The first four chapters of the book are devoted to outlining the theoretical principles needed. These include the Lewis octet theory, bond polarity, atomic orbitals, molecular orbitals, heterolytic and homolytic fission, nucleophilic and electrophilic reagents and the four modes of intramolecular electronic displacement used by the English School. The remainder of the book is given over to the organization of organic chemistry in terms of the electronic theory. Chapters V to XI deal with nucleophilic substitution reactions at saturated carbon, elimination reactions, additions to unsaturated compounds, tautomerism, esterification, hydrolysis of esters, aromatic substitution and saturated rearrangements. These chapters include many examples of experimental data which show accord with theoretical predictions of the effect of substituents or of alteration of the thermodynamic environment on the equilibria, rates and courses of chemical reactions. It is rather surprising that he consistently relates changes of electron density to rate constants without any hint that this procedure involves the neglect of the entropy of activation which only too frequently outweighs the activation energy in determining the rate constant.

I would stoutly defend Dr. Baker's right to decide which subject matter is to be included in his book and which is to be ignored. But I would also stoutly maintain that the prospective reader of the book has the right to know which subjects, of those pertinent to the field covered, are omitted. With this in mind, it might be mentioned that, with the sole exception of the contributions made by Lewis and Pauling to theories of atomic and molecular structure, no mention is made of any basic electronic principles contributed by Americans. Thus, one finds no mention of the neighboring group theory or of the various stereochemical principles developed in our country nor is the theory of concerted (push–pull) reactions employed as a general principle, although in the Chapter dealing with tautomerism one concerted reaction is quite incidentally included. It is, perhaps, also significant that in the lists of suggested further reading to be found at the end of each chapter all references except one are to papers by English authors.

This book on the electronic theory of the English School is highly recommended to all chemists interested in theoretical organic chemistry. Those approaching the subject for the first time will find it an authoritative and clear introduction to the subject; those already acquainted with the field will find it an aesthetic delight of perfect organization and an excellent review.

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Chemical Analysis. Volume VIII. Colorimetric Determination of Nonmetals. Editor, DAVID F. BOLTZ. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1958. xii + 372 pp. 16 × 23.5 cm. Price, $8.50.

This book may be considered a companion volume to the well-known monograph by Sandell on the "Colorimetric Determination of Traces of Metals" published in 1944 as Volume III of this Series; a second edition, revised and enlarged, appeared in 1950; the third edition is scheduled to be published late in 1958 or early 1959. Because of the success and popularity of Sandell's book it seemed advisable to make available a supplemental one devoted to the nonmetals.

Volume VIII of this Series is a collective monograph to which fourteen authors have contributed "the colorimetric methods, based upon their experiences and/or judgment, which they believe to be the most suitable." There are eleven chapters as follows: Chapter I (D. F. Boltz), Principles and Practices in Colorimetric Analysis; Chapter II (D. F. Boltz and C. H. Lueck), Phosphorus; Chapter III (G. V. Potter), Silicon; Chapter IV (M. J. Taras), Nitrogen as Ammonia, Nitrite and Nitrate; Chapter V (D. F. Boltz and W. J. Holland), Chlorine; Chapter VI (E. R. Wright, R. A. Smith and S. Black), Bromine; Chapter VII (B. Zak), Iodine; Chapter VIII (S. Megregian), Fluorine; Chapter IX (G. D. Patterson, Jr.), Sulfur; Chapter X (R. A. Johnson), Tellurium and Selenium; and Chapter XI (G. Porter and R. C. Shubert), Boron. The editor has followed the same style and order of presentation of subject matter as used by Sandell; *i.e.*, separations, methods of determination, and applications. Three to eleven methods are given for each of the eleven nonmetals and each chapter has an extensive bibliography at the end, there being a total of 718 references. The book is well illustrated with figures and graphs, and a transmittance–absorbance conversion table is given as an Appendix. Author and Subject Indexes conclude the book.

The printing, paper and binding are good. The monograph will make a useful companion to Sandell's "Colorimetric Determinations of Traces of Metals."

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Dislocations and Mechanical Properties of Crystals. An International Conference held at Lake Placid, September 6–8, 1956. Sponsored by Air Force Office of Scientific Research, Air Research and Development Command, and the General Electric Research Laboratory. Editors: J. C. FISHER, W. G. JOHNSTON, R. THOMSON and T. VREELAND, JR. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1957. xiv + 634 pp. 16 × 23.5 cm. Price, $15.00.

Dislocations were invented some 30 years ago to explain the low strength of crystalline solids compared to theoretical estimates. Although occasional experimental results appeared in the intervening time, it is only within the last ten years or so that direct proof of the existence of dislocations has been obtained. Many theoretical concepts have been justified and new experimental results have given fresh impetus to theoretical work. This book appears at a particularly appropriate and interesting time for dislocation theory. Quoting from the foreword: "Perhaps the most striking contribution to the conference dealt with the observation of dislocations, which formed the subject of the first morning's discussion. Photographs of dislocations, slipband formation, Frank–Read sources, prismatic dislocations, and even motion pictures of dislocation motion were shown. Here was remarkable and breathtaking confirmation of much previous theoretical work, and a wealth of new experimental material which has given the experimentalist a period of supremacy."

This book includes the proceedings, discussions and post-conference remarks of a small international conference on the mechanical aspects of dislocations. Forty-two papers, covering a wide range of interest, are presented by a cross-section of excellent investigators. The material covered is not only required reading for anyone immediately interested in mechanical properties, but might well be used by others as an initiation into the rapidly evolving field. Much significant recent work is covered and the bibliographies are extensive and include the necessary background material.

The book has been divided into eight sections: I. Direct Observation of Dislocations; II. Deformation of Pure Single Crystals; III. Work Hardening and Recovery; IV. Alloy Crystals, Impurities, Yield Point Phenomena; V. Dislocation Damping and Fatigue; VI. Theory of Dislocations; VII. Whiskers and Thin Crystals; and VIII. Radiation Damage. The classification of papers under these headings is necessarily somewhat arbitrary since material included in any particular section often contains information that would apply to other sections. Some duplication naturally occurs but is usually a matter of complementary work.

Since the large number of papers precludes reporting on all, discussion will somewhat arbitrarily be limited to those aspects that appear to the reviewer to be of most general interest.

Section I includes many striking photographs of dislocations and dislocation etch pits brought out by diverse techniques. S. Amelinckx considers the mechanism of decoration of dislocations by precipitated particles and includes photographs of different types of dislocation networks brought out by this technique in transparent crystals. W. C. Dash observed decorated dislocations in silicon using an infrared image tube in conjunction with a microscope. Hirsch, Horne and Whelan show photographs of dislocations observed by transmission electron microscopy on thin foils of aluminum. Results of etching techniques are pre-