ORNITHOLOGY

DDT Effect on Robins

➤ NIGHT CRAWLERS in soil beneath elm trees sprayed for Dutch elm beetles carried considerable concentrations of DDT, but did not kill robins that ate them in a University of Wisconsin experiment.

Wildlife researchers J. J. Hickey, L. B. Hunt and R. J. Sacho found that the soil under several elms on the university campus contained a little more than five parts per million DDT, and night crawlers taken from the soil showed more than 26 parts per million. They said this confirmed previous studies which indicated that worms "strain" DDT out of the soil and concentrate it in their bodies.

However, the Wisconsin researchers put robins on a 30-day diet which included DDT-laden night crawlers, and found that the captive birds were not affected. But they said that because it was not possible to reproduce the exact natural diet of the birds, it was also impossible to state for certain that birds in the field are never affected by DDT-laden worms. They noted that smaller species of earthworms may carry larger doses of insecticide and affected worms may be eaten over a longer period, pointing out that many robins have been reported killed where DDT has been used on elms.

The three men said that the substitution of methoxychlor for DDT has greatly reduced songbird mortality in Wisconsin areas where elms are sprayed.

Prof. Hickey told SCIENCE SERVICE that the experiment was only a part of a series aimed at determining how songbirds were being killed each spring. He said that the night crawlers in the reported study carried a moderate amount of DDT, and future work will be done with another species carrying a much heavier amount.

The university wildlife expert said he did not know whether future work would attempt to get at the effect of DDT on the sterility of robins. He pointed out that captive robins are used, and that robins seldom breed in captivity.

In another UW study, researchers A. G. Kais, E. B. Smalley and A. J. Riker, of the plant pathology department, found that the high relative humidity and high moisture availability in spring greatly increase the susceptibility and the length of time elm trees are particularly susceptible to Dutch elm disease. They said the trees are most vulnerable during the two to four weeks of shoot elongation.

• Science News Letter, 82:303 November 10, 1962

RADIOLOGY

Chemical Guards Simians

➤ A CHEMICAL MEANS of protecting monkeys against lethal doses of radiation has been developed at the University of Wisconsin. Since the monkey is man's nearest ancestor, this method may some day be applied to humans, the researchers believe.

At the University of Wisconsin Primate Laboratory, Prof. Julian L. Van Lancker, pathologist, and Prof. Richard C. Wolf, physiologist, of the Medical School, and Dr. Jay B. Mowbray, associate director of the laboratory, found that 80 per cent of the monkeys who receive a chemical treatment beforehand can survive doses of radiation that would otherwise kill them.

The chemicals, two sulfhydryl-containing compounds, protect the animals against 800 roentgens of radiation. (A roentgen is a radiation unit.) A dose of 400 roentgens is known to be lethal to man.

Poisonous hydrogen peroxide is produced in the tissues when a man or animal receives radiation. Sulfhydryl compounds neutralize the effect of this poison.

This technique of chemical protection might some day help save men who are subjected to high radiation doses. If the population is caught in a fallout area or if people must be sent into such areas to save others, the chemicals may shield them from death. Even space travelers might be protected chemically against effects of prolonged radiation exposure.

Before this method is used to protect man, it will be necessary to find drugs which are less toxic and easier to administer than those presently being used.

The two sulfhydryl drugs, aminoethylisothiouronium (AET) and cysteine, must now be given intravenously, accompanied by an injection of epinephrine to keep the animals' blood pressure from collapsing.

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ANTHROPOLOGY

Chemicals Found in Soil Clue to Population Size

➤ A TEAM of scientists is trying to determine if certain chemicals in the soil will tell if many or only a few people lived in the area earlier.

Dr. Sherburn F. Cook, physiologist at the University of California, Berkeley, told SCIENCE SERVICE human beings and animals living primitively on a site can later be detected from the materials they leave in the soil, such as phosphates and organic matter.

These materials give clues as to whether an area was sparsely or heavily populated although they will not yield the exact number of any population, nor give any calendar dates of when a site was inhabited.

However, high phosphate content in the soil, according to experts, shows that an area was at one time populated although no other evidence, such as tools or other artifacts, was found.

At the present time, Dr. Cook, anthropologists Dr. Robert F. Heizer and Martin A. Baumhoff, the latter of the Davis campus, are studying soil samples from a dozen known Indian sites in northern California. These soil samples are compared for chemical content with soil from a nearby area known not to have been inhabited.

From the difference in the two soil samples it can be deduced if many or only a few people lived there.

Whenever records tell how many people lived on a site this is compared to the actual findings.

The soil samples are taken from the surface of a site or from holes dug to determine the thickness of the living floor. The samples are processed by straight chemical analysis the same way samples are analyzed by the soil department for agricultural purposes.

Dr. Cook said that the soil's chemical content also can give a clue to the peoples' diet and industry in some cases. If much lime is found in the soil it may be guessed that a population ate shellfish.

The phosphate in the soil comes from bones of animals and humans, from garbage and excreta.

He said that when the sites now known are explored, locations where no habitation is known to have existed may be explored. It would be possible to grid the whole state and try to find new sites, but it might not be too practical a method, Dr. Cook added.

He said this method has been used in Sweden to great advantage where many unknown living sites were discovered.

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SPACE

Astronauts Experience Lunar Flight on Ground

See Front Cover

➤ ASTRONAUTS preparing for a flight to the moon will be able to experience many facets of lunar flight without even leaving the ground.

A realistic manned space flight simulator has been developed that is coupled to a room full of computers. Both the simulator and the projected moonscape move in proper relation to one another giving the space pilot an illusion of vehicle motion near the moon's surface.

The lunar surface seen on this week's front cover consists of a film image projected on the inside of a large sphere which surrounds the simulator.

Two additional projectors provide patterns which enable the pilot to practice rendezvous of space vehicles in lunar orbit.

Projectors are mounted on top of the man-carrying gondola in the center. The two cylindrical objects atop the elongated arms flanking the gondola are counterbalances for the moving-base simulator.

The device was developed by the Astronautics Division of Ling-Temco-Vought, Inc., Dallas, Texas.

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