MEDICINE

If Atomic War Comes . . .

Food and water will probably be safe in the event of resort to atomic weapons. Gelatin and dextran may be used as plasma substitutes.

➤ IN the generally grim picture of atomic war medical problems being drawn at the American Medical Association meeting in San Francisco, one note of reassurance was sounded.

Large scale contamination of the water supply of a major city is unlikely, and food supplies will be only partially affected by an atomic bombing. This was reported by Brig. Gen. James P. Cooney, chief of the radiological branch of the Atomic Energy Commission's Military Application Division.

"The amount of radioactive material required to contaminate the water supply of a large city is so great that this hazard seems unlikely," he stated.

Packaged or canned foods will be safe, and unprotected foods may be safe though they would need checking with radiation detection devices before use. A contaminated carcass of beef, for example, could be used by removing the outer, contaminated layers. This, Gen. Cooney explained, is because fission products from atomic bombs stick fast to anything they come in contact with but do not penetrate deeply.

Experience from the planned study and care of a fairly large number of ordinary burn patients will prove helpful for handling atomic burn patients, in the opinion of Dr. Everett Idris Evans, professor of surgery at the Medical College of Virginia.

Dr. Evans does not minimize the vast size and complexity of the problem of caring for burn patients after an atomic attack. But he does not think the type of injury would be different from ordinary burns.

Most peacetime burns, Dr. Evans pointed out, result from exposure to low temperatures over a relatively long period. Burns from hot water or steam are inflicted at temperatures ranging from 60 to 120 degrees Centigrade over periods of approximately a minute down to only a few seconds.

With a "flash burn" such as comes in atomic warfare, presumably there is higher temperature over a shorter period. One scientist, Dr. Herman E. Pearce of the University of Rochester, N. Y., has studied pigs burned by explosion of magnesium and found that these burns looked and healed somewhat differently from ordinary burns.

Two human patients burned by the accidental explosion at close range of quantities of magnesium gave Dr. Evans and associates a recent opportunity to study this kind of burn. The hands and forearms were involved. Shortly after the explosion, blisters formed on the burned fingers and palms. Closed pressure dressing methods of treatment were used for these patients. The course of recovery and healing of these two patients "was in every way similar to that noted in ordinary burns."

Prevention and treatment of burn shock, emergency dressing of the burn wound and provision of proper amounts of fluid and electrolytes such as salt are still the three important aspects of emergency management of severe burns, Dr. Evans stated.

Gelatin and dextran may have to be used as plasma substitutes in case of mass burn casualties, because there probably won't be enough blood and plasma, Dr. Evans said. Gelatin is "a safe and effective" plasma substitute but presently available solutions of it are not suitable for mass casualty use because of their high viscosity, he said.

He considers dextran effective for burn shock, but is not satisfied that there have been enough studies of possible kidney and liver damage to prove its complete safety. Dextran is a gummy substance produced from milk, beet juice and molasses by bacterial action. It has been used in Sweden as a blood and plasma substitute.

A single, one-piece large burn dressing for extensive burns that can be applied by trained lay persons in about one-sixth to one-tenth the time required for the ordinary pressure dressing has been developed, and will probably be the answer to the burn dressing problem. A simple, glove-like dressing for hand burns is now being worked on. This will be needed because flash burns chiefly affect the hands and face. Most face burns heal best without dressings, Dr. Evans said.

Adequate trial of penicillin or other antibiotics in a salve to be applied to the burns should be made, Dr. Evans declared. If such a salve proved effective it would save a tremendous amount of time, personnel and equipment in treatment of mass burn casualties.

Blood transfusions, the blue dye called toluidine blue, aureomycin and other antibiotics, oxygen and vein feedings of plasma, sugar, minerals and vitamins are measures that may be useful in treating the radiation damage of atom bombs, Dr. J. Garrott Allen of the University of Chicago reported.

The frequent transfusions of blood and doses of toluidine blue would be helpful but not completely successful in controlling the hemorrhage from atomic bomb or other radiation damage, he said.

Aureomycin is "distinctly beneficial to persons receiving borderline lethal exposures" of radiation because of its effect in fighting infection.

The oxygen treatment would be for the anemia and the vein feeding to overcome malnutrition due to appetite loss, vomiting and diarrhea of late stages of irradiation sickness.

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ENGINEERING

Ion Gauge Measures Low Air Pressure

➤ AN electronic pressure-gauge, for use in measuring the tiny air pressure remaining in a near-vacuum chamber, is claimed to be 200 times more sensitive than any other ever produced.

The gauge was revealed in Pittsburgh by Dr. Daniel Alpert under whose supervision it was developed by Robert T. Bayard, both of Westinghouse Electric Corporation. It is called an "ion gauge" and is able to detect the presence of air in a vacuum where only one air molecule remains out of every 10,000 billion originally present.

To measure the pressure in a vacuum, the gauge is sealed to the system. When electric power is turned on, electrons are released from the gauge. When these collide with air molecules in their path, they knock off positively charged particles called ions. The number of ions formed in this way is an accurate measure of the pressure inside the vacuum system.

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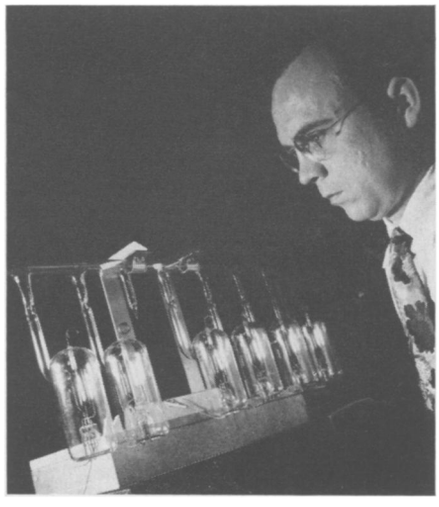

PLENTY OF NOTHING—The electronic gauges which are adept at measuring almost nothing, developed by Robert T. Bayard, can detect air in a vacuum where only one air molecule remains out of every 10,000 billion originally present. This device will aid in exploring regions of ultra-low pressures.