

AS YOU READ these words, the morning may be bright and sunny, the landscape as seen from your window peaceful, and the sounds around you—the trill of a bird, the bark of a dog, the laughter of children—part of the everyday scene.

Yet at this moment, you and your family are menaced by the most treacherous and implacable foe mankind has ever faced. No other enemy in history—no aggressor nation or disease—has ever posed such a peril to us as does the invisible menace of radiation now being introduced to this planet by medical, military, and industrial sources.

In my lifetime as a physician, I have never known any major health hazard to be so surrounded by confusion, apathy, misrepresentation, and dangerous procrastination as this one. In my opinion, the world has refused to face a scourge which can maim and destroy far larger numbers of people than any disease or nuclear war.

Because we can neither see, feel, taste, nor smell radiation; because we unknowingly may eat, drink, or breathe it; because we may be years older before the irreversible effects it causes within our bodies harm us—or even long-since dead before these harmful genetic effects are passed along to our children—because of this we have not sensed the degree of menace radiation presents. But before any more time passes, the public's attention *must* be focused on this grave danger.

Paradoxically, radiation is not new to man. Like all forms of life on this planet, the human species has evolved in an atmosphere which continually bombards its body with invisible rays. This natural radiation comes from the air, rocks, soil and even from the cosmic rays which constantly rain down on earth from outer space. Even our own bodies normally contain radioactive materials which have been present since the beginning of time.

But in 1895 mankind for the first time began to add to this natural radiation with the invention of the X-ray machine. Since then, radiation's menace to humans has steadily increased, and increased enormously with the recent advent of the nuclear age with its atom bombs and nuclear reactors.

Man-made radiation from nuclear tests now pervades the atmosphere and soil of our planet. As the uses of various products of nuclear fission inevitably increase in the years to come, a much heavier load of radioactive material will be added to our environment.

Some of the radioactive substances will emit dangerous radiation for a few hours; others will go on spraying surrounding areas with radiation for hundreds, even thousands, of years.

How does radiation affect heredity?

High energy rays are capable of penetrating human tissues and bones, whether they come from X-ray machines, radioactive materials in rocks and soil, or cosmic rays from outer space.

The prime target for radiation damage is the microscopically sized human cell. In the

laboratory, small doses of radiation rays can be seen to cause visible breaks in the chromosomes of human cells grown in test tubes. Such changes cause mutations. And once a mutation has occurred, unless it is fatal to the cell, it will become a part of the hereditary material that the cell passes on to its successors.

Recently, a Colorado biochemist, Dr. T. T. Puck, who developed a method for growing colonies of human cells in the laboratory, traced the effects of radiation on a particular human cell and its successors. When a cell is injured by radiation, he found, it continues to perform its proper functions until the time comes for it to reproduce itself. But then, at the first division or the next one, the cell is no longer able to divide normally.

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