

MEDICINE

Blood, Plasma, Rubber Armor Anti-Shock Weapons in Raids

Practical Hints for Defense-Minded Physicians
Provided in Report to American Heart Association

RUBBER armor for protection of persons exposed to air raids, use of whole blood or blood plasma for shock due to air raid or similar injuries, and a new rule for first aiders on treating shock are practical hints for defense-minded physicians and laymen in the report of Dr. Alfred Blalock, Vanderbilt University, to the American Heart Association in Cleveland.

The rubber armor idea comes from British experiments, quoted Dr. Blalock. "The explosion of a bomb," he pointed out, "may cause death even though the individual is not struck by shrapnel or debris."

In such cases, the British workers found, the most outstanding injury is hemorrhage from both lungs. The pressure wave of the blast from high explosives bruises the lungs by its impact on the body wall. This can be prevented or diminished if "the body is clothed in a suitable material which is able to take up and disperse the pressure wave."

Thick layers of rubber, the British found, protected the animals in their experiments from the blast injury.

Recent discovery that brain concussion results not from the intensity of the blow on the head but from sudden acceleration resulting from the blow may help to explain the effects of blast, Dr. Blalock suggested. If the head is kept from moving when the blow is struck, he said, the phenomenon fails to occur.

Local loss of blood and fluid, at the injured spot, are, in Dr. Blalock's opin-

ion, the "most important and most frequently encountered of the initiating factors which result in a decline of the blood volume and in traumatic (injury) shock," although he believes other factors may cause shock in some cases.

The fluid loss theory is the most hopeful from the standpoint of treatment, and recent air raid experiences in Bristol, England, show the effectiveness of treating shock according to this theory. Dr. Blalock quoted the case report of a patient badly wounded and in desperate condition of shock who was given three pints of blood plasma and four pints of whole blood within a few hours. The wound was cleaned up and within 24 hours his general condition was "good" and blood pressure about normal.

"The single most important therapeutic procedure in the treatment of traumatic shock consists of the intravenous introduction of whole blood or plasma or serum," Dr. Blalock declared.

For the first aider, there is a warning hint not to use hot water bottles or other means to raise the temperature of the extremities of persons in shock. The hands and feet are cold at least in part, he pointed out, because some of their blood has been diverted to more vital structures, such as the brain, heart and adrenal glands. The internal temperature may not be depressed. The condition of patients in shock may become worse, Dr. Blalock warned, if intensive efforts are made to elevate the skin temperature.

Science News Letter, June 7, 1941

● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by U. S. Coast and Geodetic Survey of the following preliminary epicenter:

Friday, May 16, 9:24.7 p.m., EST

In Queen Charlotte, New Hebrides region, 1500 miles west of Samoa. Latitude, 12.9 degrees south. Longitude, 166 degrees east.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see SNL, Feb. 22.

MEDICINE

Discovery Links Diet With Blood Cancer

AFUNDAMENTAL discovery showing a relation between diet and cancer of the blood, or leukemia in mice and also between diet and arteriosclerosis, or hardening of the arteries, in the same laboratory animals was announced, at the meeting of the National Advisory Cancer Council, by Dr. Carl Voegtlin, director of the National Cancer Institute.

No direct evidence that cancer or leukemia in humans is due to diet has yet been obtained, Dr. Voegtlin cautioned, but he stated that the discovery "indicates that diet has a lot to do with experimental cancer."

The discovery was made by Dr. G. B. Mider and Dr. Julius White, of the National Cancer Institute. They found that when a cancer-causing chemical, methylcholanthrene, was painted on the skin of mice fed a diet rich in sulfur containing amino acids, the animals developed leukemia, the malignant and fatal disease often called cancer of the blood. When, however, the cancer-causing chemical was painted on the skins of mice fed a diet low in sulfur containing amino acids, the animals de-

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veloped hardening of the arteries, instead of leukemia.

"This is the first time," Dr. Voegtlin said, "that I ever heard of an agent producing two diseases by changing the diet."

More and more information on the relation of diet to experimental cancer in laboratory animals is coming from cancer research laboratories, he pointed out. In time, this may lead to information about the human disease. It might be that the agents which produce tumors in humans may be influenced by certain substances in the diet.

At present, however, there is no need for concern or fear that diet produces cancer in humans.

Science News Letter, June 7, 1941

MEDICINE

Blood Pressure Vaccination New Method of Attack

SCIENCE'S latest attack on high blood pressure, is a sort of vaccination, it was revealed to the Federation of American Societies for Experimental Biology.

Both reduction of high blood pressure and prevention of it in dogs has been accomplished by injections of a substance called renin from hog kidneys, Dr. George E. Wakerlin, Dr. B. Gomberg and Dr. C. A. Johnson, of the University of Illinois College of Medicine, reported.

Trial on human patients will not be made for at least another year.

The vaccination-like feature of this method of reducing and preventing experimental high blood pressure in dogs is that renin from dog kidneys does not have this effect, but on the contrary raises the blood pressure. According to one theory, the body normally has a mechanism for counteracting the blood pressure raising effect of its own renin. When this gets out of order, high blood pressure results. If this theory is correct, the hog renin reduces blood pressure in dogs by stimulating the dog's own anti-renin, somewhat as vaccinations against infectious disease stimulate production of the body's own germ-fighters.

The high blood pressure in the dogs resulted from obstructing the flow of blood through the kidneys. Hog renin not only reduced this high blood pressure, but when given before the blood to the kidneys was cut off, prevented it.

Rabbit renin will be tried next, to see whether it will have the same effect on dogs as hog renin. The renin apparently only achieves its blood pressure reducing effect when it comes from a different species of animals than that being treated.

Science News Letter, June 7, 1941



Defiers of the Dunes

SOME trees refuse to die even when they are buried!

Many thousands of people, for many years, have seen and wondered at the half-buried trees in the sand dunes around the southern and southeastern shores of Lake Michigan—the highest dunes in the world. Some species, like oaks, give up very soon when the steady winds drift the sand deep around their trunks. Others, however, like cottonwoods and lindens, are not to be discouraged. Their branches keep on living, and throw out new roots near the new ground level established by the rising dunes. The studies of the late Prof. H. C. Cowles, of the University of Chicago, on these trees have become a classic of botany.

More recently one of Prof. Cowles' former students, Prof. Herman Kurz of Florida State College for Women at Tallahassee, has made a similar study on dunes in the South, on the Florida west coast, where the trees buried are magnolias, palmettos and other typically Southern species.

"Grain by grain the sand piles up," reports Prof. Kurz. "First the single trunk is buried; next, the primary limbs; finally the smaller branches. With only the top above the sand and the base buried below, what was once a tree becomes a wide expansive shrub."

In some cases the original roots appear to be still functioning. In many other instances, however, enormously long adventitious roots are put forth from the stems higher up, to replace the dead ones lost in the depths of the sand. In this way

new shoot and root systems are literally stacked one upon the other.

"Magnolia, scrub live-oak and saw-palmetto keep their tops above invading sand by stem elongation and production of roots therefrom," Prof. Kurz continues. "Stems laid bare by winds reveal that magnolia stacks new plants upon its old frame; that both magnolia and live-oak may multiply into new individuals by the separation of formerly connected stems in the sand below. On old stable dunes where the soil is rich and moist and the atmospheric conditions mild, magnolias may develop from seed and, barring catastrophe by man or fire, develop into normal trees and magnolia forests."

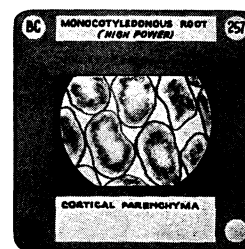
When dunes sweep into a growth of slash pine, the end result looks the same. Pine "bushes" projecting from the sand are really the uncovered tops of trees buried below. However, in this case no new roots are formed higher up on the trunks; the old roots, though buried deep, are not discouraged and keep on functioning.


Science News Letter, June 7, 1941

A manuscript in the Library of Congress, if authentic, is evidence that five of Columbus' ships reached South America in 1494—four years earlier than that mainland is generally supposed to have been found by Spaniards.

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