

## MEDICINE

# Gangrene Weapon

Heparin, anti-blood clotting chemical, may become means of preventing loss of limb after frostbite. Already has saved one patient's extremities.

► GANGRENE and loss of limbs resulting from frostbite may be prevented by heparin, anti-blood clotting chemical, three New York medical scientists report in *Science* (Aug. 10).

The scientists are Drs. Kurt Lange and Linn J. Boyd, of New York Medical College, Flower and Fifth Avenue Hospitals and the Metropolitan Research Unit, and Dr. Leo Loewe of the Jewish Hospital of Brooklyn.

One frostbite victim has already been saved by heparin from probable "more or less extensive loss of the extremities," the scientists report.

He had been picked up and sent to the hospital after lying at least 14 hours in the street when the temperature was about 18 to 20 degrees Fahrenheit. His hands were bare, his feet protected only by low shoes and thin socks.

When admitted to the hospital his feet and legs were ice-cold up to the knees and remained so for five hours. Heparin was injected into his veins for five days, the clotting time of his blood being kept between 30 and 60 minutes.

"He developed considerable blistering, especially on the hands, but completely escaped any permanent tissue loss," the scientists report.

The use of heparin on this patient followed its trial on volunteers recruited from patients being treated at the Jewish Hospital for a form of heart disease, sub-acute bacterial endocarditis. Dry ice was put on a small area of skin of the upper arm to produce the experimental frostbite. In one volunteer the dry ice was left on for 30 minutes, producing a tem-

perature considerably under 22 degrees below zero Centigrade, which is about seven degrees below zero Fahrenheit.

This, the scientists state, "is comparable to the frostbite suffered by aviators in high altitude flying, such as nose gunners after demolition of the plexi-glass protection or gunners attempting to unjam guns without glove protection."

Heparin protected the volunteers from serious injury as it did rabbits in still earlier stages of the investigation. It acts by reducing the rate at which blood clots, thus preventing the thrombosis or clot formation in blood vessels which "ultimately leads to gangrene."

The dangerous thrombosis does not occur early in frostbite. First, the scientists found, there is a clumping of red blood cells in the smaller blood vessels, resulting from a loss of plasma through the blood vessel wall.

"The red cells are stranded and silt the blood vessels, forming a sludge," the

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scientists explain.

After about 72 hours, in the rabbit studies, these stranded red cells organize into thrombi, or clots. Efforts to prevent gangrene after frostbite must obviously be started before this stage of thrombosis is reached, the scientists point out. They are now at work on experiments to find the simplest method of using heparin treatment and the longest interval between exposure and start of treatment which would still be effective.

*Science News Letter, August 18, 1945*

## PUBLIC HEALTH

# Protected Bomb Workers

► AN impressive array of scientific health watch-dogs, including two nicknamed "Sneezy" and "Pluto" but not otherwise identified, was assembled to protect the health of workers on the new atomic bomb.

The health defenses had two aims: 1. guarding the workers against injury from the peculiar hazards of the enterprise, many of which were entirely new; 2. guarding the secret of the work so vital to national military security.

It was vital that reports of the work not leak out through medical case histories of death or serious injury from radiation, it is stated by Dr. H. D. Smyth, chairman of the department of physics of Princeton University, and consultant to Manhattan District, U. S. Corps of Engineers, in the technical report released by the War Department.

"Sneezy" measured the concentration of radioactive dust in the air. "Pluto" estimated the extent to which laboratory desks and equipment were contaminated

with substances emitting alpha particles—usually the new element plutonium.

Pen-like pocket meters were carried by workers to show the daily amount of radiation to which they were exposed. Concealed counters at exit gates to certain laboratories sounded an alarm when someone passed whose clothing, skin or hair was contaminated. Contamination of laboratory coats was checked before and after laundering by instruments, called counters, which detect radiation.

To have healthy workers, the health group worked along three main lines. Prior to employment, a careful physical examination was given each applicant and re-examinations were frequent, particularly of workers exposed to radiation. Only a limited amount of exposure was permitted, a careful check being kept on workers and the plants. The effects of direct exposure of persons and animals to various types of radiation, and of swallowing or breathing the various radioactive or toxic materials with which they

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# Books of the Week

**AIR POWER FOR PEACE**—Eugene E. Wilson—*McGraw*, 184 p., illus., \$2. Value of air power and its impact upon military and economic security.

**THE BASIS OF SOVIET STRENGTH**—George B. Cressey—*McGraw*, 287 p., illus., \$3. A survey of raw materials, agriculture, climate, industry, and racial backgrounds.

**CARBON MONOXIDE: ITS HAZARDS AND THE MECHANISM OF ITS ACTION**—W. F. von Oettingen—*Supr. of Doc.*, 255 p., paper, illus., 35 cents. Public Health Bulletin No. 290.

**CHEMISTRY FOR ELECTROPLATERS**—C. B. F. Young—*Chemical Pub. Co.*, 205 p., illus., \$4.

**DIET MANUAL FOR HOME NURSING**—Marie V. Krause and Eleanor Sense—*Barrows*, 218 p., \$2. Helpful advice on what to do after the doctor has left a diet prescription.

**INDUSTRIAL OIL AND FAT PRODUCTS**—Alton E. Bailey—*Interscience*, 735 p., illus., \$10. A text on oil and fat technology.

**INTELLIGENCE AND ITS DEVIATIONS**—Mandel Sherman—*Ronald Press*, 286 p., illus., \$3.75. Psychology Series. Medical, psychological and social aspects of the subject.

**KEEP 'EM ROLLING: A Driver's Handbook**—Richard Gordon McCloskey—*Infantry Journal*, 279 p., illus., paper, 50 cents. 6th ed., revised and enlarged. A handbook for the Army driver.

**MEDICINAL PRODUCTS, UNITED STATES EQUIVALENTS AND ALTERNATIVES: Alkaloids, Biologicals, Chemicals, Glandular Products, Pharmaceutical Specialties, Vitamins**—George R. Tompkins and S. N. Samuelson—*Supr. of Doc.*, 107 p., paper, 50 cents. Industrial Series No. 11. Text in English, Spanish and Portuguese.

**PLASTICS: A Simplified Presentation of the Important Plastics Materials and Products with Tables of their Properties and the Basic Design Information Required by Engineers and Designers**—J. H. DuBois—*Am. Tech. Soc.*, 447 p., illus., \$4. 3rd ed., revised and enlarged.

**THE STORY OF BLUE CROSS: On the Road to Better Health**—Louis H. Pink—*Public Affairs Committee*, 31 p., illus., paper, 10 cents. Public Affairs Pamphlet No. 101.

*Science News Letter, August 18, 1945*

## From page 110

worked were carefully studied. Even the smoke from the stacks was investigated for dangerous gases.

The workers were shielded by airtight walls of concrete, steel or other absorbing materials from the radioactive elements. Uranium was even loaded and unloaded by remote control. High stacks were built to carry off the radioactive poisonous gases along with the acid fumes. Most of the time the carefully-protected operators had nothing to do except record the readings of various instruments.

The chief way of determining if a person was suffering from overexposure to radiation was the white blood cell count. Individuals affected were shifted to other jobs or given brief vacations; none have shown permanent ill effects, Dr. Smyth said.

"Film badges" were introduced by the health division to check on the conditions under which the people worked. Small pieces of film, worn in the identification badge, were periodically developed and examined for radiation blackening.

Pocket meters were also developed to show the extent of exposure. The first was a simple electroscope about the size

and shape of a fountain pen. The meters were electrostatically charged at the beginning of each day and read at the end of the day. The degree to which they became discharged indicated the total amount of ionizing radiation to which they and the carrier had been exposed.

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## CHEMISTRY

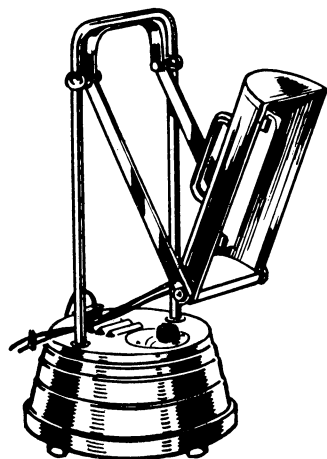
### New Method Offered For Desalting Oil

► SALT, any experienced oil man can tell you, is one of the most ruinous impurities you can have in petroleum. To get rid of salt in oil in which it is present in practically dry, microcrystalline form along with organic acids, G. S. Nees of Ft. Worth and R. B. Perkins, Jr., of Houston, have devised a process on which they have received patent 2,380,458. They introduce water containing sufficient alkali partially to neutralize the acid, and agitate the oil until it is in an emulsified state. Then it is exposed to an electric field that causes the salt-containing droplets to coalesce, making their elimination easier.

*Science News Letter, August 18, 1945*

Eight or more sprayings of *apple orchards* are now required to accomplish the results of a single spraying 40 years ago; the codling moth of today is the descendant of the worms that proved best able to resist poisoning in the past.

It is important in curing *hay* to save the leaves, as they contain more feeding value than the stems; alfalfa leaves, for example, have twice as much protein, calcium and phosphorus as the stems.



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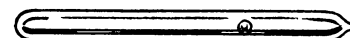
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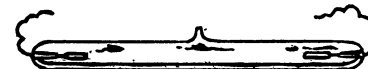
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