having done so in one, certainly each reader would have his list of "favorite contributors" to suggest for the other volumes.

In "A Note about Savings" it was gratifying to note that the authors refrained from the once-popular pastime of one (hundred million dollar)-upmanship resulting from applications of radioisotopes and radiation in industry and agriculture.

Can any two authors really compress into one volume a subject as extensive as *Research, U. S. A.*? The preface to this book immediately set this reader's mind at rest when it limited the contents to basic, nuclear research since 1958, principally physics and chemistry, emphasizing Argonne National Laboratory, and other AEC National Labs. The text then makes clear the qualifications of the authors to deal with this subject. Each section depicts the problems, the challenges and the promise for further exciting discoveries in the various fields.

As a stimulus to college and high school (or junior high) students considering science for a career this book is recommended. For the nonscientist the book will provide some understanding of research and the researcher.

Another audience for this volume is the government body (or bodies) charged with the research, nuclear energy, or science policies and programs for the Major Tools of research. It is made abundantly clear that research tools such as a reactor are relatively useless without an extensive investment in supporting, peripheral equipment.

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About the Reviewer: Ashton J. O'Donnell, presently the manager of research and planning of the Bechtel Corporation's Scientific Development Department, has served his entire professional career in nuclear energy. Long association with the US Atomic Energy Commission and, more recently, with the International Atomic Energy Agency as scientific advisor to the US Mission has provided the background for a review spanning a wide variety of topics. He received his technical training at Whitman College, Walla Walla, Washington. From 1954 to 1961 he was associated with Stanford Research Institute in nuclear energy general research and development planning.

Low Level Radioactive Wastes; Their Handling, Treatment and Disposal. By Conrad P. Straub, Bureau of Technical Information, USAEC, available from Superintendent of Documents, Washington, D. C. (1964). 430 pp, $1.50.

Conrad Straub has been active in the field of waste management for many years, and has been involved in the development of some of the most widely used methods for decontamination of low-level wastes. He has also played an active part in the propagation and coordination of knowledge in the international field. As chairman of a subcommittee of the International Commission on Radiological Protection, which has prepared a report on the management of wastes from hospitals and laboratories, he has had close contact with people from many countries with a wide variety of problems and points of view. Dr. Straub is therefore well qualified to write an authoritative book that will be a most valuable addition to the very small number of works on this subject. The field is covered in great detail, and to achieve this the author has received the able cooperation of R. D. Coleman, B. Kahn, A. S. Goldin, M. I. Golman, H. L. Krieger, and A. G. Friend.

The book is well organized into fifteen chapters. The temptation to begin with a short course in radioactivity has been wisely resisted. Instead we have a brief statement of the 'philosophy' of waste management and a description of the standards governing the guides set up by the US and international bodies concerned with radiation safety. This is followed by a chapter on the sources, quantities and composition of low-level wastes, which would have been even more useful if it had not been restricted almost entirely to US establishments. Apart from a short chapter on Public Health implications, the remainder of the book is concerned with the technique of waste management.

A book of this kind must be judged from several points of view. It will be used as a reference source by people working in the field, as a text book by undergraduates, as a guide to the literature by research workers, and as an aid by administrators and reporters who want a quick and accurate collection of facts and a readable description of processes. Perhaps the most important group, however, are the newly recruited members of the staffs of nuclear energy establishments, who are so often compelled to 'learn on the job' because there are few books in plain English on their subject. This can be a serious problem, particularly in countries where the professionally qualified people are so overburdened with work that they can spare little time on instruction of junior staff. The clarity of exposition, the great store of information and the extensive bibliography to be found in this book are just what is needed in such a situation.

Straub has a pleasant style and writes with the minimum of jargon. The bibliographies, conveniently placed at the ends of chapters, are comprehensive up to 1961. The removal of radioactivity from solution by a "municipal-type" water-treatment process, flocculation, precipitation and ion exchange are described in great detail. This section—about one-third of the book—gives a good picture of the research effort that went into the development of the processes presently in use, but it may be a little difficult for the uninitiated to distinguish the practically successful techniques from the interesting research results. The value of the excellent chapter on ground disposal would have been enhanced if it had been more clearly stated that the ground behaves as a 'container,' because radionuclides usually move so much more slowly than the ground water that there is an opportunity for significant radioactive decay.

This is such a good book that it will get heavy use, and it deserves something better than paper covers. The extensive errata sheet suggests hasty revision, and it is to be hoped that the second edition will be more permanently bound. The printing and paper are excellent, and the numerous illustrations are well reproduced, adding greatly to the appearance of the work.

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About the Reviewer: Colin A. Mawson is head of the Environmental Research Branch of Atomic Energy of Canada Limited and, in that position, is responsible for the

direction of Canada's radioactive waste management program and for monitoring the environment in the vicinity of the Chalk River Nuclear Laboratories for radioactivity. He has served on various panels and committees of the International Atomic Energy Agency and the International Committee on Radiological Protection and is a member of the Canadian Reactor Safety Advisory Committee.

The reviewer's academic training is in the interesting combination of chemistry and physiology, all at the Victoria University of Manchester, which led him into biochemical research in England prior to his coming to Canada in 1949.

He, too, is a contributor, with high stature, to the literature of this field as the author of a recently published book—Management of Radioactive Wastes.