MEDICINE

Cancer Tied to Bombing

The bombings of Hiroshima and Nagasaki in 1945 played a role in causing leukemia in persons exposed to the radiation—By Faye Marley

➤ THE LATEST REPORT on leukemia in Hiroshima and Nagasaki, covering the period from 1946-1964, upholds the unquestioned role of the atomic bombings of 1945 in the cause of this cancer of the blood-forming organs. But statisticians cannot state exactly how many cases might have occurred in the natural course of events.

During January 1946 through December 1964, 1,098 cases of leukemia were recorded by the Atomic Bomb Casualty Commission, but 139 of them included unsatisfactory and incomplete information. Of 959 "definite and probable" cases, 562 occurred in Hiroshima and 397 in Nagasaki. Of these 738 occurred in persons born before the bombings took place and 221 in those born afterwards.

The Commission has now studied 326 cases of leukemia occurring in survivors located up to 6.2 miles, or 10,000 meters, from the point (hypocenter) at which the bombs fell. Reported in the New England Journal of Medicine, 274:1095, 1966, were two groupings—160 leukemia patients in the close area of 1,500 meters, less than one mile, and 166 patients from 1,501 to 10,000 meters from the hypocenter.

Leukemia developed excessively in persons exposed within less than a mile of the hypocenter. Those up to 29 years old at the time of the bombings developed chronic granulocytic leukemia in the period 1946-1955 at a faster rate than those who were farther away from radiation.

Other factors besides radiation that could cause leukemia are genetic predisposition including mongolism, genetic or environmental effects of family and geographic "clustering," and viruses. An excess of thyroid cancer in females exposed within 1,500 meters of the hypocenter adds a discriminatory sex effect.

The ABCC is a cooperative research agency of the U.S. National Academy of Sciences-National Research Council and the Japanese National Institute of Health of the Ministry of Health and Welfare. Funds are provided by the U.S. Atomic Energy Commission, the Japanese National Institute of Health and the U.S. Public Health Service.

Reporting the study in the New England Journal of Medicine were Dr. O. Joseph Bizzozero Jr., surgeon of the U.S. Public Health Service Division of Radiological Health assigned to the ABCC; Dr. Kenneth G. Johnson, ABCC chief of medicine and associate professor at Yale University School of Medicine; and Dr. Antonio Ciocco, professor of biostatistics, University of Pittsburgh School of Medicine.

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Space-General

'MOONWALKER' — Anthony Thormin drives the walking chair by simply putting the "stick shift" in one of four positions to go forward, backward, left or right.

TECHNOLOGY

'Moonwalker' Helps Crippled Children

➤ AMPUTEE AND PARAPLEGIC children may be able to keep up with an adult walking at a leisurely two miles an hour. An eight-legged "walking chair" based on a discarded "Moonwalker" originally proposed for lunar exploration, is being evaluated by the Child Amputee Prosthetics Project of the University of California's Rehabilitation Center at Los Angeles.

Still called a Moonwalker because of its appeal to children, the chair can move forward or backward, climb or descend a curb, and travel over dirt, grass, low shrubs and loose sand.

Its eight legs operate in pairs, one of each supporting the weight while the other is in motion.

Powered by two one-third horsepower motors and four motorcycle batteries, the Moonwalker was developed by engineers at Space-General Corporation, El Monte, Calif.

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GEOLOGY

New Phosphate Deposits Found off N. C. Coast

➤ LARGE DEPOSITS of phosphate rock, valuable in the manufacture of fertilizer, detergents and baking soda, have been discovered off the coast of North Carolina.

The find was made by Dr. Orrin H. Pilkey, marine geologist at Duke University, Durham, N.C. The deposits, covering at least 20 square miles, lie about 30 miles off the coast between Cape Fear and Cape Lookout.

Dr. Pilkey said the value of the discovery depends on the thickness of the phosphate layer, not yet determined. The layer is believed to have been deposited from 15 million to 30 million years ago.

Dr. Pilkey's research on the origin of carbonate portions of the continental shelf off central North Carolina and Georgia is supported by the National Science Foundation.

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PHYSICS

1965 USSR Nuclear Test Doubled Sr-90 Fallout

➤ VENTING of a Russian underground nuclear test on Jan. 15, 1965, "significantly increased" the amount of strontium 90 falling on Japan.

Venting, or release of radioactive material, can take place when, for example, a nuclear test is designed to produce a crater.

When a nuclear device is exploded underground, it creates a "bubble" of molten material which cools and leaves a cavity. By carefully adjusting the depth at which the device is placed, the cavity can be so located that the earth and rock above fall downward to form a crater.

Although the explosion is not exposed to the air, it does create at its peak a sort of dome, formed by the earth bulging upward, which then falls back into place.

Escaping radioactive material from the Russian test could have resulted from temporary breaks in the dome, which would allow incandescent gases and perhaps solid particles to escape.

Two Japanese chemists, Takeshi Sotobayashi and Seitaro Koyama of Niigata University, Niigata, reported in Science, 152:1059, 1966, that measurements of rainfall from Jan. 21 to Jan. 31, 1965, showed substantial increase in Sr-90 following the test on Jan. 15.

In addition, the scientists revealed that Sr-90 fallout from the first Chinese atomic bomb, a surface-level explosion, was "several times heavier" over each square mile per unit of fission energy than that from previous atmospheric test series by other countries.

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