

Life Sciences Notes

RESEARCH FUNDS

Engineering Academy Gets NIH Grant

As part of its recently intensified drive to apply basic research to medicine, the National Institutes of Health has awarded a \$250,000 grant to the National Academy of Engineering. The Academy plans to set up a special committee to study the application of advances in engineering to problems in biology and medicine. Representatives of the social and behavioral sciences will join engineers, biologists and physicians on the committee.

INSECT ENDOCRINOLOGY

Insect Hormone Found in Plants

From common weeds and ferns scientists have isolated substances that are identical to ecdysone, an insect hormone that influences growth rate. By injecting this material into insect larvae, they can manipulate development and study hormone action. So far, scientists do not know how hormones work, though there is evidence they may get into chromosomes where they activate genes.

Why plants make ecdysone, however, is something of an enigma. According to Harvard's Dr. Carroll M. Williams, ecdysone production in plants "is a very curious business." Scientists are assuming that the hormone is produced in plants to protect them against insects. But the plant hormone does not penetrate the "skin" of larvae; it must be injected to speed their development to a lethal degree. The catch, however, is that the insects—fleshflies—studied so far do not eat during the larvae stage when ecdysone is harmful; how it acts to protect the plant is a mystery, Dr. Williams reports in the September PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

Juvenile hormone, another insect growth hormone, is part of a plant's protective mechanism and one with great potential value as a biological insecticide. It is manufactured by some plants, and it does pass through insects' bodies to upset normal growth.

PESTICIDES

Hazard from Sprayed Pesticides

Household use of spray pesticides is more dangerous than is generally recognized. According to Dr. William B. Deichmann of the University of Miami, Fla., persons who frequently use spray pesticides at home have a high concentration of pesticide residues in their bodies. Organochlorine pesticides such as DDT and dieldrin are particularly dangerous.

In the past, Dr. Deichmann says, when traces of pesticides were found in fatty tissues, scientists thought they came mainly from pesticide residues in food.

Pesticide residues in the body may influence the effects of drugs and other chemicals by affecting enzyme metabolism. Enzymes metabolize or break down drugs so that the body can use them.

In studies of fat tissues taken at autopsy from 271 patients, Dr. Jack Radomski, also of Miami, found high levels of pesticide residues in persons who had used pesticides freely, whereas the opposite was true for persons who had used them infrequently, he told the AMA Congress on Occupational Health meeting in Atlanta.

TRANSFUSIONS

Warm Blood in Surgery

Blood warmed to body temperature is better than cold blood for patients requiring transfusions during surgery. Drs. Roger H. Morris and H. A. Trachtenberg of Harvard report that in a comparative study, 21 of 36 patients receiving transfusions of cold blood suffered cardiac arrest during surgery but that only one of 45 patients getting warmed blood had heart stoppage. Transfusions are given usually with blood that has been thawed but not heated.

Under anesthesia, body temperature always drops. Transfusions of cold blood push temperature even lower and reduce the heart's output of blood to tissues. Patients receiving warm blood have a slight rise in body temperature and increased heart output of blood, the researchers told the meeting of the American Society of Anesthesiologists in Las Vegas this week.

VIROLOGY

'Harmless' Virus Causes Cancer in Rat

By the time they are five years old, 90 percent of urban children have been infected with one of three types of adenovirus which cause respiratory disease. At least one of these viruses previously thought to be relatively harmless causes cancer in rats, scientists find. In the September PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, teams of researchers from Microbiological Associates, Inc. and the National Institutes of Health report that adenovirus type two produces tumors in rats. Types one and five are suspected cancer-causing agents too.

Adenovirus types one, two and five have been recovered from tonsils and adenoids of infected persons as well as from normal persons, showing the virus may be latent in large numbers of individuals where they persist for an undetermined number of years. As yet, however, no studies have been made to correlate the viruses' cancer-causing activity in rats with cancer in humans.

DIAGNOSIS

Lung Biopsy by Hollow Needle

Suspected lung diseases can be diagnosed by a simple, efficient procedure called needle aspiration biopsy. Using a fluoroscope to guide their long, hollow needle, radiologists insert the needle through the chest and into the lungs from which a small amount of tissue is extracted for study.

Reporting on a study of 126 such lung biopsies, Dr. G. Melvin Stevens and his colleagues from the Palo Alto Medical Center, Calif., told the American Roentgen Ray Society meeting in Washington that the method is considerably more satisfactory than conventional means. "Although they had been undiagnosed by conventional means, 85 percent of the malignancies and 79 percent of all lesions in our study were accurately identified by needle biopsy," he said.

Even if the first try is unsuccessful, a second or third puncture will "significantly increase the diagnostic yield," Dr. Stevens reported.