

**RESEARCH IS PEOPLE: A Discussion of the Recruitment, Motivation, Recognition, Rating and Evaluation of Research Personnel**—J. H. Perrine and others—*Industrial Research Institute (New York University Press)*, 69 p., illus., paper, \$4.00. Discussion of the problems related to personnel engaged in research. Proceedings of a symposium held in April, 1956.

**SCORPIONS**—Herbert L. Stahnke—*Arizona State College, Poisonous Animals Research Laboratory*, 36 p., illus., paper, 50 cents. Contrary to common belief, scorpions are not confined to subtropical and tropical climates, but in the United States they are more than a minor nuisance only in Arizona and parts of California. Visitors there are warned not to walk barefoot after dark and to shake their shoes before putting them on.

**SLOPES OF THE SEA SURFACE DEDUCED FROM PHOTOGRAPHS OF SUN GLITTER**—Charles Cox and Walter Munk—*University of California Press*, 79 p., illus., paper, \$1.75. Describing a method applied to aerial photographs taken near the Hawaiian Islands.

**SPECTROSCOPY AT RADIO AND MICROWAVE FREQUENCIES**—D. J. E. Ingram—*Philosophical Library*, 332 p., illus., \$15.00. For those who wish to apply the techniques in their own field of study.

**THERMODYNAMIC TABLES AND OTHER DATA**—R. W. Haywood, Ed.—*Cambridge University Press*, 23 p., paper, 50 cents. Useful information for physicists and engineers.

Science News Letter, November 3, 1956

#### FORENSIC MEDICINE

### Sex Identity Test To Aid Criminology

► A TEST for telling the sex of an unborn baby or for determining sex in doubtful cases can be used to help solve criminal problems.

The test depends on the presence of sex chromatin in the nucleus of female cells.

The sex chromatin persists in the cells after death. From it scientists can in certain circumstances identify the sex of small fragments of mutilated tissue, of material sticking to instruments and of human hair, Drs. A. D. Dixon and J. B. D. Torr of the University of Manchester, England, report in *Nature* (Oct. 13).

Even when a body has been buried in direct contact under two feet of soil, its sex can be identified with certainty as long as four weeks later by examination of the cell nuclei.

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#### PUBLIC HEALTH

## Test Detects Nerve Gas

**Chemicals, now part of Army Chemical Corps testing kits, used to detect very small amounts of nerve gases in water. Fish can also be used to spot Sarin and Tabun.**

► VERY SMALL AMOUNTS of lethal nerve gases in public water supplies can be rapidly detected by a test announced by Joseph Epstein of the Army Chemical Center, Md., in *Public Health Reports* (Oct.). Mr. Epstein is chief of the sanitary chemistry branch, biochemical research division, Chemical Warfare Laboratories.

The test is chemical, but one nerve gas, Tabun, can be detected by its fruity odor, and both it and another nerve gas, Sarin, can also be detected by tests with small fish.

Many chemicals that are poisonous when inhaled, such as hydrogen cyanide and cyanogen chloride, are so rapidly broken down by hydrolysis in water that it would take enormous amounts, one ton in a 10,000,000-gallon reservoir, to make the water dangerous for drinking, Mr. Epstein points out.

Nerve gases, on the other hand, would be poisonous if water containing very small concentrations were drunk.

The average man could safely drink water containing 25 parts per million of hydrogen cyanide for a week if he drank normal amounts of water daily. However, for one nerve gas, Sarin, the safety level, or "tolerance," has been set at five-tenths of a part per million for a person drinking no more than five quarts daily for three days.

Tabun, another nerve gas, is about one-fourth as poisonous as Sarin when swallowed.

The lethal amounts of either gas, however, are small enough so that contamination of water supplies is probable in case of chemical warfare.

The test Mr. Epstein and associates have developed will detect as little as one-tenth of a part per million of Sarin in water, that is, one-fifth of the concentration set as safe to drink in normal amounts for three days.

The method of testing for both Sarin and Tabun in the presence of their hydrolysis products depends on their reaction with either benzidine or o-tolidine and alkaline peroxide solutions. The test is included now in Chemical Corps water-testing kits.

The fish tests might be useful in some cases for detecting small concentrations of the gases in water. Green sunfish, fathead minnows or goldfish could be used.

The concentration of each of the gases that will kill half of each of the test fish in 10, 15 and 20 minutes has been worked out. Half of the goldfish, for example, will be killed in ten minutes by thirty-five-

hundredths part per million of Sarin in water.

Simple decontamination methods will rapidly destroy both Sarin and Tabun once detected in water supplies.

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#### GENERAL SCIENCE

### Teachers Offered Aid For Summer Research

► TEACHERS in high schools and colleges who would like to undertake research in chemistry during the summer of 1957 are being offered the chance of a grant from the National Science Foundation if requests are made by Dec. 1.

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