tubes and tubes with complex geometries. The section on flow through porous material has been removed. The authors believe that "this subject is comprehensively treated elsewhere and has become too specialized for adequate coverage in the space available."

Chapter 3 describes the major classes of vacuum pumps and their mode of operation. All the material on mechanical and vapor pumps has been reorganized and covered in this one chapter. Those interested in ultra-high vacuum will welcome the sections on ion and getter pumps and cryogenic pumping.

Chapter 4 treats vacuum pump applications, their proper selection, system design, and the use of traps and baffles. The discussion of the "choice and stability of work fluids for vapor stream pumps" should clarify any misunderstandings regarding the utility of "oils" as pump fluids and their almost universal use in place of mercury.

Chapter 5 remains as a comprehensive survey on the many different types of gauges for low gas pressure measurement. Major revisions have been made in the section on ionization type gauges and leak detectors. New material has been added on ultra-high vacuum ionization gauges, spectrometers and leak detection methods.

One might view Chapter 6 on the treatment of sorption of gases and vapors by solids as a special field and better omitted from this text as was the flow through porous material. However, since one of the most important problems in high vacuum technique is the removing of gases and vapors which are present both on the surface and in the interior of glass walls and metal parts, it seems fitting to include this material in the text.

In Chapter 7 "typical data are given on the sorption of various gases on non-metallic materials which are of importance in vacuum technology." The relative activities of materials like cellulose, charcoal and glass, and the effect of methods of preparation are discussed. Although the authors state that the chapter was not intended to be comprehensive but rather to present typical data together with a few interpretive comments, the chapter is sufficiently complete to give a theoretical understanding and a practical working knowledge of sorption techniques.

The subject of occluded or dissolved gases on metals is presented in Chapter 8. A knowledge of the manner in which metals may take up gases and of the condition under which these gases may be removed is of extreme importance in vacuum technology. A new section has been added on the behavior of rare gases propelled into metals by ion bombardment and nuclear processes. New experimental work in diffusion studies using nuclear magnetic resonance, internal friction measurements, and radioactive and stable isotopes has been added.

Chapter 9 on chemical and electrical clean-up and ultra-high vacuum contains several new sections on gas sorption. Extensive data are given for rates and total quantities of gas that can be sorbed under vacuum tube conditions. New getter materials are discussed and comparisons made with older types. Even though the section on ultra-high vacuum has been expanded, there may be some readers who would like to have seen an even greater expansion of this increasingly important phase of high vacuum.

Chapter 10 deals with vapor pressures and rates of evaporation. Data have been brought up to date and tables recalculated on the basis of recent available determinations. For those particularly interested in thin films, new material has been added to the section on vacuum distillation of metals and deposition of films.

Chapter 11, "Dissociation Pressures of Oxides, Hydrides, and Nitrides," treats principally the "non-elementary modes" of dissociation of oxides and of the reduction of the oxides of metals. The editors have removed the section on oxidative rates from the new edition, but they feel that the increasing interest in the properties of materials at high temperatures justifies the continuation of a section on dissociation. Although this chapter may seem peripheral to some, it is a handy reference for those who may have need for dissociation data.

In keeping with the thorough coverage of subject matter, each chapter ends with a generous list of references and notes. Also, there is a complete name and subject index at the end of the book. Anyone interested in vacuum technology either from a scientific or practical viewpoint will find the second edition a broad and solid foundation of pertinent information and data clearly and expertly presented. The specialists who combined their knowledge to revise the individual chapters and the editors are to be congratulated on the excellent results of their collaboration. Having known Dr. Dushman personally, I am sure he would have been pleased with their accomplishment.

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Physics in the Soviet Union. An Exposition of Theoretical Physics. By A. S. KOMPANEYETS. Philosophical Library, Inc., 15 East 40th Street, New York 16, N. Y. 1962. 592 pp. 14.5 × 22 cm. Price, $7.50.

The title of this book is somewhat misleading. It is actually a summary of certain areas of Theoretical Physics and is stated by the author to be aimed at engineer-physicists and to specialists working in fields associated with physics. According to the author the reader is assumed only to be acquainted with the course of general physics and analysis. If this is the real intent, it is this reviewer's opinion that the book has failed: This does not imply anything about its quality, which is high, but only that it appears not to accomplish its aim realistically.

The text is divided into four principal sections entitled: I,Mechanics; II,Electrodynamics; III,Quantum Mechanics; IV,Statistical Physics. It should be noted that the section on Mechanics is restricted to point and rigid body mechanics. The level is high in all four sections and the coverage is quite extended and proceeds from a fundamental point of view. It is for this reason that the real utility of the book for its stated audience (at least by U.S. standards) seems questionable. The level of treatment of all the subjects is that of graduate level instruction in this country and with the compression required in this presentation, the above conclusion follows. On the other hand, it is certainly an excellent summary and reference for the individual who has had some exposure to the fields covered. The level of sophistication is similar to that attained in the series of texts on Theoretical Physics by Landau and Lifshitz and the author expresses his indebtedness to them.

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Reagent Chemicals and Standards with Methods of Testing and Assaying Them; also the Preparation and Standardization of Volumetric Solutions and Extensive Tables of Equivalents. Fourth Edition. By JOSEPH ROSIN, Member, American Chemical Society; the U. S. Pharmacopoeia Revision Committee; Formerly Chief Chemist and Chemical Director, Merck and Co., Inc. D. Van Nostrand Company, Inc., 120 Alexander Street, Princeton, New Jersey. 1961. 557 pp. 16 × 23.5 cm. Price, $14.50.

In its previous three editions this book has become so well known—and respected—that there is no need to review the present fourth edition at length. It follows the same pattern, and maintains the same high standard, as its predecessors. Specifications have been added for about thirty new reagents and for ten of the amino acids that are most commonly used therapeutically or in special food products.

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Spectroscopie Infrarouge. Partie I. Vibrations Moléculaires. By M. PIERRE BARCHEWITZ, Professeur à la Faculté des Sciences de Paris. Gauthier-Villars et Cie., 55, Quai des Grands-Augustins, Paris 6, France. 1961. vi + 238 pp. 16 × 24.5 cm. Price, NF. 42.--.

This brief account of the theory of molecular vibrations and their spectroscopic activity is based on a course of lec-