medical sciences

TOXICOLOGY

DDT workers affected in U.S.S.R.

Soviet workers occupationally exposed to DDT and other organo-chlorine pesticides have shown disturbances of stomach and liver functions after 10 years of contact with the pest destroyers.

Scientists who tested 70 workers found a difference in those who had been exposed for less and more than a decade. The workers exposed less than 10 years had increased acid and pepsin secretion in the stomach, together with a slight disturbance of the liver function. But those who were exposed more than 10 years showed an inhibition of acid and pepsin secretion in the stomach; in the liver there was pronounced disturbance of protein and sugar metabolism with pigmentation, detoxication and secretion functions.

The findings are reported in the December 1968 issue of OCCUPATIONAL SAFETY AND HEALTH ABSTRACTS, published by the International Occupational Safety and Health Information Center in Geneva.

ARTHRITIS

British coal miners lose time

A British industrial survey unit which surveyed five industries where arthritis is widespread reports coal mining to be the most back-breaking of all.

Without indicating that the occupation actually causes arthritis, the Arthritis and Rheumatism Council's survey found that, for every 100 coal miners, 126.3 working days are lost annually because of the disease. This compares with 120.5 lost days by brewery workers and 110.5 lost by foundry workers.

Arthritis is Britain's most widespread disease, costing industry 30 million workdays every year at an annual cost of $300 million, says the council report.

Doctors examined 858 workers in six iron foundries, five in the Falkirk area of Scotland, and one in Cheshire. Lumbar back pain was the arthritic form most frequently found, including lumbar disk trouble.

Changes of occupation because of arthritis occurred in 64.3 percent of the iron workers.

DIAGNOSIS

Laser for malignancy studies

A powerful laser that shows promise as a new method of detecting malignant tissues is being developed at the University of York in England.

The laser has not yet been produced, but a grant from the Medical Research Council in London has been made to Dr. Deryck Goodwin, a physicist, to develop one that will radiate at three different wavelengths—in the infrared, visible and ultraviolet frequencies—all important from a medical standpoint.

Dr. Goodwin plans to collaborate with Dr. J. C. Lawrence at the council's burns unit at the Birmingham Accident Hospital to study changes that laser light can bring about in living tissues.

The reason ultraviolet light holds particular promise for medical use is partly because it is a powerful sterilizing force, and partly because of its ability to cause certain chemicals—vitamin D for example—to fluoresce. The laser thus can be used to locate the presence of malignant disease by choosing chemicals that are selectively absorbed by the tissue and which fluoresce when radiated intensively.

The multipurpose laser will be based on yttrium-aluminum-garnet treated with neofymium.

CANCER

Leukemia virus suspected in cattle

What could be an important cancer virus discovery has been reported from the National Animal Disease Laboratory of the Agricultural Research Service in Ames, Iowa. Researchers have isolated a virus from cattle with bovine lymphosarcoma.

Virus-like particles have been discovered previously in cattle, dogs and cats with leukemias (cancers of blood-forming organs) and lymphomas (malignancies of the lymphoid tissue). But none has been proved to have biologic activity.

Drs. W. A. Malmquist, M. J. Van Der Maaten and A. D. Boothe, whose research is reported in the January issue of CANCER RESEARCH, have actually reproduced the virus in cell culture and infected calves. They do not claim to have reproduced leukemia in cattle, but they say their virus resembles mouse leukemia virus.

HOLOGRAPHY

New tool for study of teeth

In future years a person may be identified by the structure of his teeth in the same way fingerprints are used.

A University of Michigan engineer has developed a technique for making depth contour holograms of teeth. The holograms are made from castings and reveal considerably more detail than visual examination.

Jerry R. Varner, research associate in the radar and optics laboratory of the Institute of Science and Technology, working with Dr. Norman Chmielewski at the University School of Dentistry, developed the technique.

BIOPHYSICS

Genes isolated and purified

Two common bacteria, *E. coli* and *Proteus mirabilis*, have shown scientists that, theoretically at least, any gene may be chemically identified. In experiments with these two bacterial species, Dr. David Kohne of the Department of Terrestrial Magnetism at the Carnegie Institution in Washington isolated and purified genes that code for the production of ribosomal RNA.

E. coli cells, Dr. Kohne found, contain about five separate clusters of genetic information that direct the production of this chemical which is essential to ribosomes—protein-making biochemical machinery. *Proteus mirabilis* cells have six such genetic clusters.

Dr. Kohne's work, reported in the Institution's Report of the President, is thought to represent the first gene isolation and purification and provides a tool for studies of cell differentiation.