weakened. Many a theoretician uses a computer as a kind of experimental adjunct to his work; but he himself must interpret the laborings of the machine if the analysis is to carry conviction. Scientists who use computers seldom realize how much the intrinsic interest of an article is threatened by representing the computer as a black box. The editors seem to have appreciated the key role that computers play, for two chapters (by Mayers and Froese-Fischer) deal explicitly with the mechanics of working with them. In spite of this sensitivity to the needs of the reader, the articles by Sinanoğlu himself are too concise to be immediately useful.

An added sense of dissatisfaction is felt when the elaborate computational techniques fail to give striking improvements over elementary methods. Sinanoğlu presents an analysis of the excited configurations of a number of light atoms; but it is something of an anticlimax to learn that his programs so far overshoot the experimental values for certain term-separation ratios that the error given by the most naive theory is reduced by a factor of only 2. One wonders how well other theoreticians, such as Kelly or Nesbet, would fare. However, Sinanoğlu and Nicolaides are more successful with their calculations of line intensities.

Aside from the problem of maintaining the reader's interest, there lies the risk that the accessibility of the computer may inhibit the desire to improve analytical techniques. This point is stressed allegorically by Wybourne. No doubt the ambiguous function of the computer will be under increased scrutiny in the years ahead.

B. R. JUDD
Department of Physics, Johns Hopkins University, Baltimore, Maryland

Solution Chemistry

The Chemical Statics and Kinetics of Solutions. E. A. MOELWYN HUGHES. Academic Press, New York, 1971. xiv, 530 pp., illus. $29.50. Physical Chemistry Series.

The title of this book should not be taken as an indication that the contents are devoted equally to equilibrium and kinetic properties of liquids and solutions. In fact, only 3 of the 16 chapters (plus a few isolated sections) deal with equilibria; even one of these chapters is concerned largely with statistical mechanics appropriate to an ideal gas. This section of the book, because of its brevity and an average age of about 30 years for the references cited, does not provide an adequate introduction to the present status of the very broad topic of molecular interactions in the liquid phase. However, it does serve the purpose of establishing a basis for topics treated later in the book.

What about the remaining chapters on chemical kinetics in solutions? Since Moelwyn Hughes and his students have been prolific workers in this field, one might expect the assistance of an experienced guide in traversing this area. It becomes apparent, however, that one is being led along a rather narrow path, with little opportunity to see far on either side of it. As he implies in his preface, Moelwyn Hughes is an advocate of the collision theory of reactions, and uses it to the almost complete exclusion of activated complex theory. This is a minority viewpoint, for there is general agreement that the assumptions behind activated complex theory should be most valid for reactions in solution, whereas the definition of a collision in a condensed phase becomes somewhat arbitrary.

Again, in the discussion of reactions involving substitution at the carbon atom, the viewpoint is that of classical electrostatics, with almost no attention given to a more detailed description in terms of wave mechanics or chemical bonding.

Several topics, such as the steady-state assumption, activated complex theory, quantum-mechanical tunneling, and isotope effects are treated awkwardly or incorrectly. There are some outright mistakes, as in the section on the base-catalyzed bromination of acetophenone. The author gives rate data for reactions of OH^-, OD^-, and OT^- with acetophenone-d_3, whereas reference to the original paper shows that the data are for reactions of OH^- with acetophenone, acetophenone-d_3, and acetophenone-t. One's confidence in the book is shaken by this sort of error and by the generally sloppy editorial work in both text and references. Among the more amusing examples are a measurement made "nanometrically" instead of "manometrically" and the variations on the name of Martin Karplus, who appears as K. Marplus in the author index and once in the text, but as Marples in three other places in the text.

It is particularly regrettable that Moelwyn Hughes has overlooked many recent references, the citation of which could have made this book a useful starting point for further reading. Perhaps one should not be concerned about a "generation gap" in literature citations, but an average age of 30 years is much too old in a field as active as chemical kinetics. This is revealed, for example, by the complete disregard of the definitive work of R. A. Marcus in the fields of electron-transfer reactions and unimolecular reactions.

This book does have some positive features. The inclusion of many primary kinetic data and the detailed treatment of the pertinent rate expressions will be useful to teachers of chemical kinetics. The chapter on fast reactions contains lucid, brief discussions of several experimental techniques, and then gives a very thorough treatment of ultrasound absorption as an example of relaxation methods. However, in view of the cost of this book and the availability elsewhere of more complete discussions of many of the topics, it seems to miss the mark both as a textbook and as a reference work.

RALPH E. WESTON, JR.
Department of Chemistry, Brookhaven National Laboratory, Upton, New York

Manifesto

An Archeological Perspective. LEWIS R. BINFORD, with a contribution by George I. Quimby. Seminar Press, New York, 1972. xii, 464 pp., illus. $11.95. Studies in Archeology.

This book can be read as two books, "A" and "B," one inserted in the other.

Book B is a book on Lewis R. Binford: an autobiography which sometimes has the character of a very personal archeological novel on the birth and growth of a school in American archeology. To its author, it seems to be important that this should be seen as "New Archeology." With due respect, one could prefer to postpone this classification and use a more descriptive label—for instance "the Binfordian movement." The author says his presentation is "frank and open," and the discussion "sometimes overpersonalized." This is so. Sometimes he hurts. Nevertheless, these chapters will give a better understanding of the background and coherence of a remarkable contribution to archeology, and they enable the reader to see some of its strengths and weaknesses better. The reviewer—