

PUBLIC HEALTH

Man May Survive Fallout

► IF MAN SURVIVES the initial blasts, fires and other dangers of nuclear war, his long-term survival, even in countries directly attacked, seems possible.

This is the conclusion of Columbia University scientists engaged in a world-wide study being made of the concentration of radioactive fallout in the bone structure of man. Since the start of the study in 1953, about 9,000 samples of human bone have been obtained. The program is supported by the Division of Biology and Medicine of the U. S. Atomic Energy Commission.

The scientists say in the fourth report of "Strontium-90 in Man" that human bones would probably not collect as much strontium-90 as had been estimated earlier. Strontium-90 is an isotope produced and released into the atmosphere by nuclear explosions.

The isotope's ability to kill when collected in quantity in the human body has been one of the major reasons to fear for the long-term survival of man after a nuclear attack.

Publishing their report in *Science*, 132: 448, 1960, the scientists say also that the quantity of strontium-90 in the stratosphere from bomb tests is much less than previously estimated.

Dr. J. Laurence Kulp, director of the geochemistry section of Columbia's Lamont Geological Observatory in Palisades, N. Y.; Dr. Arthur R. Schulert, research associate at the Observatory; and Miss Elizabeth J. Hodges, research assistant at Lamont, prepared the report.

The study concludes that "if 3,000 megatons of fission (an explosive force equal to 3,000 million tons of TNT) were detonated in the Northern Hemisphere, it is probable that, away from the areas of local and immediate fallout, the long-term strontium-90 level in the diet would reach about 180 micro microcuries per gram of calcium, or an equilibrium bone level of 45 micro microcuries.

"Thus, under these extreme conditions, the contamination of non-combatant areas

would raise the average level of strontium-90 in the population to the point at which the bone dose from natural sources would be approximately doubled (0.60 micro microcuries).

"Food grown in the area of intermediate fallout—a large portion of the United States—would yield an equilibrium of strontium-90 in the diet in the range of 40 to 4,000 micro microcuries per gram of calcium.

"These concentrations would produce bone levels up to the maximum permissible concentration for industrial workers even if no special measures were taken.

"Thus, long-term survival of large populations, even in the countries under attack, would appear to be feasible, provided the serious problem of short-term survival could be solved."

The scientists report that, from bomb tests already conducted, "the strontium-90 yet to be deposited is a small fraction of that already down, and the total surface deposit will reach a maximum in 1961."

• *Science News Letter*, 78:142 August 27, 1960

MEDICINE

Body's Disease Fighters May Cause Fatal Disease

► MORE AND MORE EVIDENCE is piling up to support the theory that the body's infection-fighting mechanism itself may be able to cause diseases, an editorial in the *Journal of the American Medical Association*, Aug. 13, 1960, asserts.

Normally, the antibody-producing cells serve as front-line defense against disease, but abnormal cells may be able to cause a chronic and sometimes fatal disorder known as Red Wolf Disease, or systemic lupus erythematosus (SLE).

Quoting Dr. William Dameshek, professor of medicine, Tufts University School of Medicine, Boston, the editorial says the evidence "seems convincing" and may mark "the beginning of a new era" in defining

the causes of other diseases, such as rheumatoid arthritis, Addison's disease and chronic pancreatitis.

The symptoms of Red Wolf Disease include fever, arthritis, joint pain and skin rash. Although it is more common among women than men, it is not a rare condition.

"We believe," Dr. Dameshek says, "there is sufficient evidence at hand to call SLE a complex autoimmune disorder with irregular involvement of various constituents of the blood and small blood vessels, thus resulting in a highly protean (changeable) disorder.

"Involvement at the beginning may be limited to one tissue, one organ or one blood cell constituent, with progressively greater involvement as time goes on. Finally, there is a widespread generalized disease with death ordinarily due to severe renal (kidney) disease."

Dr. Dameshek says the reasons groups of abnormal antibody-producing cells develop are "obscure."

• *Science News Letter*, 78:142 August 27, 1960

PHYSICS

New Tool Developed for Thermonuclear Research

► A TOOL expected to be of great value in research aimed at eventual control of the hydrogen bomb's fusion reactions for peaceful power has been developed by three University of Illinois scientists.

They report in the British scientific journal, *Nature*, 187:584, 1960, that the so-called spin energy resonance techniques may be "of value as a diagnostic tool in high-energy plasma research." Plasma is the name given to a gas that has nearly equal numbers of ions and electrons but is electrically neutral as a whole.

Making a plasma react through fusion is being tried in controlled thermonuclear research. Drs. T. C. Marshall, R. A. Kawcyn and L. Goldstein developed the nuclear and electron spin resonance method to detect shifts in a magnetic field. A magnetic field is believed to be the best "container" for extremely hot plasma undergoing fusion.

• *Science News Letter*, 78:142 August 27, 1960

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