

PREFACE

The question of the consequences of exposure of human beings to low levels of ionizing radiation has attracted more general attention and given rise to more widespread public debate than any other question in which the scientific facts are so essential but so few. While equally troublesome questions have been raised recently concerning, for example, the possible effects of smoking, fluoridation of water, or nonradioactive air contamination, none of these has had the worldwide scope that radioactive fallout has; none has had more than very minor implications in the sphere of international relations.

Another important factor is that the profound underlying anxiety of all people about the influence of technological progress on the nature of any future global war—something too obvious to be ignored but too frightening to be squarely faced—has found itself a more emotionally tangible focus in the fallout hazard, which can be considered in a less personal, more statistical way. It is evident that a considerable number of scientific authorities speaking on the subject of low-level irradiation have assumed also the role of political sages; and that many of the divergent scientific evaluations are colored by convictions in the somewhat more taboo area of the threat of worldwide military destruction. Only a relatively few, such as H. J. Muller, have had the courage and insight to appreciate this authoritative dichotomy. It might further be noted that where factual science and public policy cross, there is a tendency to allow only complete agreement or total disagreement.

An unfortunate consequence of all this has been that a bewildered and insecure public, noting that such contrary opinions are held by scientists in possession of the same facts, feels that science has somehow failed. Science has incurred some of the mistrust that habitually belongs to the politics and statesmanship

in which it has become involved. The public can hardly be aware that a scientific opinion is no better than the body of knowledge on which it rests; or that in the increasing breadth and specialization of science, no one can speak as a "scientist" on all subjects or in more than a few areas.

While the discussions of radiation effects at low levels have worn the guise of scientific debate, they have, consequently, deeply involved other groups, and a scientific appraisal of the whole question must take into account the problems faced by these others. This symposium was accordingly set up in two parts: the first dealing with the scientific background and the second with related problems, those of the press, of public health authorities, statesmen, and philosophers interested in the true role of science.

In the first half of the symposium, the physical introduction was given by Dr. Robert A. Dudley, who considered the nature and amount of radiation to which man is normally exposed and that which he receives from various man-made sources including fallout. He was followed by Dr. Lester Machta, who detailed the meteorological conditions determining the geographical distribution of fallout, and how the fallout observations have clarified some problems in meteorology. The final papers, by Dr. Earl L. Green and the editor of this volume, dealt with genetic and somatic effects of small amounts of radiation on man, indicating the limits of our knowledge.

In the afternoon session, three papers were devoted to the problems encountered in three practical areas as a result of the general problem: Dr. David Price discussed the responsibilities of public health authorities and Mr. Arthur J. Snider those of the press; and the Hon. Chet Holifield, whose chairmanship of the Congressional Subcommittee on this subject resulted in a superb exposition of the problem and a remarkable integration of scientific and political viewpoints, spoke from the standpoint of legal and political implications. In the final paper Dr. C. West Churchman, who has had careers both in pure philosophy and in prac-

tical science, essayed to make a summation in terms of the basic meaning and trends of scientific thought and organization.

The symposium may be considered to suffer somewhat from the fact that the participants were allowed considerable freedom in developing their subjects. Only in the case of Dr. Machta's contribution did the title require a discussion of the fallout question in relation to basic meteorology; yet many of the other speakers chose to reflect their preoccupation with this aspect of the general topic. Reading between the lines, however, it is quite clear that a balance between different amounts and sources of human irradiation has been struck.

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