

MEDICINE

Atom Defense—3,000 MDs

Only a few men and women are prepared to give medical defense against the dropping of atom bombs. Army and Navy may give them special training.

➤ A THIN LINE of at most 3,000 men constitutes our first line of medical defense against atom bombs if any nation uses them against us. These 3,000 are the men and women physicians in the United States specializing in X-ray and radium work.

They are the ones who will be responsible for determining which buildings, which food, water and milk supplies and even where the air is safe from deadly doses of radioactivity dispersed by a bomb explosion.

Those of them attending the meeting of the Radiological Society of North America in Chicago were told by Dr. Stafford Warren of the University of Rochester, formerly of the Manhattan Project medical division, that next spring or summer they will hear from the Army and Navy of plans to give them special training for the job they will have in the next war, if one comes.

Radioactivity equivalent to that from several thousand pounds of radium was released by the underwater explosion at Bikini, Dr. Warren reported. He was not allowed to reveal the exact amount as that is still a military secret.

The approximate figures were frightening enough to the radiologists accustomed to using utmost care in handling radium in microgram amounts. Micrograms are millionths of a gram, a gram itself being about one-thirtieth of an ounce.

Contamination with deadly radioactivity was not a problem in the case of the bombs dropped over Japan because the deadly fission products rapidly rose to the stratosphere. Following the underwater explosion at Bikini, a black rain of radioactive material fell, and a mist of the same deadly stuff was carried for miles by the wind.

Explosion of a few atom bombs under the water of any of the Great Lakes would make uninhabitable not only Chicago, Cleveland, Buffalo and other lake cities but others miles away. All inhabitants of the cities who escaped immediate death would suffer the fate of the radium watch dial workers in the last war who died of cancer from the minute amounts of radium that got into their bones.

Detecting material contaminated with radioactivity is only one part of the vast job facing our medical defense workers, Dr. Warren pointed out. Once the material is detected, a safe way of disposing of it must be found. It cannot be dumped into the sewers because that would endanger people many miles away whose water supply comes from the rivers into which the sewers drain. And there will be tons and tons of such deadly material to dispose of if an atom bomb or two are exploded under water near only one of our harbor cities.

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ATOMIC PILE—Operators place a sample for irradiation on a stringer which will be pushed into the chain reacting pile at the Argonne National Laboratory.

The “permissible dose” of radiation now considered safe for workers is one-tenth Roentgen per eight-hour working day.

A shortening of the life span which Dr. Lorenz termed “unimportant” might “perhaps” result from this dosage, the mice studies showed. Such a dose, however, even over long periods of time, will not have cancer-causing effects except in the case of women.

Damage to the future children of persons exposed to this dosage probably will not occur. Dr. Lorenz said the present permissible dose gives a sufficiently wide margin of safety that “visible mutations will not occur.”

No visible mutations indicating damage from the radiation appeared in breeding experiments and continuous breeding of mice up to six generations under exposure. About 12,000 mice were used in this experiment.

A possible unknown factor in connection with slow neutrons that might injure atomic bomb workers was suspected during the early days of the Manhattan Project. This worry to the medical scientists responsible for health protection turned out to be unfounded, Dr. Raymond E. Zirkle of the University of Chicago reported. Practically all the damage that slow neutrons could do can be accounted for in terms of physical and biological events already known before

MEDICINE

X-Rays Endanger Women

➤ WOMEN NEED greater protection than men from radiation, whether they are atomic energy workers, or nurses and technicians helping give radium and X-ray treatments, or girls in candy factories using X-rays to check candy boxes.

Warning to this effect was given by Dr. Egon Lorenz, National Cancer Institute biophysicist, at the meeting of the Radiological Society of North America.

His warning was based on studies

with mice, made to aid in health protection of workers in atomic bomb production.

Cancer of the ovaries is the hazard faced by women working with penetrating radiations in atomic energy production or in X-ray laboratories. If their ovaries react to radiation in the same way mouse ovaries do, the working time of the women with such radiations should be reduced for a few years or the permissible dose should be decreased, Dr. Lorenz stated.

work on the atom bomb started and against which the workers were protected.

"Present or prospective workers in the new field of atomic energy should be caused no anxiety," Dr. Paul S. Hen-

shaw, of the Clinton laboratories, declared reassuringly.

The exposure to radiations required to induce cancer in animals, he reported, is far above the permissible levels allowed Manhattan Project workers.

Science News Letter, December 14, 1946

the blight to become the tomato-attacking strain.

One reason for the wholesale losses in this year's tomato crop was lack of equipment for spraying and dusting the fields with fungicides. As a desperate resort, airplane dusting was tried on a number of fields, but little success was reported.

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MEDICINE

Uranium Toxic to Body

► URANIUM poisoning of the kidney is a hazard facing atomic power workers unless suitable precautions are taken.

The chemical toxicity of uranium is a greater danger than the radiation hazard of the element itself before fission. The public has heard little of this chemical hazard but it was given full attention by the group protecting the health of the atom bomb workers, Dr. Andrew H. Dowdy, radiology professor and Manhattan department director at the University of Rochester, reports.

One of their first problems was to devise a reliable method for detecting uranium in very small quantities. One part of uranium in 10,000,000 parts of animal tissue, blood or urine can be accurately measured by the method they developed, Prof. Dowdy reported to the American Public Health Association. Its presence can be detected in such small amounts as 1/2,000,000,000 of a gram.

A gram is about a thirtieth of an ounce.

The poisonousness of uranium varies to a certain degree, though not entirely, with the solubility of the compounds. These may be found in the form of dusts or gases.

Many of the uranium compounds may be absorbed into the body through the skin, by way of the lungs or from the stomach and intestines by being swallowed.

Protection against uranium poisoning consists in completely closed systems, adequate ventilation systems to evacuate harmful agents from the atmosphere, gas masks, and special procedures for laundering the work clothing of plant personnel.

Personal hygiene and rigid medical supervision to detect small amounts of harmful substances in the excreta of personnel are important for health protection.

Science News Letter, December 14, 1946

PLANT PATHOLOGY

Fungus Ate 1946 Tomatoes

► THE SAME DEADLY fungus that caused famine in Ireland a hundred years ago by wiping out the potato crop will make canned tomatoes and tomato juice harder to find this winter at your grocery store.

An unexpected attack of the late blight of tomato sneaked up on American tomato fields this year just as they were about to produce a bumper crop of red fruits for canning and juice. It caused losses as high as nine-tenths of the potential yield in some commercial fields, and diminished the returns by half or more in eight eastern seaboard states. This is another strain of the death-dealing blight that visited Ireland a century ago.

A United States Department of Agriculture survey of the lost battle against the tomato late blight this year shows that the heaviest damage was concen-

trated in the chain of states along the Atlantic Coast from Virginia to Florida, together with Pennsylvania, Delaware and Rhode Island. In these states, more than half the potential crop was lost.

The deadly fungus, *Phytophthora infestans*, has damaged potatoes in this country as well as causing the common late blight and tuber rot in Irish potatoes. But where it attacks potatoes, it frequently does little or no damage to neighboring tomatoes. It takes seven successive generations of the potato menace for it to develop into the tomato late blight.

A generation requires a minimum of three days from the time the potato late blight has infected the tomato leaf or fruit, a lesion has been formed and spores have been produced. Favorable weather, cool wet nights and warm days, for 21 successive days are necessary for

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