

natural sciences

PESTICIDES

Bacteria kill lice

Agriculture Research Service entomologists R. A. Hoffman and R. E. Gingrich find that preparations made from bacteria kill poultry lice. They experimented with a commercial preparation containing *Bacillus thuringiensis*. Adult lice were eliminated two weeks following a dusting treatment. Within four weeks both nymphs and adults had died.

An exotoxin produced in cultures of *B. thuringiensis* was found to be even more effective than the commercially prepared dust. Exotoxins, chemically similar to nucleotides which carry genetic information necessary for normal cell reproduction, are thought to interfere with normal growth and development of the lice.

Neither the commercial preparations nor the exotoxin produced side effects on poultry or warm-blooded animals. However, further testing is required before the bacterial agents are made available to commercial poultry producers.

ENZYMOLGY

Plants repair radiation damage

A means by which plants are able to repair radiation damage caused by far-ultraviolet energy from the sun has been described by a Dallas, Texas, scientist.

Prof. Harold Werbin of the Southwest Center for Advanced Studies has detected the presence of a photo-reactivating enzyme in higher plants which acts to reverse far-ultraviolet radiation damage to DNA by utilizing visible light energy.

PhR enzyme is a protein which is known to exist in bacteria, viruses and animal cells. It was first discovered by Prof. Claud S. Rupert of the Southwest Center.

Dr. Werbin found PhR enzyme most heavily concentrated in the plumules, or primary buds and first stem growth above ground of young bean plants.

The radiation studied induces abnormalities in the DNA of most cells, which interfere with the processes of replication of genetic material. PhR enzyme is produced within the cell in response to certain portions of the visible light spectrum. It then is able to enter into the molecular disruption of DNA, restore it to the original state and thereby re-establish normal growth and multiplication of the cell.

PALEONTOLOGY

Fossil supports drift theory

A fossil insect wing found in the Sentinel Mountains in Antarctica represents the first documented account of Paleozoic insects from the southern-most continent.

Reporting in the June 27 issue of *SCIENCE*, Paul Tasch of Wichita State University, Kansas, and Edgar F. Riek from Canberra, Australia, link their find to the generally accepted postulation of a prehistoric proximity of Australia and Antarctica.

Analysis of the veins of the wing, fossilized in an amorphous kind of rock material, reveals an unusual pattern suggestive of a family of Homopterans well represented in the Permian period of Australia. *Homopterus*

is an order of insects represented by cicadas, leafhoppers and aphids and has some 32,000 contemporary species.

A crustacean parasite reported in Tasmania earlier this year is regarded as further faunal evidence of Gondwanaland, thought to have existed more than 100 million years ago as a large land mass extending from the Antarctica to Eurasia (SN: 7/5, p. 482).

CEPHALPODS

Deadly octopus plague

The deadly blue-ringed *Octopus maculosus* has become a plague in Lake Macquarie, north of Sydney, Australia. Previously, this octopus was known to inhabit only Australia's Great Barrier Reef, where several human fatalities are attributed to its bite (SN: 6/29/68, p. 617).

Scientists believe the venom of *O. maculosus* to be one of the most toxic known. Each carries enough to kill ten men. In 1967, a soldier died within an hour of being bitten. The same species killed a skindiver after he allowed it to crawl over his arm.

The presence of *O. maculosus* in Lake Macquarie poses a real threat. Fishermen discovered the creatures by the hundreds in a region of the lake used for popular recreation.

PESTICIDES

Cooking out the DDT

Through proper preparation and cooking methods, as much as 55 percent of the DDT residues in fish taken from Lake Michigan could be removed.

Biologists at the Wisconsin Department of Natural Resources prepared meal-sized portions of Lake Michigan rainbow and brown trout by several cooking methods. Fillets, with the skin removed, were deep fried, broiled, baked and pan fried. Deep frying removed the greatest amount of DDT. Baking was the least effective at 11 percent.

MARINE BIOLOGY

Attack on starfish

International teams of marine biologists and other specialists will soon begin a five-week research trip to study the devastating population explosion of the Crown of Thorns sea-star which is rapidly destroying coral reefs throughout the Indo-Pacific region (SN: 6/15/68, p. 582).

Dr. Kenneth R. H. Read, a specialist of marine invertebrates at Boston University will lead one of the teams in exploring Kapingamarangi, an atoll in the U.S. trust territory in the Pacific. He will meet in Guam July 2 for a preliminary briefing with the project's chief scientist, Dr. R. Richard Cheshier of the University of Guam.

Organized by the Westinghouse Ocean Research Lab and funded by the U.S. Government, the project will analyze the growing population imbalance and ecologic factors contributing to it. Since 1967, the starfish have killed more than 90 percent of the living coral along Guam's coastline. The people and the atolls cannot survive without the protective and food-producing coral reefs.