

ENTOMOLOGY-AAAS

## DDT Scores More Victories

**Black flies, sprayed with the insecticide while in the larvae stage, were completely wiped out in treated brooks. Corn borers also proved vulnerable.**

► **BLACK** flies, just about the most tormenting pest in northern latitudes, have at last met their Waterloo—and DDT was the weapon. Dr. Gustave Prevost of the University of Montreal told entomologists at the meeting how he had treated certain brooks in May, 1946, with DDT; in October, 1947, they were still free of the infernal insects. The trick, said Dr. Prevost, is to catch your black flies in their most vulnerable stage, as larvae. There were neither eggs nor the resting pupal stage when he made his attack. He caught them literally with their armor off—and that was that.

Less complete triumph, but some advance at any rate, was scored in DDT attacks on European corn borers in Wisconsin, where they are a serious threat to commercial sweetcorn and hybrid field-corn plantings. Dr. H. J. Lilly of the University of Wisconsin recommended two dustings with 5% DDT, spaced to catch the young borers just after they have hatched and before they can gnaw their way to safety within the tissues of the plants.

### Soiless Gardening Pays

► **SOILLESS** gardening by the gravel-bed method proved more economical on a strict cost-accounting basis, in a carnation-growing experiment conducted at Colorado A and M College by August Mussenbrock and George Beach. Two identical greenhouse benches were used, one filled with gravel and irrigated with fertilizer-salt solution, the other filled with soil. The cost of producing a crop of flowers on the soil was 28% higher than that on the gravel bed.

### Fertility Not Impaired

► **LIVING** at mountain altitudes has no effect on animals' reproductive ability, despite reports to the contrary from Andean uplands, Prof. Carl R. Moore, University of Chicago zoologist, declared at the meeting.

Prof. Moore had colonies of three kinds of rodents—rats, mice and ham-

sters—kept at four different elevations: 600 feet, at Chicago; and 7,500, 9,600 and 14,260 feet, respectively, in the

PSYCHOLOGY-AAAS

## Conflict Induces Crackup

**New evidence from rats confirms theory that a nervous breakdown may result from enforced action on impossible problems. Probably applicable to humans.**

► **IF YOU** should have a nervous breakdown, you can blame mental conflict. For some individuals, such physical strains as the noise of battle might cause a crackup, but these are few. Many more break when the noise comes on top of a losing struggle with impossible problems.

At least that is the sort of thing that happens with laboratory rats in experiments reported by Drs. Norman R. F. Maier and Joan U. Longhurst, of the University of Michigan. Rats break down when they are forced by an airblast to jump in a direction they have learned is wrong. The air makes a "Shishsh" noise annoying to humans and very irritating to rats.

Dr. Maier's rats were first introduced to scientists at a meeting similar to this one nine years ago. Then, for the first time, scientists saw, in motion pictures, rats going into fits exactly like human epileptic fits or the convulsions produced by the electric-shock treatment used for the mentally ill. In the excited stage of these fits, the rats run around and around as though crazy. In the rigid phase, they can be picked up and held by the tail as if it were a handle. Dr. Maier called this seizure a neurotic pattern. His report of it received the annual \$1,000 prize of the AAAS.

At the time, scientists were enthusiastic about it, because of the light it might throw on the causes and ways of preventing nervous breakdown, combat fatigue, and possibly also epilepsy in man.

But considerable disagreement among

Rocky Mountains. At all levels, the animals reproduced freely, and all grew healthily to similar sizes and weights. There were no signs of sterility, and growth to sexual maturity was approximately the same in all four places.

The one sign of abnormality was in female mice at the highest altitude. There they seemed to have less milk for their young, and some of them developed a tendency to devour their own offspring.

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psychologists followed. Some believed on the basis of further experiments that it was the noise rather than the mental conflict that brought on the fit.

At this meeting Dr. Maier reported new experiments which test this idea and indicate that he was correct in putting the blame on mental conflict which makes even rats crack up.

In his new experiments, he used 81 rats from 18 different litters. One group of 37 animals were first trained to distinguish between a black circle and a white circle and to jump to the black circle to obtain a reward.

Later these same rats were shown only one of the cards, but were forced by a blast of air to jump, regardless of whether the card shown had the black circle or the white one. When the "wrong" circle was shown, the rat did not want to jump but had to. This formed the "conflict."

Another control group went through the same test of having to jump to a card containing either black or white circle, but these animals had had no previous training to teach them that one circle was right and the other wrong. Thus having to jump to the white circle instead of a black one did not disturb them—there was for them no conflict.

The group faced with the mental conflict had a larger number of seizures per animal than those who were subjected to the noisy airblast alone, in the ratio of 1.6 to .44. And more of the group who had to endure the conflict became subject to fits, 38.8% as compared with 6.7%.

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