

INTERSCIENCE announces New North-Holland Books...

Modern Analysis of Diffraction by Matter

by R. HOSEMANN, *University of Berlin*, and S. N. BAGCHI, *University of Calcutta*
1960 Approx. 640 pages \$19.50

The Theory of Brillouin Zones and Electronic States in Crystals

by H. JONES, *Imperial College, London*
1960 Approx. 300 pages \$9.50

Optics of Thin Films

by ANTONIN VASICEK, *University of Brno*
1960 Approx. 420 pages \$12.50

Relativity: The General Theory

by J. L. SYNGE, *Dublin Institute for Advanced Studies*
1960 Approx. 550 pages \$16.50

Paul Ehrenfest: Collected Scientific Papers

edited by M. J. KLEIN, *Case Institute of Technology, Cleveland*
1959 644 pages \$13.75

Analytical and Canonical Formalism in Physics

by ANDRE MERCIER, *University of Berne*
1959 230 pages \$6.75

INTERSCIENCE Publishers, Inc.
250 Fifth Avenue, New York 1, N. Y.

first and then the basic principles of the resonance method are outlined. This is followed by a section on experimental methods and then by six chapters on the detailed theory necessary to interpret and analyze the spectra. The emphasis throughout, as the title suggests, is on "high-resolution" spectra, and hence is confined to samples in the liquid state from which very narrow spectral lines can be obtained. There is therefore little to be found in the book on nuclear resonance as applied to solid-state problems, which are probably of more interest to the physicist. On the other hand, it is an exhaustive and reliable account of all the theory and applications of nuclear resonance that are of interest to the chemist, and should prove invaluable to any entering this field of research and eager to understand the implications of its results.

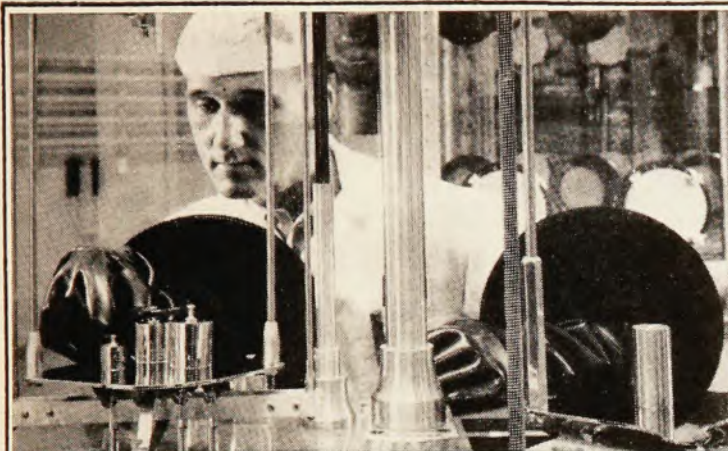
The section on applications has a comprehensive chapter on the determination of molecular structure from the chemical shifts observed for protons, followed by one in which the chemical shifts for other nuclei are considered in detail. The following chapters then deal with more complex phenomena on which nuclear resonance can give very precise information, such as internal rotation, hydrogen bonding, and solvent effects. Many specific examples are given throughout these chapters which help to illustrate and underline the points under discussion.

The presentation of the subject matter and the production of the figures are of a high standard throughout and this volume will undoubtedly find its place as one of the standard reference works on the subject.

Physikalisches Praktikum: Eine Sammlung von Übungsaufgaben mit einer Einführung in die Grundlagen des physikalischen Messens (9th Revised Ed.). By Wilhelm H. Westphal. 285 pp. Friedr. Vieweg & Sohn, Braunschweig, Germany, 1959. DM 19.80. Reviewed by L. Marton, *National Bureau of Standards*.

THE ninth revised edition of Westphal's book is reviewed here without reference to the earlier editions. The reason for this is twofold—I haven't seen the earlier editions, and to my best knowledge they haven't been reviewed in *Physics Today*. The book is a syllabus of undergraduate physics laboratory experiments which is used widely in German-speaking universities. I don't believe that there is a similar distribution for any of its American counterparts. Many American schools prefer to use their own mimeographed laboratory manuals. For comparison purposes, I am taking a representative American text which covers approximately the same topics; this arbitrary choice is the printed syllabus of Wall and Levine prepared for the University of Minnesota in 1951.

Westphal's book is very neatly conceived and skillfully executed. The introductory chapters are on the system of units, the calculation of the results of measurements, and error calculation, and they give some practical hints about the execution of measurements and the keeping of notes. Personally, I would have



(Photo by courtesy of Argonne National Laboratory)

CHARCO "NEO-SOL" DRY BOX GLOVES IN USE AT ARGONNE'S PLUTONIUM REACTOR FUEL ELEMENT FABRICATION FACILITY.

FLEXIBLE, FINGER SENSITIVE AND COMFORTABLE

"NEO-SOL"®

PREMIUM QUALITY. ALL MILLED NEOPRENE. THESE GLOVES ARE OIL, CHEMICAL AND OZONE RESISTANT. THEY CONFORM TO REQUIREMENTS OF ARGONNE NATIONAL LABORATORY SPECIFICATIONS PF-1-b-(Rev. 6).

"RAD-BAR"®

SEAMLESS, LEAD-LOADED, MILLED NEOPRENE ARE OF A DENSITY OF 3.95 GRAMS PER CUBIC CENTIMETER. UNDER ACTUAL TESTS THESE GLOVES HAVE BEEN PROVEN TO SHIELD OUT SOFT GAMMA RAYS MORE THAN 85%.

**EACH DRY BOX GLOVE IS
HIGH VOLTAGE TESTED**

CHARCO DRY BOX GLOVES

**PROVIDE DEPENDABLE
PROTECTION IN CRITICAL
OPERATIONS AT
ARGONNE NATIONAL
LABORATORY**

PROUD RECORDS OF RELIABLE PERFORMANCE BY CHARCO DRY BOX GLOVES HAVE BEEN MADE IN THIS COUNTRY AND ABROAD, IN MAJOR ATOMIC ENERGY INSTALLATIONS; ALSO IN BIOLOGICAL AND INDUSTRIAL RESEARCH.

CHARCO Dry Box Gloves are manufactured of MILLED NEOPRENE, by the Multiple Dip Cement Method, in which MOLECULAR SOLVENT solutions of Neoprene are used.

Both "NEO-SOL" and "RAD-BAR" gloves are offered in a complete range of styles and thicknesses, to fit 5, 7 and 8 inch diameter ports. The lead-loaded "RAD-BAR" glove is also offered in standard short glove lengths.

Our Research and Testing Laboratories Welcome The Opportunity To Help Solve Your Problems.

WRITE FOR BROCHURE AND TECHNICAL DATA

CHARLESTON RUBBER COMPANY

85 STARK INDUSTRIAL PARK

CHARLESTON, SOUTH CAROLINA

RESEARCH SCIENTISTS

ARMOUR RESEARCH FOUNDATION has professionally challenging openings for high calibre research engineers and scientists to do theoretical and experimental research in the fields of:

**Shock and Detonation Wave Phenomena
Hypersonic Flow
Rarefield Gas Phenomena
Transport Phenomena**

The Foundation encourages original research and publication of papers. These positions offer stimulating associations with other leading scientists in these fields.

Applicants must have an M.S. or Ph.D. degree in Engineering or Science, and have experience in one or more of these areas. In addition to the many cultural opportunities in Chicago, we offer the advantage of being located on a university campus. We have an excellent benefit program which includes a liberal vacation policy of up to four weeks each year.

We invite you to send your resume to:

E. P. Bloch

**ARMOUR RESEARCH FOUNDATION
of Illinois Institute of Technology
10 West 35th Street
Chicago 16, Illinois**

Ready for fall classes

Professor Silvan S. Schweber, of Brandeis University, is preparing a manuscript, *An Introduction to Relativistic Field Theories*, which will be published in the early fall. Basically, this book is a revision of Volume I, *Fields*, of the two-volume set, *Mesons and Fields*.

The most recent formulations of relativistic field theories, particularly Wightman's and LSZ's are being incorporated. A discussion of the analytic properties of scattering amplitudes, a proof of dispersion relations based on the Jost-Lehmann Dyson representation, as well as a proof of the TPC theorem and of the connection between spin and statistics are included.

The foreword to this volume is being written by Professor Hans A. Bethe.

**ROW, PETERSON AND CO.
Evanston, Ill. Elmsford, N. Y.**

Accent is On the Individual at ALCO...

A pioneer designer and manufacturer of nuclear thermal equipment. Active programs in the SM-1 operation and Core I loading, SM-1A and PM-2A final engineering and startup, and SM-2 design and development, as well as Core I procurement. Small groups providing many individual opportunities. Liberal benefits include company assistance in furthering educational development at nearby universities.

REACTOR ANALYSTS & REACTOR PHYSICISTS

To establish core nuclear and thermal characteristics.

REACTOR PHYSICISTS

To perform shielding and hazards analyses.

HEAT TRANSFER & FLUID FLOW ENGINEERS

To perform analyses of fluid dynamics, thermodynamics and heat transfer phenomena and to perform steady and transient thermal stress calculations.

College degree with several years' experience required

Some supervisory positions available

Please send complete resume and salary requirements in confidence to:
G. Y. Taylor, Administrative Services



ALCO PRODUCTS

INCORPORATED

Schenectady 5, New York

liked to see more emphasis placed on the use of significant figures and a little less emphasis on the formal part of preparing notes. The main part of the book consists of 47 experiments described in detail: 10 in mechanics; 7 in heat, theory of gases, and acoustics; 12 in optics; and 18 in electricity and magnetism. In line with the undergraduate character of the book no advanced experiments are described. The most advanced, in terms of modern physics, is probably the determination of the characteristics of a triode, which indicates how "classical" the contents of this syllabus are. The volume ends with appendixes on damping, galvanometers, and error calculation, as well as a few simple tables used in undergraduate laboratory practice.

All experiments are described in detail with extensive numerical examples giving the usual course of an experiment. The book does not ask the student questions as its American counterpart does—the whole experiment, together with an extensive graphical presentation of the results, is handed to the student. In comparing identical experiments in the two syllabuses, Westphal's seems to go into more detail. For instance, where Wall and Levine are content with giving the simple pendulum, Westphal treats both the simple and the compound pendulum together with a treatment of the higher order corrections of the period of oscillation. All in all, 21 pages are devoted to the pendulum as compared to 2 pages in the American book. On the other hand, the treatment of vacuum tubes is confined to $7\frac{1}{2}$ pages in Westphal, whereas Wall and Levine treat vacuum tubes and related matter in 31 pages.

The book can be warmly recommended as an aid to teachers who wish to make up syllabuses of their own. It is bound very attractively in a flexible leather-like plastic cover, which should give good wear even in the hands of undergraduates. It might be worthwhile for the American book industry to have a look at this kind of binding.

Books Received

LES SÉRIES ET LEUR APPLICATION À LA RESOLUTION DE DIVERS PROBLÈMES PRATIQUES D'ANALYSE MATHÉMATIQUE, Vol. 1. By C. Meynart. 198 pp. Eyrolles, Paris, France, 1959. 2800 fr.

CRPL EXPONENTIAL REFERENCE ATMOSPHERE. By B. R. Bean and G. D. Thayer. 67 pp. NBS Monograph No. 4. US Govt. Printing Office, Washington, D. C., 1959. Paperbound \$.45.

THE THEORY OF OPTIMUM NOISE IMMUNITY. By V. A. Kotelnikov. Translated from Russian by R. A. Silverman. 140 pp. McGraw-Hill Book Co., Inc., New York, 1959. \$7.50.

MATHEMATICAL METHODS AND THEORY IN GAMES, PROGRAMMING, AND ECONOMICS. Vol. 1, *Matrix Games, Programming, and Mathematical Economics*, 433 pp. Vol. 2, *The Theory of Infinite Games*, 386 pp. By Samuel Karlin. Addison-Wesley Publishing Co., Inc., Reading, Mass., 1959. \$12.50 each.

RUSSIAN DIARY. By Gaylord P. Harnwell. 125 pp. U. of Pennsylvania Press, Philadelphia, Pa., 1960. \$3.75.