ENTOMOLOGY

Flies Resist DDT by Making Own Antidote

➤ THE SECRET of how flies have become resistant to DDT and other modern insecticides has been discovered by Dr. Clyde W. Kearns and co-workers at the University of Illinois.

The flies make their own antidote to DDT and presumably to other insecticides. They do it by developing enzyme chemicals. One called DDT-dehydrochlorinase changes DDT to the nontoxic compound, DDE.

This enzyme antidote is specific for DDT. Flies apparently produce another enzyme antidote for other insecticides such as chlordane.

From a million or more flies, Dr. Kearns and associates were able to get enough of the anti-DDT stuff to study it. They hope to purify it, find out the precise mechanism of the DDT detoxifying process and then, presumably, find a way to circumvent the antidotal enzyme.

These findings apparently are not expected very soon. A $75,000 Rockefeller Foundation grant to aid the research runs for a five-year period.

Science News Letter, September 4, 1954

TECHNOLOGY

Cotton Acrylonitrile To Become Plastic Fiber

➤ COTTON MAY itself become a plastic fiber to challenge the market synthetic fibers are taking from the natural textile material.

In a new experimental operation being started in Texas City, Texas, by the Monsanto Chemical Co., cotton will be married to its commercial rival, acrylonitrile, author of synthetic rubber and intermediate in the production of certain plastics.

Joined with acrylonitrile, cotton will excel in the more rugged qualities, strength, resistance to mildew, weatherproof advantage over the ordinary materials for tents, awnings and tarpaulins. Increased ability to take dyes should brighten up the work-day uses for the modified cotton that will result from the new process.

Clothing is not expected to be affected by the new acrylonitrile process for the present, although waterproofing and wrinkle-proofing methods now in use are said to combine well with the new chemical treatment.

Acrylonitrile, a chemical manufactured in liquid form, is the basis for at least three fibers now used for clothing. The trade names of these fibers are Orlon, Dynel and Acrilan. They are made by processes similar to those used in manufacturing plastics, and are more like wool than like cotton when woven into textile fabrics.

Modification of cotton to help this staple agricultural resource meet competition from synthetic fibers and to improve on cotton's own valuable qualities has been for many years an aim of one research program at the U. S. Department of Agriculture's Southern Regional Research Laboratories, New Orleans.

Treatment with acrylonitrile is among the chemical processes investigated by chemists there, as one of the methods of improving the old successful mercerization treatment.

As a result of a conference on chemical finishing of cotton, held by the National Cotton Council of America, opportunities for making new and different fibers from cotton were said to be "almost unlimited, and one advantage of the effect of chemical finishing is that of permanency."

Science News Letter, September 4, 1954

BIOCHEMISTRY

Thyroid Chemical Five Times More Potent

➤ PATIENTS WITH under-active thyroid glands can now be given a chemical remedy five times more powerful than thyroxine, the thyroid gland hormone previously used to treat such patients.

The new chemical is called triiodothyronine. It is apparently the form of the thyroid hormone that enters and acts on the body cells, while thyroxine is the form of the thyroid hormone while it is in the blood.

Triiodothyronine was discovered in human blood by Dr. Jack Gross of the State University of New York College of Medicine in Brooklyn.

Together with Dr. R. Pitt-Rivers at the National Institute for Medical Research, London, England, he isolated triiodothyronine from the thyroid of cattle, explored its physiological properties and synthesized it chemically, making it possible to test its effects on the body.

For his discovery, Dr. Gross received the 1954 $1,000 Chilean Iodine Educational Bureau Award at a meeting in Boston of the American Pharmaceutical Association, which administers the award.

Science News Letter, September 4, 1954

GENERAL SCIENCE

Kinsey Sex Studies Have Non-Rockefeller Support

➤ DR. ALFRED Kinsey of Indiana University, famed for his studies of sexual behavior in the human male and female, is "now in a position to obtain support from other sources" than the Rockefeller Foundation, Dean Rusk, president of the foundation and of the General Education Board has announced.

The foundation has made a new grant of $150,000 for a three-year period for further support of the Committee for Research in Problems of Sex of the National Research Council. It was through this committee, founded in 1921, that Dr. Kinsey originally obtained substantial support for his studies.

Science News Letter, September 4, 1954

IN SCIEN

VETERINARY MEDICINE

Humans Menace Health Of Animals in Zoos

➤ VISITORS MAY be afraid of the lions, gorillas and snakes when they visit the zoo, but they are a greater danger to the zoo animals than the animals are to the visitors, the American Veterinary Medical Association announced at its meeting in Seattle.

"Primates (apes, monkeys, etc.) have little or no resistance to tuberculosis, and, therefore, should be protected from visitors by glass," the AVMA committee on diseases of wild animals reported. The findings came from a statistical compilation of causes of deaths in various zoos.

The committee said that routine quarantine and tuberculin testing of newly acquired primates have greatly reduced the prevalence of tuberculosis in zoo collections. Deaths among captive animals of the feline species (cats, tigers, lions) which formerly resulted from panleukopenia can be prevented by inoculations, the committee reported.

Foxes, wolves, hyenas, raccoons and other wild animals susceptible to distemper are also being protected by modern vaccination.

Above all, the committee said, "improved nutritional standards have resulted in healthier animals which are less susceptible to disease."

Science News Letter, September 4, 1954

VETERINARY MEDICINE

Cortisone Helps Sick Cats, Dogs and Horses

➤ CORTISONE, FAMOUS gland hormone that has brought relief to thousands of pain-racked bed-ridden arthritis patients, can bring the same relief to dogs, horses and cats afflicted with arthritis.

A six-year-old boxer with such stiff arthritic joints it could not climb was able to run upstairs after one week of cortisone treatment, Dr. John E. Martin of the University of Pennsylvania School of Veterinary Medicine, Philadelphia, reported to the American Veterinary Medical Association meeting in Seattle.

The boxer was only one of many animals helped by cortisone in tests by Dr. Martin and his associates, Drs. Walter E. LaGrange, Frank G. Fielder, Joseph F. Skelley and Maurice W. Arnold.

Besides helping animals with arthritis, cortisone proved effective treatment for otitis externa, an ear infection of dogs, and for skin irritations in dogs and cats, wounds and infection in livestock and acute laryngitis in horses.

Science News Letter, September 4, 1954

SCIENCE FIELDS

PLANT PATHOLOGY

Antibiotics Cure Blight Of Pear and Apple Trees

➤ FRUIT TREES are being protected from the plague of fire blight by antibiotic sprays, the American Phytopathological Society meeting in Estes Park, Colo., was told by John C. Dunegan, plant pathologist of the U.S. Department of Agriculture.

In the first successful, large-scale commercial orchard trial of sprays of mixtures of Terramycin and streptomycin, 98% control of fire blight was obtained in controlled tests at Marysville, Calif.

Fire blight causes annual losses of $70,000,000 and has destroyed pear growing east of the Mississippi. It has made inroads on commercial apple production.

These antibiotics are also being used on hitherto uncured bacterial diseases of tomatoes, peppers, beans, walnuts and potatoes.

Science News Letter, September 4, 1954

PHYSIOLOGY

Heart Force Measured Using Suspension Bed

➤ A LIGHT-WEIGHT suspension bed is now ready to help doctors measure the strength of the human heart.

At present it is being used by the Air Research and Development Command, Baltimore, Md., to evaluate the effect of partial pressure suits on the output of blood from the heart.

The bed is part of a ballistocardiograph apparatus that records on a graph the force and time course of the heart beat. Each time the heart forces blood out into the body there is a shock, something like the recoil of a gun. Measuring the strength of this shock gives information about the strength of the heart. (See SNL, Aug. 28, p. 130).

The shock of ejection of blood from the heart can be seen by standing on a well balanced spring scale and watching the pointer quiver.

Numerous devices, all called ballistocardiographs, have been made to measure this heart beat force. They are said, however, to have given an untrue picture because they did not take into account shock-absorbent and spring-like characteristics of the human body.

This is where the suspension bed comes in. It is suspended so delicately that it moves with each minute rebound of the body caused by ejection of blood.

It was developed as a result of studies begun in Germany by W. W. von Wittern, a physicist, and later continued at the Wright Air Development Center's Aero Medical Laboratory in Ohio.

With the aid of Capt. Carl Honig, a physician at WADC, and WADC engineers, the special light-weight bed was developed, into which were built compensations to cancel out the spring and damping qualities of the human body. Now, with these eliminated, the ballistocardiograph produces an accurate measurement of the shock action of the blood as it is ejected from the heart.

The function of the device basically is to record on a graph the acceleration given the blood as it is ejected by the heart. This acceleration, when known, makes it possible to calculate the strength and time characteristics of heart contraction, which is important in medical research and diagnosis. This has been impossible to obtain from an electrocardiograph.

The new apparatus already has been employed clinically with very promising results.

Science News Letter, September 4, 1954

PUBLIC SAFETY

Nation's Vets Urge More Defense Against BW

➤ THE AMERICAN Veterinary Medical Association at its meeting in Seattle urged more money and preparations for defense against germ warfare.

Although lay persons, especially city dwellers, are likely to think of germ warfare, or BW, in terms of human disease epidemics, veterinarians know that the nation's food supply might be cut by BW attacks on livestock, poultry and plant crops for human and animal feeding.

The AVMA's National Emergency Advisory Committee urged that the Federal Civil Defense Administration be given sufficient funds and authority to complete its program of preparing the nation against attack. It also recommended that problems relating to livestock in this program be turned over to the U.S. Department of Agriculture, which should be equipped with the necessary veterinary services.

An inventory of the amount of biological agents on hand for emergency and of the facilities for producing them, and a study to determine the need for additional state and regional laboratories to guard against possible biological warfare were also urged.

Science News Letter, September 4, 1954

AERONAUTICS

Four Generations Of Fighters

See Front Cover

➤ TOP FIGHTERS of the past, present and future for the United States sat for their portrait recently at Nellis Air Force Base, Nev. Circling around the 110-mile-an-hour Spad of World War I (lower left) are the North American F-86 Sabre Jet, F-51 Mustang, top propeller fighter of World War II, and the new supersonic F-100, holder of the official world's speed record of 755 miles an hour (left to right above).

Science News Letter, September 4, 1954

TECHNOLOGY

Machine to Show All Of Shell Egg Quality

➤ A MACHINE will some day do the entire job of detecting the quality of eggs in the shell, Dr. A. W. Brant of the U. S. Department of Agriculture predicts.

Mechanical methods can now determine nine of 11 major factors currently considered criteria of shell egg quality. Still to be developed are mechanical methods for measuring albumen quality and for "screening" for defects.

The nine quality factors that can now be determined by machine are egg size, shape, cracks, shell strength, air-cell size, blood, *Pseudomonas,* or green, rots, shell color and yolk color.

Mechanical methods for determining these were described by Dr. Brant and K. H. Norris, agricultural engineer of the department, at the World Poultry Conference, Edinburgh, Scotland, as follows:

Egg size is determined by weighing the eggs as they are moved by a conveyor. Egg shape determination requires only the application of known principles of electronic accepting or rejecting signals received from mechanical "feelers." Crack detection is accomplished through mechanical tapping and "listening"—an adaptation of the long known art of "clacking" eggs.

Shell strength can be determined by applying known stresses to shells and accepting those undamaged by the treatment. The worth of this method lies in its ability to salvage weak-shelled eggs that would ordinarily crack during marketing and be lost. Air-cell size is reflected with a high degress of accuracy by measuring the absorption of radio-frequency energy.

Presence of blood, presence of *Pseudomonas* rots, commonly called green rots, and shell and yolk color can be detected—and classified where necessary—by appropriate use of light transmitting, reflecting or fluorescing properties of the egg.

Science News Letter, September 4, 1954

VETERINARY MEDICINE

Virus Hits Brain And Nervous System

➤ A NEW disease threat to dogs has been discovered. It is a virus disease that attacks the brain and nervous system, and is described in *Nature* (Aug. 21).

Continuous high fever and later trembling, weakness, failure of muscular coordination, disturbed reflexes and epileptic-like convulsions are the symptoms.

The disease was discovered by Dr. James H. Whittem of the University of Sydney, Australia, in a four-month-old fox terrier. This terrier died of the disease. It had had shots against distemper one month before. Study of its body led to discovery of what Dr. Whittem believes is a new virus distinct from others that cause canine encephalitis.

Science News Letter, September 4, 1954