

to those involved in the teaching or practice of radiation protection.

*Arthur B. Chilton has been involved in shielding and related radiation protection for many years, the last six of which have been spent teaching and doing research in the Nuclear Engineering Program of the University of Illinois. Chairman of the Shielding and Dosimetry Division of the ANS, a consultant to both governmental and industrial research organizations on shielding, and a contributor to technical and professional literature for much of his professional life, he would like to point out how much easier it is to be a critic than a creator.*

### SOME NOTEWORTHY PAPERS

*Title* Radiation Chemistry, Vol. 1  
*Editor* Robert F. Gould  
*Publisher* American Chemical Society, 1968  
*Pages* xviii + 616  
*Price* \$16.00  
*Reviewer* A. O. Allen

The organizers of this international conference sponsored by Argonne National Laboratory, August 12-15, 1968, under the chairmanship of E. J. Hart, spared no expense in bringing scientists from all over the world to their meeting. This volume contains 41 papers, plus 17 abstracts of papers not received in time for complete publication. Contributions from 13 different countries are included. The volume is an impressive testimonial to the widespread interest in basic research in the field of radiation chemistry.

It would be pleasant to be able to say that this compilation presents a comprehensive picture of the present state of radiation chemical science. Unfortunately, this is not the case. Few contributors chose to present a general review of a topic of any breadth. Instead, we have mainly detailed accounts of new experiments, which might have appeared in, e.g., the *Journal of*

*Physical Chemistry*. It is impossible to review each paper in this space. We will mention a few which seem to be of broadest interest.

About half the papers are classed under "Aqueous Media". Several deal with the hydrated electron; R. M. Noyes discusses its thermodynamic properties; D. C. Walker reviews what is known of its role in non-radiation produced reactions, e.g.,  $\text{Na} + \text{H}_2\text{O}$ ; K. Schmidt and E. J. Hart show how useful yields of  $e_{aq}$  can be generated photochemically. Most of the other papers present new detail regarding specific reactions brought about by radiation in aqueous solutions of various sorts.

Papers classed here under "Biology" are not really concerned with biology, but rather with radiation effects in chemical compounds of biological interest, such as proteins, amino acids, or nucleic acid components, or with large molecules such as dyes which are apparently thought to behave under radiation like biologicals. The impression one gets is that the chemical changes are complicated and despite much work are little understood in detail. In the case of protein radiolysis, a beginning has been made through the persistent efforts of W. M. Garrison and his co-workers over a period of many years. One paper in this section is noteworthy for its concern with building molecules up by radiation, rather than tearing them down: N. Getoff and G. O. Schenck synthesized the amino acid cystine by gamma-irradiation of a solution containing ethylamine, sodium bicarbonate, and hydrogen sulfide, with the surprisingly high yield  $G = 1.65$ . This section also includes an interesting review of G. E. Adams, et al. on rates of electron transfer reactions in solution, including data on a large variety of active electron donors, organic and inorganic.

The third section, "Dosimetry", has only six papers. Five are on methods of measuring radiation doses in specific situations; the sixth is of more general interest, being a review of the status of theoretical calculation of radiation-chemical yields and the track structure, by Santar and Bednář of Czechoslovakia. A theoretical paper on structure of heavy particle tracks by Mozumder, Chatterjee, and Magee of Notre Dame, Indiana was included in the "Aqueous Media" section. These

papers deserve careful reading by everyone interested in the basic principles of radiation chemistry; and the extensive theoretical work of the Czech school deserves much wider appreciation than it has had in this country.

The high price of these volumes will deter their purchase by many libraries. The same amount of material, edited and printed to the same high standard by a regular journal, would cost subscribers only about a third as much. This material, however, should be made available to all active researchers in the field of radiation chemistry.

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### A MUST FOR LIBRARY BOOKSHELVES

*Title* Radiation Chemistry, Vol. II  
*Editor* Robert F. Gould  
*Publisher* American Chemical Society, 1968  
*Pages* xvi 558  
*Price* \$16.00  
*Reviewer* D. Metz

This volume, a companion to the one reviewed above, contains those papers presented at the ANL-sponsored International Conference on Radiation Chemistry in the sessions entitled "Gases, Solids, and Organic Liquids," as well as several plenary session papers addressed to the same general areas. Inasmuch as the book was available at the time