For instance, it hardly seems appropriate to devote 8 pages (pp. 523–530) to the principles of conformational analysis, beginning with a reference to Van't Hoff in 1875. There appear to be few errors, but one mistake concerning the total synthesis of the oleanane carbon skeleton (p. 637) was noticed. The first synthesis was not carried out by Barltrop, *et al.*, in 1962, but by Corey, *et al.*, in 1959 [*J. Am. Chem. Soc.*, **81**, 5258 (1959); **85**, 3979 (1963)].

The above criticisms are minor ones, and the book can be recommended warmly. It will be found invaluable to all who are interested in triterpenoids, either from a chemical or a biological point of view. It is unfortunate that the very high price will restrict the number of scientists who will be able to purchase the book for themselves.

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**Les Mécanismes Réactionnels en Chimie Organique.** By BIANCA TCHOUBAR, Directeur de recherches au C.N.R.S. Dunod, 92, rue Bonaparte, Paris, France. 1964. xvi + 231 pp. 11 × 17 cm. Price, 18 F.

Chemical education in France—the home of Dirac and de Broglie—has long segregated the principles of quantum chemistry from the more mundane science of organic chemistry. This little book is a modest effort to bridge the gap between these disciplines at the undergraduate level. More properly to be titled, "An Introduction to Reaction Mechanisms in Organic Chemistry," this pocket-sized volume attempts to survey and classify the processes of organic chemistry in terms of current concepts of the electronic structure of molecules. The first four chapters deal concisely with orbital hybridization, bond polarity and polarizability, conjugation energy, inductive and mesomeric effects, modern concepts of acidity and basicity, and related topics. The treatment is predominantly qualitative, reflects the Ingold influence, and is well illustrated by clear and simple diagrams. The remaining nine chapters include a short but excellent introduction to chemical kinetics and the transition state, followed by surveys of aliphatic substitution reactions, eliminations, additions to olefins, prototropic processes, reactions of carbonyl groups, and aromatic substitution. These necessarily brief surveys are well supplemented by an appendix referring the reader to selected review articles dealing with the key reactions of each class.

The linguistic style of the author is lucid and straightforward; indeed this reviewer recommends the volume to all those who would learn "chemical French" painlessly. The typography and flexible cloth binding are exceptionally attractive. From the scientific standpoint the presentation is essentially sound and up to date. Such subjects of relatively recent interest as the reactions of enamines, arynes, n.m.r., multiplicity of carbenes, and the stereochemistry of carbanions are touched upon in greater or lesser detail. The book does contain a few curious statements which carry unfortunate implications, *e.g.*, that pinene has a conjugation energy of 13 to 14 kcal., that electron delocalization is always more important in a cyclic conjugated system than in the corresponding acyclic system, that demonstration of fast deuterium exchange by a halogenated substrate proves a carbanion mechanism (as opposed to an E2 mechanism) for elimination from that substrate, and that "thermal or photochemical excitation transforms a singlet carbene into a biradical (triplet)." One would also hope for more thorough literature referencing of the various experiments and statements cited in the text. On balance, however, this is a competent little work, and although its use in the theoretically oriented U. S. chemical curriculum would appear limited, one might foresee considerable interest among undergraduates overseas.

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**Solvay Institute 12th Chemistry Conference. Energy Transfer in Gases.** Edited by R. STOOPS, 76–78, Coudenberg, Brussels, Belgium. Interscience Publishers, John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1964. 554 pp. 18 × 26 cm. Price, $15.00.

This volume presents the week-long discussion of energy transfer between molecules in collision by many of the foremost experts in this field. Chemical kinetics, ordinary unimolecular gas reactions, flash photolysis, chain reactions, and collision theory were discussed. These subjects were followed by reports on shock tube kinetics and electronic excitation, energy exchange in detonation, molecular beams, mass spectrography, and vibrational energy relaxations, and some remarks were made on scattering theory. The following authors are responsible for the chapters: A. R. Ubbelohde, O. K. Rice, R. G. W. Norrish, N. N. Semenov, E. P. Wigner, A. Kantrowitz, A. G. Gaydon, D. F. Hornig, T. L. Cottrell, J. Ross, and E. F. Greene, J. D. Morrison, V. N. Kondratiev, and I. Prigogine. This list should be sufficient guarantee of the high quality of the material presented.

The book contains a surprising number of misspelled words which, however, leads to no special difficulty. The book is well put together and reasonably priced for these times.

One cannot but be impressed with the many new methods for measuring energy transfer and with the effort going into the theoretical calculations which we find summarized here. Collision theory is the growing edge of reaction rate theory and this book provides a welcome review of this important field.

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**Crystal Structures. Second Edition. Volume 2. Inorganic Compounds, $RX_n$, $R_nMX_2$, $R_nMX_3$.** By RALPH W. G. WYCKOFF, University of Arizona, Tucson, Ariz. Interscience Publishers, John Wiley and Sons, Inc., 605 Third Ave., New York 16, N. Y. 1964. vii + 588 pp. 15.5 × 24 cm. Price, $24.00.

"The author of the volume under review already has an enviable reputation for his brilliant research in developing the science of crystal structure analysis in this country and for his earlier volumes on "The Structure of Crystals," as well as for his more recent ultracentrifuge and electron microscope studies of proteins and other biological substances. This new publication is sure to increase his reputation still more.

"It is a magnificent work, describing, illustrating, classifying, and comparing the crystal structures of all elements and compounds of known structure. . . .

"The reviewer recommends this book highly as a reference work to all chemists and physicists interested in the properties of solid matter and their correlation with structure."

The foregoing comments are from the writer's review[1] of Section I of the first edition of Wyckoff's "Crystal Structures." They are equally applicable to the Second Edition.

The first edition was published in loose-leaf form, with supplements issued from time to time to keep it more nearly up to date. With the rapid expansion of the literature in this field, however, the difficulties of inserting the new material into the proper places among the old pages and of proper indexing made the loose-leaf system unsatisfactory. The second edition is therefore being published in the usual book form. It is to be hoped that the remaining volumes will be rapidly forthcoming and that revisions will appear at frequent intervals.

Volume 1 covered the elements and compounds having formulas of the RX and $RX_2$ types. Volume 2 covers other inorganic compounds of the $R_nX_m$ class, also $R(MX_2)_n$ and $R_n(MX_3)_p$ compounds. The literature has apparently been thoroughly (and critically) covered through 1961 and a part of 1962.

Except for some intermetallic compounds, the author attempts to report all structures for which the atomic positions (usually excluding hydrogens) have been determined. Dimensions and symmetries of the unit cells and coordinates of the atoms are given, using the terminology and conventions of the "International Tables for X-Ray Crystallography."[2] Some interatomic distance data are included and there are occasional discussions of bond distributions and other structurally interesting or important facts. For more information of this sort, the reader must go to the original papers or to their abstracts, published in the "Strukturbericht"[3] and its successor, "Structure Reports."[4] It may be noted that although there is much overlapping between "Crystal Structures" and "Structure Reports," the latter are essentially abstract vol-

(1) M. L. Huggins, *J. Chem. Educ.*, **26**, 289 (1949).
(2) "International Tables for X-Ray Crystallography," Kynoch Press, Birmingham, England, 1952, 1959, 1962.
(3) P. P. Ewald, *et al.*, "Strukturbericht," Akademische Verlagsgesellschaft m.b.H., Leipzig, 1931–1939.
(4) A. J. C. Wilson, *et al.*, "Structure Reports," Oosthoek, Utrecht.