MEDICINE

New Treatment for Burns

➤ BLOOD FROM persons who have recovered from serious burns may be "banked" some day to save other burn victims who are fighting for their lives.

A new treatment was given to seven children badly burned Dec. 1, 1958, in the fire at Our Lady of the Angels School, a large parochial grade school in Chicago. Six of the children showed improvement. One of them had been described earlier as "hopeless." The seventh, and most severely burned child, died.

Trial of the technique was suggested by Dr. Sol Roy Rosenthal, director of the Institute for Tuberculosis Research at the University of Illinois College of Medicine. Dr. Rosenthal, currently working under contract to the U. S. Navy, has been studying human blood.

He suggested that some of the most severely burned children be given blood donated by persons who had recently recovered from bad burns. This was done, and "dramatic changes" were observed overnight, the Office of Naval Research told SCIENCE SERVICE.

The child who died had Rh negative blood and received only 150 milliliters of "convalescent burn plasma," as it is called. The other children received generally more than this. The blood was gathered in the Washington and Chicago areas on an emergency basis for use in the trial.

Dr. Rosenthal believes the rationale behind this treatment to be that a severe burn results in a release of toxic, or poisonous, material into the blood stream. This toxic material is injurious to the remote tissues of the body. The badly burned person produces antibodies slowly, often too slowly to combat the effects of these toxins on the blood and blood vessels.

Such a person may die from the toxic effects of the burn, whether or not he is severely burned. To combat this threat to the satisfactory progress of the patient, blood taken from other persons who have recovered after being badly burned is thought to be useful because it contains high amounts of antibodies against the toxins.

The treated children responded so well to the blood transfusion that Dr. Rosenthal believes blood banks should be set up to process and store blood donated by persons who have recovered from bad burns. He urges research to proceeed as quickly as possible to confirm his theories, and speculates that it may be possible to prepare a vaccine from burn toxins that could be administered to generate natural immunity, reports *Naval Research* (April).

Science News Letter, May 9, 1959

PHYSIOLOGY

X-Rays Shorten Life Span

➤ RADIATION can be a major factor in causing premature aging.

Studies of fruit flies exposed to X-irradiation indicate that it is the chromosome loss produced by the X-rays that causes aging. Actually, this is evidence for a genetic basis for shortening of an animal's life span, a biologist reported to the National Academy of Sciences meeting.

While short-term effects of exposure to X-rays, such as cell destruction in the blood-forming tissues, can be traced directly back to breaks in the chromosomes' genetic material caused by radiation, it had not previously been shown that such breaks were involved in premature aging.

Dr. Irwin I. Oster of the Institute for Cancer Research, Philadelphia, explained that the fruit fly's unusual chromosome make-up gave scientists a tool for studying how radiation diminishes the average life span.

The male fly's cells contain one X-chromosome while the female's cells contain two X-chromosomes in addition to the three pairs of chromosomes which both sexes have. It had been reported earlier that male larvae are more susceptible to killing by X-rays than are female fruit fly larvae.

By using special breeding techniques, Dr. Oster said, it is now possible to introduce different type of chromosomes into the cells of otherwise normal flies. These chromosomes are more easily broken by radiation than normal ones. Following X-ray exposure, more larvae containing the "susceptible" chromosomes had their lives shortened than did the other larvae. Severely affected individuals died just before hatching from the pupa case. Dr. Oster said.

In addition, "the easily-breakable-chromosome-containing survivors were much weaker than their normal chromosome-containing counterparts," he pointed out. There is no relationship to the fly's sex except that the chromosome numbers of males and females differ.

In this study, Dr. Oster said, the chromosome difference simply provided a tool to demonstrate the effects of loss of chromosomes on the longevity of living things in general. It would be mistaken to conclude that males in other species are more easily damaged by radiation than females until it is known that loss of a partner-less chromosome—the X-chromosome in the male—is as harmful as it is for fruit flies.

Science News Letter, May 9, 1959

TECHNOLOGY

Bureau Studies Power Line Vibrations

➤ THE NATIONAL Bureau of Standards is working out ways to reduce damaging wind-caused vibrations of telephone and power lines.

Bureau researchers have found polyethylene sleeves on the wires are effective in damping out some of the vibration. Further study is expected to produce optimum sleeve sizes for various types and sizes of conductors.

Another result of the work is the redetermination of the Strouhal number, a basic constant that allows vibrations to be predicted.

These studies were started with the introduction of long-span high-tension lines by the Rural Electrification Administration, especially in the "wind belt" areas from the Dakotas to Texas and New Mexico. Vibration has caused these lines to wear at the ties and armor rods, and they frequently have broken, particularly in cold weather.

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METEOROLOGY

Weathermen Study Lightning Control

➤ THIS SUMMER, in the northern Rocky Mountains, weathermen will study what makes thunderstorms grow. The object is to find ways to control lightning.

The study, part of the long-term Project Skyfire, a cooperative study of lightning-caused forest fires, will consist of seeding and photographing clouds, recording electric currents and counting lightning strokes.

It will be conducted by the U. S. Weather Bureau and the U. S. Forest Service.

The northern Rocky Mountain area was chosen because rain released there from a high cloud may evaporate in the dry air and never reach the ground. It is the resulting "dry lightning" storms that cause so much fire damage to commercial forests and public playgrounds.

Eastern thunderstorms, on the other hand, are usually accompanied by heavy rains that put out any forest fires caused by the lightning.

Lightning causes about 7,500 forest fires every year in the United States at a cost of more than $25,000,000. In the northern Rocky Mountain states 70% of all fires are caused by lightning. Besides timber losses, watersheds are damaged, and national forests and parks are made unusable.

This summer silver iodide will be distributed from airplanes directly into cloud bases. This may "snip potential storms off at the top" or keep them from building up.

Scientists will also examine thunderheads by radar and place electric field meters on the ground in the usual cloud paths. Experimental models of a simple lightning-stroke counter will be tested too.

The research may yield some means of decreasing lightning or of increasing the amount of rain reaching the ground.

"So far," said DeVer Colson, Weather Bureau meteorologist, "we feel that under certain conditions we can modify the form of a cloud and its electric field, but we are not sure yet whether we have actually averted lightning."

The scientists will take steps to make certain they do not increase lightning from a given storm or create trouble elsewhere by upsetting the atmospheric balance.

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