

610

STORIES of New Jersey

rejected, because it would be impossible for a farmer or housewife to get large amounts of the poison into the pests to be killed. If, after repeated tests, the material proves itself by the injection test, it is ready to be used in the contact test.

In actual use an insecticide is applied in several ways. Spraying coats the insect with a mist which is absorbed through the skeleton into the bloodstream. Should a powder be used, it clings to the insect's feet and legs, and, since a bug cleans its feet and legs by passing them through its mouth, the poison is absorbed into the stomach and passes into the bloodstream. A paste insecticide is eaten by the insect, and, once in the stomach, is absorbed like the powder by the blood. The second test, called the contact test, approximates the spray method.

In this experiment, as in the injection test, the insects are in a semi-conscious state. They are turned on their backs and a very small amount of insecticide is dripped on them through a tiny tube. As in the injection test the amount of liquid depends on the size of the insect, and each one is carefully weighed before being dosed. The treated bugs are then placed, still on their backs, in covered dishes and observed. If they regain their feet, the insecticide is considered ineffective. The insect must be killed with a small amount of the liquid, for in the actual spray application only very little will cling to its target.

In some cases a poison that is highly effective when injected is found useless when applied to the insect's body. This is due to the fact that the poison cannot penetrate the shell or skeleton. When this occurs, it becomes the task of the scientist to find how to change the chemical formula of the insecticide to overcome this difficulty.

When the poison has passed both the injection and the contact tests, it is tried for its efficiency as an "eaten" insecticide. Now a new problem faces the scientist. The insect's natural stomach liquids may neutralize the poison and render it harmless. The solution is first tested by being injected directly into the stomach with a hypodermic needle. Its success here does not neces-



Cockroach

Racetrack