



**SPREADER OF FILTH AND PESTILENCE**—Perched on the edge of a saucer, the fly carries filth to food, and is believed to spread such diseases as tuberculosis, cholera, dysentery, infantile diarrhea and typhoid, among others.

all the cattle in Oklahoma were sprayed with DDT—because it pays!

Dr. Ellsworth Fisher, University of Wisconsin entomologist who directed last year's dairy fly control operations, gives the 1000-odd "custom sprayers" in his state credit for making the program a success. Many of these operators are ex-GIs, others are experienced exterminators who have added DDT to a long list of insect-killing weapons.

#### Business of Killing Insects

In Princeton, Illinois, two former Air Force pilots, Robert Kirkpatrick and Donald Rickard, have built up a profitable business killing insects by land and by air. With a Navy-surplus plane they shower corn with DDT for protection against the corn borer; with a jeep and power sprayer they douse cattle and farm buildings with DDT for fly control. They charge \$40 for a season's spraying of animals and buildings on an average farm—one visit in June, another in August. "Many farmers were skeptical at first," Kirkpatrick says, "but took the gamble. Now they're enthusiastic. One day we sprayed a farm and its herd of 32 cows. The next day milk production went up ten gallons, and stayed up." Last year Kirkpatrick and Rickard had

about 90 customers for fly control, all of whom signed up for service again this spring. One of their biggest jobs was the spraying of the county fair grounds and its buildings, which they did so effectively that even the picnic area, strewn with sandwich crusts and watermelon rinds, was free from flies.

Three years ago George Hockenyo, custom sprayer of Springfield, Illinois, added fly control to the many services of his Sentinel Pest Control Company. Hockenyo sprays homes three times a year, charging about \$10 for each treatment. Last summer he sprayed the 25 buildings of a state institution. One time around took him four days, but when he got through there were "99.44% fewer flies." Hockenyo is confident that some day flies will be a rare sight round all homes and barnyards. An old timer in pest control, he advises newcomers to work for a while with an experienced outfit before going out on their own. It isn't just a matter of killing flies, he points out. "You have to kill them in the right places. In a restaurant, for example, DDT should not be used near open food. Flies would walk through the poison, then die in the food. After a few dead flies in the soup," he says, "the restaurant has lost its business—and you've lost yours."

#### Caution Against DDT Poisoning

While harmless to people and to most animals in the weak dilutions prepared for these campaigns, DDT should be used with caution, for it is after all a poison. Promiscuous treatment of crops and fields may result in the poisoning of birds and honey bees, and upsets in the balance of nature. When spraying is done on the farm, drinking bowls and feed troughs should be covered, and DDT in oil solution should never be used on cattle, for it will penetrate the skin. And cats should never be sprayed with it, because of their cleanly habit of licking themselves.

Ever since flies were sent to plague the Pharaohs, we've been shooing, swatting and swearing at them. And they've been hopping around from filth to food, carrying some 20 diseases—including tuberculosis, cholera, dysentery, infantile diarrhea and typhoid. It takes years to gather final evidence, but present indications are that the incidence of many of these diseases will drop along with the fly population. Yet now there seems no doubt that with the combined weapons of DDT and modern sanitation we can make the fly a rare museum specimen.

There's no reason why your com-

munity cannot be made flyproof this summer. If you live on a farm, write to your county agent or to your agricultural experiment station for advice and further details. If you are a town or city dweller, get your local newspaper or service clubs to start a campaign, or call up your health commissioner and keep buzzing until he does something.

*Science Service took a prominent part in the anti-fly campaign of 1947, through a series of illustrated articles written by Dr. Frank Thone, and is preparing to participate similarly in the 1948 drive. The foregoing article was prepared for the Science News Letter in cooperation with The Reader's Digest; it will appear in the June issue of that magazine.*

*Science News Letter, April 17, 1948*

#### MEDICINE

### New Chemical Improves Blood Test for Syphilis

► BLOOD tests for syphilis are becoming more reliable, thanks to a new testing chemical discovered by Dr. Mary C. Pangborn of the New York State Department of Health. Details of the chemical and its use were reported by Dr. Pangborn at the venereal disease symposium held in Washington under the auspices of the National Institute of Health.

When a blood test for syphilis is done on a patient with malaria or a vaccinated person, the report often is positive even when the person does not have syphilis. Such tests are called "false positives." They have long been a source of worry to doctors and patients.

Many of these false positive tests will be eliminated when the new testing chemical is used, it appears from results with it so far.

The chemical is named cardiolipin. It is a phosphorus containing fatty substance obtained from beef heart. For

## SCIENCE SINCE 1500

By H. T. PLEDGE

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## Do You Know?

*Livestock* often refuse to eat the feed that rats have contaminated.

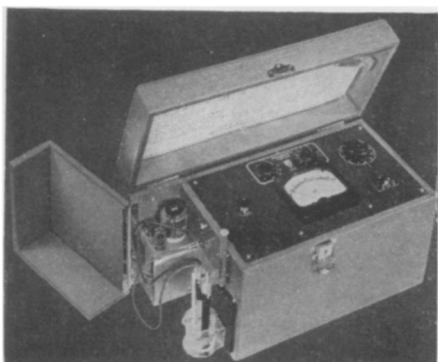
A modern *boiler* used in a power plant may contain as much as 85 miles of tubes.

From a ton of Douglas fir chips between 50 and 60 gallons of *alcohol* can be obtained by a fermentation process.

The *sting* of a honeybee generally hurts even the experienced beekeeper, but immunity from after-effects due to the poison can be gradually acquired.

Rare chemical elements, long thought to be useless, are now finding important applications; *uranium*, of atomic energy fame, was used until recently principally in coloring glassware.

The Galapagos islands, on the equator 500 miles west of South America, have never had any land connection with other lands; their 89 species and subspecies of *bird life* must have arrived as chance wanderers.



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many years extracts from beef heart have been used in blood tests for syphilis, but since these were crude extracts it was almost impossible to get two of them exactly alike. Consequently it was difficult to standardize the test material so that the test would be the same when performed in different laboratories.

#### BIOCHEMISTRY

## Chemical Link to Vitamin

➤ DISCOVERY and synthesis of a new chemical compound which forms a third link in the chain leading to production in the body of the pellagra-preventing vitamin is announced by Drs. H. K. Mitchell and Joseph Nyc of the California Institute of Technology at Pasadena.

The chemical, known as 3-H for short, can also be obtained from love-in-the-mist, though it is unlikely you will be chewing the seeds of this plant, known botanically as *Nigella*, to get your daily ration of the vitamin.

The vitamin is niacin, or nicotinic acid, known for years as both cure and preventive of pellagra. More recently it was discovered that a quite different chemical, tryptophane, could be substituted for nicotinic acid in the diet of rats without any damage. They grew just as well on one as the other.

Tryptophane is an amino acid, one of the building-blocks of protein. Rats can get along without nicotinic acid if they are given tryptophane because, it is believed, they convert the tryptophane into nicotinic acid in their bodies. Proof for this conversion, however, has not yet been obtained.

Dr. Mitchell and associates, working with the red bread mold known scientifically as *Neurospora*, uncovered two steps in the chemical conversion chain. Tryptophane breaks down into a second stage to become a compound known as kynurenin. This is a result of a rearrangement of the atomic pattern of tryptophane.

In a third stage in the conversion, just discovered, a side chain of atoms is discarded. This results in the new compound, 3-H, known chemically as 3-hydroxyanthranilic acid.

Feeding certain strains of the red bread mold, *Neurospora*, any of the three isolated chemical compounds causes an increase in their production of nicotinic acid. Tests are now being made with rats and preliminary work has shown that feeding these animals any of the

Efforts to purify the beef heart extracts led to discovery of the new compound, *cardiolipin*.

Besides its advantages of specificity and ease of standardization, the new chemical has the further advantage of being adaptable to different test procedures.

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three compounds results in their excreting more nicotinic acid.

Whether it will work in man remains to be seen but Dr. Mitchell points out that surprising number of chemical mechanisms are common to both large and small organisms.

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### Science Service Radio

➤ LISTEN in to a discussion on uranium, source of atomic energy, on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p.m. EST Saturday, April 24. Dr. Robert A. Millikan, head of the California Institute of Technology, as the guest of Mr. Watson Davis, director of Science Service, will discuss the shortage of uranium. Dr. Harlow Shapley, director of Harvard College Observatory, will give a brief report on the ideas and accomplishments of Science Service.

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