

CHEMISTRY

# Most Effective Insect Killer Yields Formula to Chemists

## Rotenone, Obtained from Tropical Plants, May Be Made In Laboratory Following Discovery of Its Composition

**R**OTENONE, most effective insect killer yet discovered, has yielded the secret of its chemical makeup to three chemists of the U. S. Department of Agriculture, Dr. F. B. LaForge, Dr. H. L. Haller and L. E. Smith.

Rotenone is a white crystalline substance, obtained from the roots of tropical plants belonging to the pea family. Its principal commercial source at present is the East Indian vine derris; but a South American shrub, cubé, has also been shown to contain it in paying quantities.

Rotenone contains only three chemical elements, carbon, hydrogen and oxygen, in the ratios of 23, 22 and 6. This is expressed by the "linear" formula  $C_{23}H_{22}O_6$ . The "structural" formula, which shows organic chemists just where each atom of the molecule is located, is reported to be quite complex.

The three chemists who conquered rotenone's secret are lauded by Dr. C. A. Browne, assistant chief of the Bureau of Chemistry and Soils, as winners over keen competition by German and Japanese chemists, who also were hard on the trail of its formula, and had been working for some time before the Americans started.

Chemists always want to know the exact formula of a compound that has been found valuable, because then they may be able to learn how to put it together more cheaply out of coal tar or some other low-priced material, instead of extracting it from expensive imported plant sources. The three chemists are now at work on this problem, and have already succeeded in assembling several compounds that might be said to represent half-way steps in the reconstruction. There is, of course, always the possibility that some entirely new synthetic product may be put together that will be even better than the natural prototype.

Rotenone, for all its present highly scientific exploitation, was originally a gift to white men by naked savages. In both the East Indies and in South America, the plants containing it were used as fish poisons. Though poi-

soned, the fish were still good to eat.

White man tried the poison on himself and on warm-blooded animals and found it harmless. He tried it on insects, and found it killed them with amazing quickness and economy. Now rotenone is used on a large scale in many widely-advertised insecticides. It is in the hope of making cheaper and better insect-killers that the Department of Agriculture chemists are carrying on their research.

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MEDICINE

## Men Attacked by New Brain Disease of Horses

**T**WO CASES, one of them fatal, in which men have apparently been afflicted with a newly-discovered brain disease of horses and mules have been reported by Dr. Karl F. Meyer of the George Williams Hooper Foundation for Medical Research, University of California, to the American College of Physicians.

The two cases occurred in cattlemen

who had been caring for horses afflicted with the equine form of the disease. Dr. Meyer could not prove conclusively that they had suffered from the same disease because he was unable to examine the brain of the man who died. But from the symptoms and the fact of their close contact with the sick horses, he felt sure they had contracted the disease from the animals.

The equine disease, called encephalomyelitis, first appeared in California during the summer of 1930. During 1930 and 1931 about 6,000 horses died. Dr. Meyer expects the disease to occur in epidemic form again this season when the warm weather returns, as several cases have already been reported from the San Joaquin Valley. The malady is caused by the type of germ known as a virus, which attacks the brain and spinal cord of the animal. It is apparently identical with the so-called "cerebro-spinal meningitis" which has been reported in various parts of the United States during the past 70 years, Dr. Meyer said.

An attack of the disease, even so slight as to escape notice, seems to give the animal immunity, that is, to protect it from subsequent infection in the majority of cases. Investigations at the Hooper Foundation are being made with the hope of producing a serum that may be used in treating the animals or a preparation that will confer immunity on them. Encouraging results have been had in a small number of cases.

*Science News Letter, April 23, 1932*



—Courtesy National Society for Prevention of Blindness.

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