

PUBLIC HEALTH

Radiation Exposure

► A DOSIMETER to keep a constant, cumulative record of any ionizing radiation to which the body is exposed over long periods has been developed by U.S. Navy scientists.

It can detect and record from one up to 300,000 roentgens, from the ionization radiation given off by a luminous watch dial to that from an atomic reactor. It is intended especially for Navy personnel working in the vicinity of atomic installations.

Dr. J. H. Schulman and his associates of the Naval Research Laboratory, Washington, described the dosimeter at a conference sponsored by the Office of Naval Research at the U.S. Naval Academy, Annapolis, Md.

At present radiation exposure is detected by a photographic film badge that must be developed in a photographic laboratory, is good for only one continuous exposure, and is more affected by low-energy than high-energy radiation. After being used once, it is thrown away.

The new dosimeter is in the form of a minute vacuum tube containing a white powder, a form of calcium fluoride, developed especially for the purpose by the Navy laboratory. Electrons emitted by atomic radiation are trapped in the crystals of this powder.

When heated, the particles emit light in the blue-green region of the spectrum. The brightness of this light is directly proportional to the amount of energy stored in the crystals. The storage time extends for at least two weeks without any appreciable leakage. It is necessary only to renew the powder to use the device over and over again.

The tube can be made sufficiently small to be implanted in a particular location to determine the radiation absorption of any

part of the body, such as bones or a particular bone, a lung, etc. It can detect as little as one-hundredth of a roentgen when used in this way.

The dosimeter is expected to have a wide applicability in medical research, and in treatment of radiation injuries.

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Mixtures Analyzed

► NAVY CHEMISTS now can detect as little as one-quadrillionth of an ounce of a chemical element in a mixture.

They can analyze the contents of less than 40-millionths of a cubic inch.

This was reported by Drs. R. E. Seebord and L. S. Birks of the Naval Research Laboratory, Washington, at a conference sponsored by the Office of Naval Research at the U. S. Naval Academy in Annapolis, Md. The technique, they said, promises to be of considerable importance in studies of metallic alloys and air-carried dust.

The extremely fine analysis is made possible by the "electron probe micro-analyzer," largely developed by the Research Laboratory technicians.

The probe must operate in a high vacuum. At the top is an "electron gun," able to shoot forward a stream of electrons at energies between 10,000 and 500,000 volts. This stream is focussed by two magnetic lenses on a spot about a four-hundred-thousandth of a square inch, or even considerably less, in area. The impact of the electrons causes the various elements in the ultra-microscopic sample to generate their characteristic X-rays, the spectrum of which has been established in other experiments.

The apparatus is equipped with an X-ray

analyzing system, which splits them into their various wavelengths. The intensity of the X-ray bundles of the various characteristic wavelengths is a measure of the amount of an element in the mixture, such as iron, chromium, magnesium and other ingredients in stainless steel.

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MEDICINE

Brain Damage Detected By Psychological Tests

► UNDETECTED BRAIN DAMAGE, which may cause behavior, language and learning problems in children of normal intelligence, may show up in psychological tests.

Dr. Raymond L. Clemmens, director of the Central Evaluation Clinic for Handicapped Children, University of Maryland School of Medicine, Baltimore, told the American Academy of Pediatrics meeting in Washington that the usual neurological examination, even when expertly performed, may not reveal causes of disorder.

Minimal brain damage, causing the brain to function less than normally, can cause deviations in behavior and learning, as well as minor hearing and seeing problems, Dr. Clemmens said.

These peculiarities may not be noticed until the late pre-school or early school years, the pediatrician reported.

"Psychological testing may yield positive evidence of organic cerebral dysfunction although the classical neurological examination is negative," he said.

Dr. Felix P. Heald, director, adolescent medicine, Children's Hospital, Washington, told the meeting that a study of body fat in adolescent patients should become a routine part of examinations.

"Changes in total body fat during adolescence are not well understood," Dr. Heald said. The fact that there are normal and important differences in body fat between adolescent boys and girls has received little emphasis.

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MEDICINE

Hormone Given Too Often

► THYROID HORMONE is prescribed too often for persons it does not benefit, a Mayo Clinic gland specialist warned family doctors.

Dr. Edward H. Rynearson of Rochester, Minn., said physicians often give thyroid to obese or tired patients to see what it will do but make little effort to evaluate its results.

Hormones from the thyroid gland are the most commonly prescribed of all hormones, Dr. Rynearson told the American Academy of General Practice meeting in Miami Beach, Fla.

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Emergencies in Labor

Emergencies in the first stages of labor were blamed for preventable maternal deaths by Dr. Denis Cavanagh of the University of Miami School of Medicine.

"Preventable maternal deaths are the greatest tragedy in the practice of medicine," Dr. Cavanagh said, pointing out that it is sometimes possible to spot early indications of a developing emergency. Convulsions or a coma are often preceded by severe headaches, visual problems, pains over the stomach and vomiting.

Tying off the two large arteries that supply blood to the pelvic region can prevent many deaths from hemorrhaging in childbirth and gynecological operations, two Chicago physicians believe. They illustrated their method of ligating the internal iliac arteries at the American Academy of General Practice meeting in Miami Beach.

Drs. Walter J. Reich and Mitchell J. Nechtow of Cook County Hospital, Chicago, said this is a method that can save the uterus of a young mother hemorrhaging in childbirth.

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DERMATOLOGY

Ringworm Epidemic Caused by Soil Infection

► AN EPIDEMIC of ringworm infection in a cucumber greenhouse in Alcester, England, has been traced to infected soil.

This is the first time, the researchers report, that an epidemic has been reported caused by *Microsporum gypseum* in which the fungus was grown from soil. This confirmed that infection was actually contracted from the soil itself.

Twenty-two persons, including children infected by parents working in the greenhouse, got ringworm as a result of the infected soil.

Dr. J. Alsop, a general practitioner in Alcester, and Dr. A. P. Prior of the South Warwickshire Hospital Group, report the findings in the British Medical Journal, April 15, 1961.

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