

MEDICINE

Blood Against Atom Bomb

One million pints of blood a week would be necessary in the event of atomic attack. This must be stockpiled now for emergency use and continually renewed.

By JANE STAFFORD

See Front Cover

► Rx: BLOOD, 1,000,000 pints. To be taken every week for first three weeks in event of atom bomb attack.

That prescription has already been written by the nation's leading authorities on medical defense.

There is only one blood bank in the world where that 1,000,000-pint-a-week prescription can be filled. That blood bank is circulating in the veins and arteries of the living American public.

But in the event of an atomic attack, there would not be time to find and bleed one million persons, test and process the blood, and transport it to the scene of the disaster. Some of the blood must be stockpiled, and the machinery for getting more in a hurry must be set up and ready to go into action at a moment's notice. And since blood cannot be kept longer than three weeks, the stockpile must be continually renewed.

National Blood Program

The answer to the problem, medical and health defense authorities believe, lies in the hands of the American Red Cross. During the war, this organization collected 13,326,242 pints of blood for our armed forces. Last year, when the nation's blood stockpile for ordinary peacetime needs was growing dangerously low, the Red Cross responded to widespread appeals to set up a national blood program. Now, with the world a-jitter over the possibility of atomic war, such a national blood program seems more essential than ever.

The reason why blood, millions of pints of it, would be needed in case of atomic attack was presented at a conference of clinical consultants to the national blood program by Dr. George M. Lyon, chief of the radioisotope section in the Veterans Administration. Before heading up this section of the VA, Dr. Lyon served as safety adviser to the U. S. Navy and Manhattan Engineering District. He was on hand for the first

atomic bomb test in New Mexico and later went to Bikini as safety adviser and senior representative of the Surgeon General, U. S. Navy.

"A study of the Hiroshima incident provides us with information relative to the unique aspects of atomic explosives," Dr. Lyon told the blood program consultants. "This has been further supplemented by information gained at Bikini."

At Hiroshima there were 80,000 deaths. Medical authorities estimate that 20,000 of these lives could have been saved if there had been available adequate facilities for providing medical relief.

Whole blood in sufficient amounts is the one most important medicine for preventing loss of life in this group, Dr. Lyon declared.

After an atomic attack, Dr. Lyon pointed out, there will be shock, burns from flash and flame, injuries from direct blast, flying debris and collapsing struc-

tures. On top of these injuries will be those due to the ionizing radiation from the bomb itself.

This ionizing radiation damages bone marrow and other blood-forming organs. The victims suffer a special kind of anemia in which they lack both red and white blood cells and hemoglobin. Hemoglobin is the chemical that gives blood its red color and, more important, carries oxygen to all parts of the body. The small blood vessels, called capillaries, grow fragile and leaky, so that blood may be lost through their walls. The membranes that line nose, throat, mouth, and other body openings are damaged and they are likely to bleed. Finally, because the normal clotting mechanism of the blood is damaged, the bleeding does not stop readily, as it does when a healthy person cuts his finger. Resistance to germ infection is also greatly reduced.

Whole Blood

"For patients presenting such a picture whole blood is particularly to be desired and other measures are particularly ineffective," Dr. Lyon declared.

Next in order for the victims of atomic



BLOOD NEEDS IN PEACE AND WAR—Atomic bomb survivors, like these night club fire victims, would need quantities of blood to help them recover from burns and radiation injury to their blood-forming organs.



EMERGENCY SHIPMENTS—Mercy flights bring blood to victims when disaster strikes in peace.

attack would be serum albumin, a material obtained from blood. This would be used for victims suffering severe burns from other than ionizing radiation.

Blood plasma would be valuable if stockpiles of serum albumin were not big enough to treat all the burn victims.

From the Hiroshima incident working figures for the amount of blood needed have been developed. If all the 80,000 fatal casualties there could have been treated, they would have needed one to three transfusions on the average. The requirements for all casualties, Dr. Lyon reported, would have been from 150,000 to 200,000 pints of whole blood or its equivalent in serum albumin.

Blood Needs

But military authorities state that plans must be made on the basis of at least 15 incidents equal to the Hiroshima one occurring within one week. And the need for whole blood will not be limited to the first few days but will continue for the first three weeks. Conservative estimates place the total amount of blood needed, therefore, at 15 x 200,000, or 3,000,000 pints. Fortunately this tremendous amount would not all be needed the first week. The requirements would be 1,000,000 the first week and similar amounts during the second and third weeks.

Plans for filling that 3,000,000-pint

prescription for blood are part of the National Blood Program. But that prescription is not the only reason for the National Blood Program. The daily peacetime medical needs of the nation call for 3,700,000 pints of blood per year. This is the blood needed to save the lives of accident victims, mothers in childbirth, as shown on the cover of this week's SCIENCE NEWS LETTER, patients undergoing surgical operations, others weakened and made anemic by serious illness.

Many cities have blood banks with enough blood to take care of ordinary peacetime needs. But these banks could not meet the needs of a national emergency or disaster. And many communities are without any blood banks. So are most of the rural areas of the nation.

The Red Cross National Blood Program is set up to fill these needs as rapidly as possible. Blood centers are being set up in cities. Bloodmobiles will operate from these centers to rural areas. You and I and all our fellow-Americans will go to the centers, if we live in cities, and meet the bloodmobile if we live in the country, to make our donations of blood, just as we did in the war.

Doctors and nurses will be in charge of the bleeding. The blood will be "processed" at the blood centers. That means it will be typed and tested and treated

with preservative and refrigerated under scrupulous scientific supervision. Some will be kept in the centers. Some will go back, via the bloodmobiles, to the small towns and rural hospital or health centers. Every 18 days, the whole blood will be called in and replaced by fresh blood. The old blood will be separated into plasma and red cells. Some of this will be stored for use in cases where plasma can be used as satisfactorily as whole blood. Surpluses will be divided into the various fractions which yield measles-stopping globulin, blood-clotting materials for surgical use and other substances which can help heal the sick.

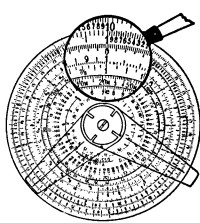
The blood and the various blood products will be free. Hospitals and physicians may charge a reasonable fee for giving the transfusion or one of the blood products, but there will be no charge for the blood or product itself.

Blood Centers

Setting up the blood centers, getting the equipment and organizing the staff of doctors, nurses and technicians all takes time. So there may not be a National Blood Program center in your community right now. And if your community already has one or more blood banks able to meet the needs, these banks will probably continue to operate while the Red Cross sets up a center in a region now without any blood banks. Or, as has already taken place in some regions, the local banks may decide to come into the National Blood Program and operate through it.

First of the regional centers of the National Blood Program was opened in Rochester, N. Y., in January of this year. Since then regional centers have been opened in Wichita, Kansas; Atlanta, Georgia; Tucson, Arizona; Washington, D. C., Los Angeles, San Jose and Stockton, California. In addition, the entire

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Do You Know?

Cowbirds lay their eggs in nests of other birds for hatching by them.

Among most *hoofed animals* the young are able to follow the parent within a few hours of birth.

What is commonly called the 17-year locust is actually the 17-year *cicada*, a close cousin of the dog-day cicada or harvest-fly.

World *population* has increased about 10% in the past decade.

A United States hatchery is shipping by plane about 1,000 baby *chicks* to Venezuela each week.

state of Massachusetts has come into the program.

But this is not just a program. It is not just a plan for meeting national disaster that may never come. It is vital action going on right now. Sick babies, old people, middle aged people in small towns are now being helped to health by gifts of blood from folks in other towns, large and small. Within three to five years, you and your neighbors, in cities or hamlets, will be giving and receiving blood for life and health.

First of three articles on blood.

Science News Letter, July 3, 1948

VETERINARY MEDICINE

New Disease Killing Dogs In U. S., Britain, Sweden

➤ DOGS in this country are suffering from a new and highly fatal disease, the American Veterinary Medical Association reported. Noticeable symptoms are fever, sore throat, coughing, loss of appetite, weakness and finally collapse and death. Sometimes there are also convulsions and other nervous manifestations. Postmortem examinations have shown severe damage to the liver.

Cause seems to be a virus, distinct from the virus that produces canine distemper. The disease seems to be identical with one that has killed 190 dogs in Sweden and "suggestively similar" to a malady that has caused the death of many dogs in Britain. Swedish veterinarians call it "hepatitis contagiosa canis."

Science News Letter, July 3, 1948

ANTHROPOLOGY

Geniuses' Lives Not Brief

Majority of acknowledged geniuses were not doomed to early deaths. In certain other traits, they conform to popular beliefs concerning them.

➤ GENIUSES don't die young, as a rule. Famous cases of brilliant lights snuffed out by early death, like those of Shelley, Keats, Schiller, Heine and Raphael, are exceptions, accounting for only one-half of one per cent of the world's acknowledged geniuses, declares Dr. R. E. G. Armattee, director of the Lomeshie Research Centre for Anthropology and Race Biology in Londonderry, Ireland.

Offsetting the early deaths of these young geniuses are the long lives of many other noted men, he points out. Classic instances are Michelangelo, Da Vinci, Corneille, Goethe and Newton; among the great who have died more recently at advanced ages were H. G. Wells and Max Planck. Still living, full of years and honors, are Shaw, Sibelius and Einstein.

Geniuses share the widespread but erroneous belief that their lives will be brief, Dr. Armattee found. Many of

them, convinced that they were doomed to die young, have labored with demonic energy, with the result that they produced their best work before 35.

Dr. Armattee was induced to make his study by a naturalist friend of his, who wanted to know why geniuses are short-lived. Four years of investigation, into the lives of 12,000 generally acknowledged geniuses, convinced him that the assumption was false.

Modern men who rate high in the arts and sciences have a life expectancy of 65 years, which is far greater than the average for geniuses of past generations.

In certain other traits, however, Dr. Armattee found geniuses to conform more closely to popular beliefs concerning them. Among these are a high degree of self-esteem, an infinite capacity for taking pains, and an indifference to the accepted code of sex morals.

Science News Letter, July 3, 1948

ASTRONOMY

Sun's Role in Cosmic Rays

➤ GIANT explosions associated with sunspots on the suns of the universe may be giving birth to the powerful cosmic rays which bombard our earth from outer space.

A natural atom-smasher, a kind of magnetic accelerator, is operating in the neighborhood of sunspots, Dr. Manuel Sandoval Vallarta of Mexico City suggested at a symposium on cosmic rays at the California Institute of Technology in Pasadena. Such an accelerator mechanism on our own sun may be producing a part of the cosmic radiation on the earth. Acceleration near sunspots on other stars might account for the rest of the cosmic rays, Dr. Vallarta pointed out.

This proposed solution for the mystery of the origin of the potent rays was presented to the National Academy of Sciences last year by Scott E. Forbush of the Carnegie Institution of Washington. He reported that Carnegie Institution records showed an increase in cosmic radiation at times of particularly high

activity on the sun. Dr. Vallarta has been working with Carnegie Institution scientists on a theory to explain how the suns of the universe could manufacture cosmic rays.

A new, yet-to-be-discovered cosmic ray particle was forecast at the symposium by a famous French scientist, Dr. Pierre Auger. Dr. Auger described the particle as a lightweight meson. It will have a weight of only three to ten times that of an electron, the tiny, negatively charged bit of atoms.

Known types of mesons, first found in cosmic rays and recently produced artificially for the first time at the University of California, have been assigned measured or estimated weights ranging from 200 to 900 times that of the electron.

The symposium, bringing together outstanding scientists from many countries, is being held in honor of 80-year old Dr. Robert Andrews Millikan, retired head of Cal Tech and a pioneer in the study of cosmic rays.

Science News Letter, July 3, 1948