

# The Nuclear Sword of Damocles

By Lenore Marshall

A SHORT while ago another nuclear accident occurred. An underground weapons test, supposedly self-contained, produced a radioactive cloud that traveled at least 450 miles, with fallout at its site that affected hundreds of people who had to be evacuated and decontaminated, and for whom ultimate damage cannot yet be ascertained.

During the years since Hiroshima—the short years previous to this newest atomic accident (which was the 17th underground test that has leaked, according to Atomic Energy Commission announcements)—we have recognized to our sorrow and terror that our entire planet has joined the wilderness in its struggle for survival; not only the wilderness but the whole world is in peril. Nothing, no matter how remote, is immune. Great tracts of fertile land, plant life and animal life in forests, plains, oceans, rivers, and lakes, have been joined by human life in the danger of extinction. The greatest threat to the continuance of animal, vegetable, and human existence comes from the nuclear sword of Damocles that hangs over our heads.

By great good luck, despite the minor accidents, there has not yet been a massive release. However, since sources of nuclear contamination are proliferating, the chances of a major disaster are also increasing; such a disaster could devastate a number of states and cause thousands more cases of cancer and genetic defects and deaths. There is a fundamental difference between radioactive pollutants and other pollutants such as DDT, NTA, oil, and automobile exhaust. All the latter are stable compounds, and there are possibilities of eliminating them or of rendering them harmless. But radioactive atoms are deranged atoms whose high-energy emissions from the nucleus cannot be stopped or, presto, made innocent by a lawsuit or a wave of a wand; they taper off at their own rate—240,000 years for radioactive

plutonium 239, which happens to be a basic element in both the military and peaceful application of nuclear energy.

Cockroaches are said to withstand the effects of radiation quite nicely. Other animals, wild or otherwise, fare worse.

Since there is no way to turn off radioactivity, nuclear pollution is in a class by itself. Therefore, to whatever extent is possible, we must prevent any more of it from occurring.

We are already bearing the legacy of some earlier activities—radium from uranium mine wastes eroding into the Colorado and into other rivers, plutonium 238 in the atmosphere from a misfired navigational satellite (1964), and fallout from the atmospheric nuclear bomb tests. They are all, of course, still with us. For instance some of the radioactive cesium 137 will still be around 300 years from now and radioactive carbon 14 another 57,000 years. The strontium 90 fallout created by atmospheric tests was enough to work its way into the bones of almost every child tested for it in the Northern Hemisphere, according to Anthony Smith (*The Body*). Since all radiation exposure is assumed to be harmful, whether it comes from bombs, medical X-rays, nuclear power plants, rocks, or the stars, what counts is the amount we accumulate and which we can still limit. The only hopeful thing to be said about this peril is that it is still possible to control it, keeping doses of radiation to safer permissible levels.

The biggest radioactive burial ground in the world lies in Nevada only 75 miles from Las Vegas, and consists of 250 square miles of contaminated desert surface pocketed with deadly plutonium 239. Under the surface, as well, lie hundreds of pools of radioactivity; some radioactive tritium is contained in the waters beneath the surface. This no-man's-land is mentioned in a paragraph within a report of the Atomic Energy Commission to the President's Council on Environmental Quality. If an earthquake or some other disaster, man-made or natural,

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were to strike this land, there is no knowing how vast would be the damage.

This is only one of many instances of pollutant destruction related to A.E.C. blasts and experiments. There is no way of estimating how much radioactivity is being released to the environment from all sources; however, what is known is that the amount of radioactivity and the damage from it are adding up. Since 1957 the A.E.C. to date has conducted over 200 tests in Nevada, plus two in Mississippi and two in Alaska. During 1970, through October 14, the United States detonated 23 underground bombs, the Russians six. An estimated 33 per cent of the underground explosions vent some radioactivity into the air and, probably, gases seep to the surface eventually from all of them. Regarding Alaska, an A.E.C. contractor has calculated that the MILROW test in October 1969 could start discharging radioactive hydrogen into the ocean in six years and continue discharging for the subsequent 66 years. In 1966 ecologist G. G. Polykarpov warned that the oceans already have all the radioactivity that they can tolerate and that fish embryos show damage. Nonetheless new underground tests, the largest we have ever held, are being planned for Alaska, and in an active earthquake zone.

From sources other than nuclear bomb tests the danger and the damage proliferate. There are about 20 experimental nuclear power plants in operation in the United States now; the A.E.C. expects to license 450 to 650 more in the next 30 years. Each plant accumulates in one year as much long-lived radioactivity as in several hundred Hiroshima bombs. Construction and active preparations are presently occurring in 28 states and in Puerto Rico. Peaceful "Plowshare" underground bomb tests, proposed by the hundreds, would create contaminated gas, oil, and possibly copper for nationwide distribution. Pilot projects have been blasted in Arizona and Colorado; Wyoming is probably next. Nine "Plowshare" excavation bomb experiments for building canals and harbors have produced contaminants; a recent one produced radioactive air as far from the Nevada test site as Boise, Idaho. Thus the "peaceful atom," a kindly-sounding benefactor, may require a bit more assessment.

Radioactive material is being more and more widely used in industry, raising problems of disposal. In Florida, the country's first commercial nuclear sewage disposal plant is using radioactive cobalt. Storage of radioactive wastes is a mammoth problem. Altogether, there are over 100 million gallons of high-level radioactive waste stored in tanks in South Carolina, Idaho, Washington, and New York states. Storage tanks tend to disintegrate under the

intense radioactive bombardment and heat; so far, 60,000 gallons have leaked from such tanks into the ground. The A.E.C. is working on techniques for solidifying the waste, but the process is so expensive that the A.E.C. hopes to dump millions of gallons of *unsolidified* waste into underground excavations along the Savannah River. At the A.E.C.'s Hanford installation, there are open "dribble trenches" for so-called "low level" wastes. In March 1970, ducks drinking from these trenches were found to be so radioactive that eating them would give a person five times the annual "permissible" dose of radiation. And oysters at the mouth of the Columbia River are reconcentrating radioactive zinc released far upstream at Hanford. In New Mexico, radioactive waste is pumped into deep wells, stored, and allowed to seep into desert soil. Monitoring has sometimes been casual. At one commercial plant in West Valley, New York, after official denials of hazard, a group of citizens found radioactive levels in a creek to be 30,000 to 100,000 times higher than levels permitted by the A.E.C. During a test of the nuclear space rockets in Nevada in 1965, levels of air contamination on U. S. highway 95 between Reno and Las Vegas rose temporarily to 200,000 times their normal level.

When plutonium 239 falls on the test site in Nevada, the land is fenced off and posted. The problem is how to confine that plutonium to that fenced-off place, against wind and oxidation, for the next 240,000 years—when it will no longer be able to hurt us. Near Denver, Colorado, local scientists have proven that significant amounts of plutonium have escaped from the Rocky Flats plant where warheads are manufactured. After denying the possibility, the A.E.C. has confirmed the findings.

A recent medical report in the *Journal of the American Medical Association* states that among the young people of Rongelap Atoll in the Pacific who were accidentally exposed to fallout during the 1954 tests, the majority have developed thyroid abnormalities, many of them malignant.

Today's environmental crisis proves that much modern technology now actually functions to the detriment of society. It has become disoriented from society. Science and scientists are not omniscient; in fact many scientists are attached to special interests in government and industry. As Doctors John W. Gofman and Arthur R. Tamplin \* say of science and technology: "They offer credibility to the proposed ABM system and thereby offer thinkability to a nuclear war; they create the illusion that if we really

\* "A Proposal to Establish an Adversary System of Scientific Inquiry," in *Environmental Action Bulletin*, January 2, 1971.

get into trouble with our environment, science and technology will be able to rescue us; and they divert the scientific manpower away from more meaningful programs." Thus, within the fact that there are seismic, tidal wave, and radioactive hazards from nuclear weapons-testing underground, there lies the greater danger that weapons-testing is part of a general framework of thinking that war is thinkable.

Doctors Gofman and Tamplin continue: "Science in itself is not bad or good; that is why it has no ethics. Without application, science is meaningless. But most of science in this country is meant to be applied, and hence the government, hand in glove with industry, rules over science by controlling the purse strings. . . . Quite obviously we need a mechanism for effectively criticizing present day science and technology, and for articulating a new set of priorities that would lead science and technology to fulfilling the needs of society. . . . They must offer alternative programs that represent routes to the solution of the needs of society." Doctors Gofman and Tamplin propose an Adversary Center to consist of a group of distinguished scientists who would criticize any new application of science until it has been impartially scrutinized. In terms of the human condition, an Adversary Center would assist technology, and would base its rationale on the continuance of life of the human species. It would take up arms against the concept of the obliteration of man and of his beautiful earth, his wilderness and his cities, and of the civilization he has built.

It is argued that the country's increased need for electrical power necessitates nuclear plants and that defense needs necessitate further weapons development. As for the latter, since we already have means for overkill beyond that of any other country, and since the continuance of the arms race leads to a deadly tit-for-tat psychology that can only end in catastrophe, the sooner a moratorium on development and accumulation of nuclear weapons is called the safer we shall be. If the world aims at universal disarmament, perhaps elephants and seals and eagles and sparrows and pine trees and fish and roses and children will survive. A moratorium on the burgeoning nuclear reactor business must similarly be called.

What are some of the alternatives? Without nuclear energy would there be brown-outs? Would a million sparklers around advertisements be cut in

half? Would the electric carving knife not cut? The answer is that we *can* obtain the power we need. The lights will not go out. Even if this were the case, one must ask which is more important: more lights or life itself? Moreover *there are safer alternatives* to nuclear electricity. There is the further development of fossil fuel, which may be better utilized and made "clean" by means of new processes. There should be investigation of magnetohydrodynamics (MHD) and work on fusion and geothermal energies. Promising work is being done to develop the use of solar energy; it is said that the sun's heat falling on Death Valley alone could solve a multitude of power needs. Certainly, much electric energy that is wasted today could be conserved.

The public is entitled to demand information from the government and to say, Stop! to nuclear danger until plans are submitted for impartial scrutiny. There are a number of citizen groups which are fighting for safety from nuclear pollution. Two new committees have recently been launched, one to act as a clearing house and action center to bring about safeguards, the other as an information and educational center. They are, respectively, Task Force Against Nuclear Pollution and Citizens Committee for Nuclear Responsibility. They may be reached through Suite 1200, 111 East 58th Street, New York.

The marvel of our mass society, of our intricate civilization, of our establishments and vast impersonal structures, is that the individual can always do something. The individual has always performed miracles, and he still can. He can save his wilderness, he can save animal and vegetable life, he can save himself. He can understand his predicament, and if he has the will to do so he can take steps to save what he loves; one man—one woman—can start to build a bridge whereon others may walk. Will individuals tackle this new proliferating danger before it is too late?

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MRS. MARSHALL is a poet, novelist, and short story writer. Her new book is a collection of poems, *Latest Will*, published by Norton. She was active in the effort to halt atmospheric atom bomb tests, and is now Co-Chairman of Task Force Against Nuclear Pollution, and of the Citizens Committee for Nuclear Responsibility. She was a co-founder of SANE, and is a member of its Board of Directors.

