a piece of a leg bone of an immature adult mammoth. Its histology and chemistry, studied by H. C. Ezra and S. F. Cook of the University of California at Berkeley, are reported in *Science* (Feb. 20).

Science News Letter, March 7, 1959

MEDICINE

Medical Plan Received With Optimism

➤ ESTABLISHMENT of an Institute of International Medical Research at Bethesda, Md., site of the other National Institutes of Health, is included in the "Health for Peace Act" proposed by Sen. Lister Hill (D.-Ala.).

The new Institute would be directed, as are the other Institutes in Bethesda, under the authority of the Surgeon General of the U. S. Public Health Service.

Also under the proposed legislation, young scientists from the U. S. would exchange a period of study with their counterparts in other parts of the world. The counterparts could study at the new Institute. The Rockefeller Foundation is now educating trainees from other countries.

One problem will have to be solved if the legislation is passed: Many trainees are reluctant to return to their countries when the training period ends.

One of the fields the proposed bill would accelerate is the vast screening program for compounds that exhibit anti-cancer properties. Money to support such programs in other countries would speed up the search. Presently, Sen. Hill suggests that \$50,000,000 per year be appropriated for the international medical program.

Science News Letter, March 7, 1959



EXPLODING DYNAMITE CAP—The hair-like projections represent high-speed particles and their shock waves from this exploding dynamite cap, as it was photographed at $1/10,000,000$ of a second in the stroboscopic light laboratory at the Massachusetts Institute of Technology by Dr. Harold E. Edgerton and two students, Vinod Sundra and Douglas Sinclair. Dr. Edgerton is chairman of the board and vice-president of Edgerton, Germeshausen and Grier, Boston firm that has been engaged in extensive research and development work, including the testing and photographing of A-bombs and H-bombs.