The typography and format of the volume are superior. The figures and tables admirably illustrate the statements of the author.

All in all, the purposes of this monograph seem to have been accomplished. Undoubtedly, it will be replaced in a few years by its combination with a new edition of *The treatment of syphilis* with greater and more lasting conclusions. For the future it will have historical interest and value. New chemotherapeutic agents undoubtedly will be developed, and reference to this volume will be of great aid in determining the approach necessary for their proper appraisal.

ROBERT R. KIERLAND
Mayo Clinic, Rochester, Minnesota

Biochemistry of cancer. Jesse P. Greenstein. New York: Academic Press, 1947. Pp. viii + 389. (Illustrated.) $7.80.

Research on cancer has been relatively slow in development and, as an experimental science, began only at the beginning of the present century. The long tradition of pure morphologic study had meantime fastened itself with throttling grip on the investigation of neoplastic disease, and cancer research itself in effect was, until recently, suffering from an intellectual cancer. It is one of the strange vagaries of science that chemistry, instead of being introduced early, has been the latest of the disciplines to enter cancer research.

There have been several previous treatises on the chemistry of cancer, but all have consisted of undigested collections of facts and errors, assembled magpie fashion, containing some good data but with so much trivial dross as to make them valueless. Also, as the author aptly states: "More chemists than one have blundered in oncology, not so often on the basis of poor oncology as of bad chemistry. For some odd reason, cancer research has been the graveyard of many a scientific reputation."

The present volume, then, is unique in that it assembles for the first time quantitative chemical data which are discussed in a critical manner. It is more than the biochemistry of cancer; it includes a great deal of information on the ancillary sciences—the physiology, genetics, and even taxonomy of the neoplastic state.

After an orienting introduction the volume is divided roughly into three parts which deal, respectively, with chemical aspects of the induction, control, and properties of tumors. Since the author is one of the leading enzymologists, the catalytic factors naturally receive greatest emphasis, but this is felicitous in that the enzymes of cancers are, in the thoughts of many workers, agents of very high importance. Dr. Greenstein's forte has been the study of the spectrum of the protein catalysts in normal, neoplastic, and germane states. As a generalization, he has arrived at the conclusion that tumors tend to converge, enzymatically, to a common type of tissue and to resemble one another rather more than the tissues of origin.

This volume represents a vast amount of scholarship and will be indispensable reading for all workers in cancer research, whether savant or tyro. It is destined, no doubt, to become dog eared in scores of laboratories.

The style of the author is characterized by elegance and simplicity, and his writing is occasionally enlivened by nice touches of pointed humor and stimulating speculation. The only criticism of this work deals with the modesty of the author, which is so great that he has not included himself in the author index.

Dr. Greenstein is well qualified to write this volume, being head biochemist at the National Cancer Institute. His important contributions to the quantitative chemistry of proteins are well known. His studies and this book are in the best tradition of the U. S. Public Health Service, of which he is a distinguished member.

CHARLES HUGGINS
Department of Surgery, University of Chicago

Parenteral alimentation in surgery with special reference to proteins and amino acids. Robert Elman. New York-London: Paul B. Hoeber, 1947. Pp. xx + 284. (Illustrated.) $4.50.

Dr. Elman has brought forth a timely and distinguished book. Although written primarily for the surgeon, it should be read by all workers, clinical as well as laboratory, whose work touches the healing art, human or animal. The book deals with the administration, to patients unable to assimilate food by the gastroenteric route, of the basic units of the six substances which are concerned with the maintenance of corporal integrity, namely, water, minerals, vitamins, carbohydrates, fats, and proteins. For the surgeon, preoccupied with the exacting demands of his strenuous professional life, this volume is both a bringer of gifts from the basic disciplines of biochemistry, nutrition, and physiology and a manual at once comprehensive and practical. Dr. Elman has delved into at least six different fields, going over the knowledge which had been built up by research workers over decades, and distilled from them this compact volume. Typifying the ideal modern surgeon, he had had a wide research training and experience prior to entering the specialty of surgery and has been a prodigious worker in one of the sectors of this field, the new and important sector of intravenous amino acid alimentation. He has made important and basic contributions in this sector and, indeed, should be credited with bringing it into practical clinical use. He is, therefore, eminently qualified to write such a book, and it is doubtful whether, in the hands of any other author, it could have been so lucidly and effectively written.

The book is well organized, skillfully integrated, written in a highly readable style, and presented in a well-balanced manner. It is brief without sacrificing scientific exactitude and scholarship. As is to be expected, the best chapters are those in the field of the author's major research competence—the protein field; but the chapter on water and electrolyte needs is also excellent. That on the history of intravenous therapy is interesting and illuminating, and the extensive field of vitamin therapy, which would appall others, has been skillfully packed into 11 pithy pages. The chapter on the practical program of intravenous alimentation, which climaxes the book, is practicable and highly instructive. The cases used as illustrations are well chosen, as are also the charts and figures, which are clear, easy to grasp, and well reproduced. Furthermore, the book is well documented, covering some 450 papers by over 500 authors. The extensive bibliography, culled with such painstaking care from a field which must number publications by the thousands, should prove exceedingly valuable to the more serious student.