ogy, and perhaps they are less subject to the vagaries of procedure and experimenter; but, as with so many studies of human interaction, the results do not seem to generalize much beyond the specific situations studied. We do not learn significant principles of individual behavior that permit us to predict the results for other simple social situations, even for other games. Some mathematical theories are suggested, but no careful attempt is made to test them and no clear understanding emerges of the mechanisms at work. The concluding chapter highlights the resulting quandary. A variety of similar studies is suggested, each as interesting as the next, and it is not difficult to amplify the list 10- or 100-fold; but, lacking a plausible criterion of scientific significance, where does this end? Detailed studies of specific social situations may be justified when the situations are, themselves, of applied interest; however, when they are at best highly abstracted analogues, some guide other than curiosity is needed. Perhaps it is unfair to fault this book for failing to confront this widespread dilemma of research strategy, especially since the book is good within the terms of the problem formulated. Nonetheless, the question of which interaction studies are worth performing is rapidly becoming acute and, in my opinion, a high degree of scientific acumen is now needed to choose among the myriad possibilities.

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AIBS-AEC Series on Radiation Biology

Although a vast amount of data has accumulated during the past 50 years on the response of mammals to whole-body irradiation and the sensitivity of the target organs that are responsible for the "so-called" lethality syndromes, most of the quantitative information on these key organ systems dates from the adaptation of specific metabolic precursors to biological research, of which one of the most important was tritiated thymidine. Of equal importance to the problem of cell population kinetics and the changes produced by irradiation has been the development and refinement of cell-culture techniques. Scientists at Brookhaven National Laboratory have been in the forefront of the development and utilization of these techniques, and the authors of the volume reviewed here, **Mammalian Radiation Lethality: A Disturbance in Cellular Kinetics** (Academic Press, New York, 1965. 356 pp., $9.50), Victor P. Bond, Theodore M. Fliedner, and John O. Archambeau, were active participants in many of these experiments—in particular, in the investigations involving hemopoiesis.

In this book they deal with three syndromes—hemopoietic, gastrointestinal (G.I.), and central nervous system (C.N.S.)—but because of the amount and nature of the data they are concerned primarily with the hemopoietic and the G.I. syndromes. Cells of the C.N.S. are highly specialized, nonproliferative cells; therefore, the C.N.S. syndrome occurs (in most animals) after a high dose and is followed by death within a few hours. In treating the hemopoietic and G.I. syndromes, the authors review and bring into proper perspective most of the information gathered on these two cellular systems for both normal cell kinetics and the changes produced by whole-body irradiation. Death following both syndromes results from the depletion of mature functional cells, but it is the inactivation or destruction of the precursor or stem cells that brings about death. In neither case, bone marrow or intestinal crypt injury, can the stem cells be positively identified, and the current models used to explain the role of the stem cell in regeneration following irradiation are not completely satisfactory. Although the dose-survival curves of these cells resemble those of cells grown in culture, the *in situ* environment and the intricate feedback mechanisms of the whole animal make it somewhat tenuous, if not misleading, to extrapolate from one set of data to the other.

A discussion of animal data precedes the discussion of the effects of whole-body radiation on man. The sources of this information were (i) accidents in industry or laboratories, (ii) the Pacific testing-ground accidents involving exposure to fallout radiations, (iii) the experience at Hiroshima and Nagasaki, and (iv) medical exposure of patients to whole-body (or near whole-body) radiation for therapy of cancer or for other reasons. Although direct extrapolation from animal data to man (or for that matter, from one animal species to another) may be misleading, the general sequence of events in both the bone marrow and G.I. syndromes is essentially the same in all mammals. It is also clear that death is not the result of damage to a single organ system but that in the lethal range of the syndrome (hemopoietic, G.I., or C.N.S.) death is associated with widespread damage to many organs. Death follows a terminal period that involves hemorrhage, infection, and fluid imbalance.

In general, the authors' treatment of the data shows that the primary consequences leading to the progressive signs and symptoms resulting in death, in days or weeks, to mammals (man or laboratory animals) exposed to large doses of whole-body radiation have their basis *in a disturbance of normal cellular kinetics.*

This book will be of great value to the advanced radiobioligist as a reference source for use in research and in teaching. It will also provide the clinician with possible guidelines for use in treating persons accidently exposed to whole-body radiation, in treating cancer, and in making preparation for organ transplants. Heretofore, this information has been widely scattered throughout medical and biological journals and was not available in this form.

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Flora of Turkey

A published flora often dominates our understanding of the vascular plants of its area long after the steady accretion of knowledge has rendered it obsolete. Nowhere has this been more clearly demonstrated than in the Near East, the source of many of our finest garden plants and a number of our most noxious weeds. More than three-quarters of a century has elapsed since the death of the illustrious Swiss botanist Edmond Boissier and the completion of his six-volume *Flora Orientalis* (1867 to 1888). Only in recent years has this classic begun to be superseded by other major works concerned with the plants of this huge region: *Flora U.R.S.S.* (1934–1964) for its northern and northeastern margins; *Flora Iranica* (1963–) for its eastern