numbers of methylene groups may reduce steric hindrance increasing conjugation between ring and attached group and thereby increase the wave length of absorption. In molecules with a dipolar ground state cyclization may decrease this polarity and thereby decrease the wave length of absorption. This paper is very interesting and presents an instructive set of spectra.

The fourth session (May 29) is devoted to problems connected with molecular dipole moments. Nguyen-Quang Trinh summarizes the theories of the dielectric polarization and the dielectric constant and the various methods of their experimental determination. He also discusses the attempts to understand the dipole moment of a molecule in terms of its bond moments. Henri Lumbroso considers some problems connected with interpreting electric moments observed in hydrocarbons with polar substituents and in heterocyclic organic molecules on the basis of the resonance concept. Alexandre Laforgue sketches the wave-mechanical problems involved in the calculation of molecular dipole moments; in particular he considers the moment of a diatomic bond and the moment of a system of conjugated π-bonds on the basis of the molecular orbital method.

The final session (June 5) comprises a paper by Adolphe Pacault, Mrs. Nicole Lumbroso and Jean Hoarau concerning their work on the diamagnetic anisotropy of conjugated systems, and a lecture by Paul Chanson on the subject "Can We See Atoms and Molecules Through the Microscope?" The theoretical part of the first article systematizes the molecular diamagnetic susceptibilities by means of a generalized additivity rule (based on "atomic contributions" and "structural increments") and proceeds to discuss the anisotropy caused by delocalized π-electrons and its temperature dependence. Strangely, the theory of F. London is not mentioned. The experimental part of the paper gives a description of the interesting technique recently developed by these authors for the determination of the diamagnetic anisotropy. In the final article Paul Chanson analyzes the nature of the pictures of the microcosmos furnished by X-ray and electron diffraction and discusses the possible resolution of such instruments.

In accordance with the title mentioned above, these meetings had the purpose of bringing the participants up to date on various topics. Consequently, the lectures are mostly brief and do not attempt to be exhaustive; some of them have an extensive bibliography. The book gives a representative review of some of the work of the "French School."

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Catalysis. Volume II. Fundamental Principles (Part 2). Edited by Paul H. Emmett, Gulf Research and Development Company's Multiple Fellowship, Mellon Institute, Pittsburgh, Pennsylvania. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1955. vi + 473 pp. 16 × 23 cm. Price, $12.00.

This is the second volume to be published on the general topic of Catalysis and again deals, as in the case of Volume I, with fundamental principles. This is true of two chapters by Hulburt on the nature of catalytic surfaces and the nature of complexes on catalytic surfaces; by Eyring and three colleagues on general theories of heterogeneous catalysis; by Wheeler on the problem of pores and pore volume in selective catalytic processes; by King on catalysis in homogeneous reactions in the liquid phase. The introductory chapter by Innes is a classification of the large amount of literature on vapor phase heterogeneous catalysis systemized by the reaction types involved. This chapter summarizes a very considerable body of literature dealing with different reaction types and the catalysts which have been studied.

A study of the chapters dealing with fundamental principles leads the reviewer to the conclusion that it is not yet possible to compile a definitive text on catalysis. All the authors have written lucidly concerning the present state of the science in the area of their immediate concern, even as to the most recent publications in the field. "Much work remains to be done before any conclusion can be drawn" and "Detailed mechanisms for these reactions are still open to question" are, however, typical of a large volume of comment dispersed throughout these pages. Hence, it is as a provocative series of essays considering the manifold aspects of the problem, *a priori* or induced heterogeneity, *d*-band character of metals and alloys, semi-conductors and catalysis, adsorption, both physical and chemical, on plane surfaces and in pores, the relative importance of physical diffusion or chemical reactivity, that the reader must approach this volume. The student will find in it a veritable mine of research problems. The veteran in the field will conclude that, while much progress has resulted from four decades of work in the modern science of catalysis, there are many areas for the young explorer to discover.

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Introduction to Atomic and Nuclear Physics. Third Edition, Revised and Enlarged, of **Introduction to Atomic Physics.** By Henry Semat, Ph.D., Professor of Physics, The City College, College of the City of New York. Rinehart and Company, Inc., 232 Madison Avenue, New York 16, N. Y. 1954. xii + 561 pp. 16 × 23.5 cm. Price, $6.50.

In this edition of Semat's widely used book, the text is divided into three parts: 1 (Foundations of atomic and nuclear physics, 202 pages) elements of electricity and magnetism, charged atomic particles, the nuclear atom, electromagnetic radiation, X-rays, waves and particles; 2 (The extra-nuclear structure of the atom, 98 pages) the hydrogen atom, optical spectra and electron distribution, X-ray spectra; 3 (Nuclear physics, 208 pages) natural radioactivity, disintegration of nuclei, nuclear processes, nuclear fission, fundamental particles, new elements and isotopes, and particle accelerators. There are 32 pages of appendices: values of some physical constants, atomic weights of the elements, periodic table of the elements, table of isotopic masses, table of naturally occurring isotopes, path of an α-particle in a Coulomb field of force, derivation of the equations for the Compton effect, evaluation of the integral in quantization of radial momentum in an elliptical orbit.

A reduction in type size has made possible inclusion of about 25% more material in parts 1 and 2 than in previous editions with but a 15% increase in number of pages; part 3 contains roughly four times as much matter as the earlier versions. The chapters in parts 1 and 2 are part descriptive, part analytical in character; those dealing with nuclear physics are almost wholly descriptive.

The book is intended for use at the undergraduate level with students who have had a one-year physics course and a course in the calculus; however, it has been used quite widely in Senior-level courses in atomic physics where the students have somewhat more extensive preparation. The text is well written, and the factual material is very up-to-date. The style is lucid and sustains interest; there are numerous well chosen diagrams and photographs scattered throughout the exposition.

Mechanically, the book meets a very high standard in all respects but one: the reproduction of half-tones is pretty poor on the average.

In this book 30 pages are devoted to an exposition of the wavicle situation, 18 to the Bohr–Sommerfeld treatment of the hydrogen-like atom, and there are 3 pages of broad description given over to the application of wave-mechanics to the same problem. The reviewer believes that this is an unfortunate situation; the student is prepared for dealing with descriptions which involve application of wave-mechanical concepts, then the descriptions or analyses are not permitted to materialize. It seems to me that the distribution of space accorded the hydrogen-like atom in a recent introductory text in physical chemistry is to be preferred; there, five times as many pages were devoted to a description of the wave-mechanical solution of the problem as were spent on the Bohr theory.

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