be faulted for the oversight of his authors, it would appear appropriate for him to have mentioned that the circa-1968 politician is a different breed of animal from the stereotyped ward heeler of a bygone era. Some politicians of today are surprisingly astute on scientific matters and willing and eager to learn more.

Worth noting is the outstanding indexing job performed on this volume. It could be nothing less than a joint effort of one of Nelson's best classes of senior students. It reveals that the Presidents and their science advisors are the most widely quoted authorities on and in *The Politics of Science;* that the two most colorful, opinionated and quotable scientists of our times are Edward Teller and Hans Bethe; and that many, many writers on the relationship of the scientist with the outside world cannot proceed far into their subjects without a kind or unkind reference to C. P. Snow.

* * *

Craig Hosmer is the ranking house minority member of The Joint Committee on Atomic Energy.

Light reading for experimentalists

ADVANCED OPTICAL TECHNIQUES. A. C. S. Van Heel, ed. 678 pp. North-Holland, Amsterdam (Interscience, New York), 1967. $35.00

by Joseph G. Hoffman

The editor, A. C. S. Van Heel, writes in the forward: "The respective chapters can be considered as introductions to the pertinent literature." His intent was to have a volume equivalent to a *Progress in Optics,* except that the chapters would be fully developed rather than cursory reviews. The intent is achieved and the result is a contribution useful to both student and expert. The 18 chapters by 24 contributors serve as a massive reference text on selected aspects of current optics.

The list of chosen subjects is not what one might expect. The words hologram, holography and space-filter are not in the index. Seven of the chapters are about very practical subjects such as optical glass and the production of optical parts (a fascinating chapter, telling with numerous photographs how lenses, for example, are made). The other 12 chapters deal with thin films, fibers, coherence, interferometry and spectrometry.

Van Heel died before the volume was assembled, and this misfortune may account for the book's editorial problems. For example: There are numerous redundant statements; the index shows that "triple-slit interferometer" can be found on page 232, but it is on page 236; chapter 12, about a new kind of interferometer, will remain a puzzle for most readers because the two key figures referred to in the text as numbers 11 and 12, were left out.

The format is excellent. Heavy, glossy paper with many figures and photographs support the text. Each chapter has an adequate list of references and aside from its editorial deficiencies this volume is a commendable book for experimentalists.

* * *

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What holds the world together

STATISTICAL PHYSICS. (Berkeley Physics Course, Vol. 5) By Frederick Reif. 396 pp. McGraw-Hill, New York, 1967. $5.50

by Eugenie V. Mielczarek

Statistical Physics by Frederick Reif is the last volume of the Berkeley Physics Course. The text is intended for the last eight weeks of sophomore level. It is an introduction to the study of macroscopic systems and includes those topics that are usually presented as "Heat" on the freshman level. The delayed teaching of these topics in the Berkeley course enables the student to study properties of macroscopic systems with a foundation of classical physics and introduction to quantum physics (volumes 1 through 4). The order of presentation of the material differs from the usual. The usual freshman introduction to macroscopic systems comes after classical mechanics and starts with the kinetic theory of gases. This text starts with a three-chapter introduction to statistical theory and concepts of probability. Chapters 4, 5 and 6 discuss the basic concepts of statistical mechanics and thermodynamics. The last two chapters consider thermodynamic interactions and transport processes.

In no other published volume of the Berkeley Physics Course has the standard presentation of a topic been so

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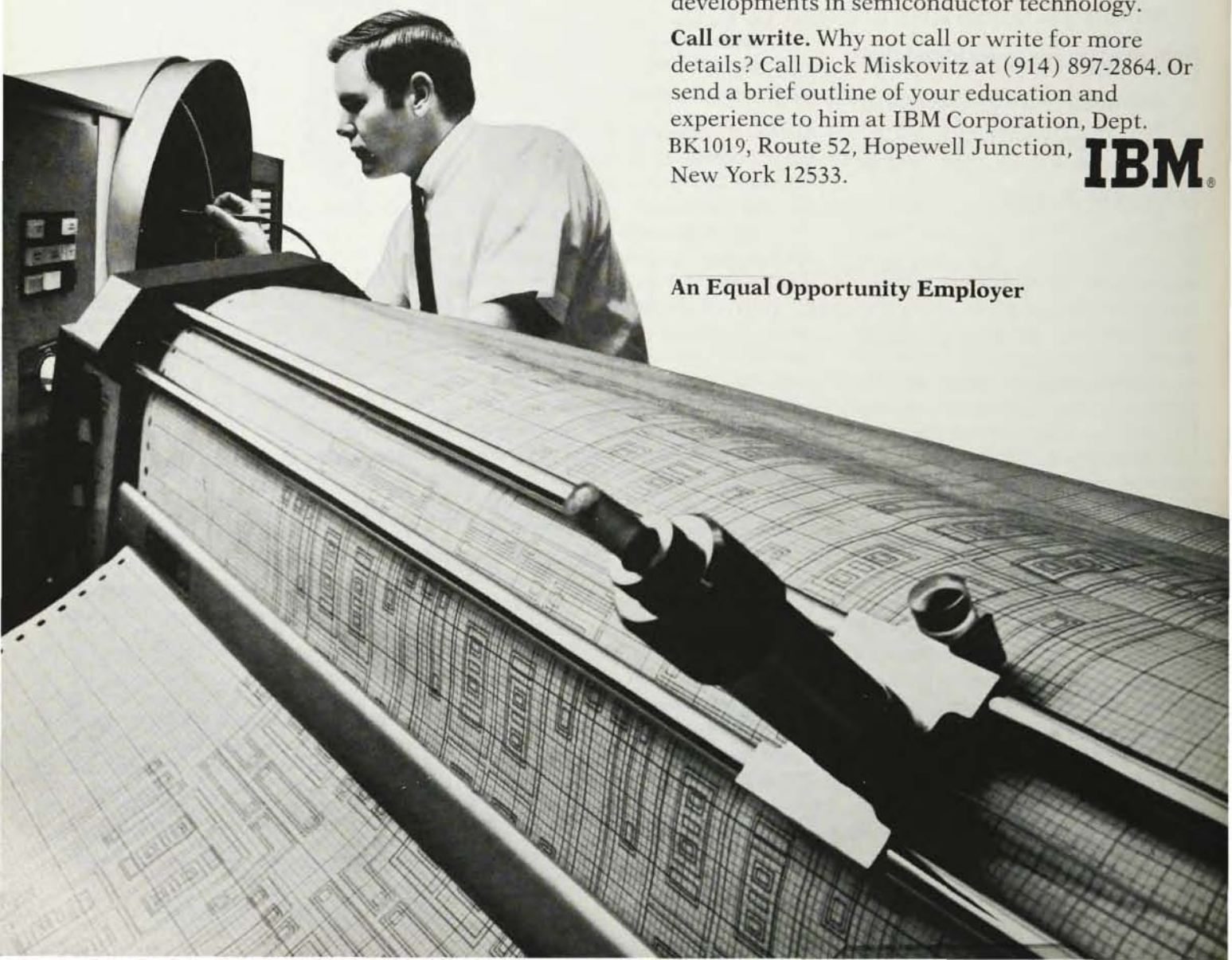

revised as in this volume, but the order of presentation has been very carefully chosen. The author states in his preface that the entire discussion is based "upon the systematic elaboration of a single principle, the tendency of an isolated system to approach its situation of greatest randomness."

The temptation to present the ideal gas first so that the variety of observed phenomena can be explained in problems is resisted. Instead the text succeeds in giving a comprehensive basis for the understanding of all macroscopic systems, of which the ideal gas is a special case. Thus the text emphasizes that understanding basic concepts of probability is fundamental to understanding macroscopic systems, much of which is necessary for a reasonable description of the macroscopic properties of all systems.

Notable in the text are the slow and careful introduction to the concept of temperature, computer-calculated figures illustrating distribution of particles in a box, and the consistent use of spin systems as examples of statistical behavior. It should also be noted that throughout the whole Berkeley series reference to biological systems is made whenever appropriate, thus pointing the way to the richest research frontier for the student.

This book would be a valuable addition to any physics library. The combination of this text and the senior-level one by the same author (*Statistical and Thermal Physics*, McGraw-Hill, 1965) would certainly provide the material for a course in statistical mechanics and thermodynamics at any level of the undergraduate physics curriculum.

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The reviewer is associate professor of physics at the George Mason College of the University of Virginia. Her research interests are in solid-state physics.

NEW BOOKS

NUCLEI

Low-Energy Neutron Physics. By I. I. Gurevich, L. V. Tarasov. (Trans. from Russian) 607 pp. Wiley (Interscience), New York, 1968. $28.00

Proceedings of the Third International Conference on Atomic Masses. Conf. proc. (Winnipeg, Can., Aug–Sept 1967). Robert C. Barber, ed. 901 pp. U. of Manitoba Press, Winnipeg, Canada, 1967.

ATOMS, MOLECULES, CHEMICAL PHYSICS

Progress in the Science and Technology of the Rare Earths. Vol. 3. LeRoy Eyring, ed. 568 pp. Pergamon Press, New York, 1968. $25.00

Quantum Theory of Magnetic Resonance Parameters. By Jasper D. Memory. 192 pp. McGraw-Hill, New York, 1968. $9.95

Structure De La Matière Cinétique Chimique, Vol. I: Eléments De Chimie Physique. Jacqueline Ficini, Nicole Lumbroso-Bader, Jean-Claude Depezay, eds. 192 pp. Hermann, Paris, 1968. Paper 30 F.

OPTICS

Images Optiques: Physique Générale et Expérimentale. (4th Edition) By Pierre Fleury, Jean-Paul Mathieu. 614 pp. Eyrolles, Paris, 1968. 110 F.

Introduction to Fourier Optics. By Joseph W. Goodman. 287 pp. McGraw-Hill, New York, 1968. $13.50

ELECTRICITY AND MAGNETISM

Electromechanical Dynamics Part 1: Discrete Systems. Herbert H. Woodson, James R. Melcher, eds. 329 pp. Wiley, New York, 1968. $11.00

Electromechanical Dynamics, Part 2: Fields, Forces, and Motion. Herbert H. Woodson, James R. Melcher, eds. 320 pp. Wiley, New York, 1968. $11.00

Electromechanical Dynamics, Part 3: Elastic and Fluid Media. Herbert H. Woodson, James R. Melcher, eds. 243 pp. Wiley, New York, 1968. $15.00

Introduction to Electrical Engineering. By William H. Hayt, Jr., George W. Hughes. 443 pp. McGraw-Hill, New York, 1968. $11.50

Nachwirkung in Ferromagnetika. By Helmut Kronmüller. 329 pp. Springer-Verlag, Berlin, 1968. $15.50

Traité D'Electricité Théorique: Electromagnétisme et Electrodynamique des Etats quasi Permanents Courants Induits et Actions Electromagnétiques, Vol. 4. By Marc Jouguet. 350 pp. Gauthier-Villars, Paris, 1968. 94 F.

FLUIDS, PLASMAS

Advances in Plasma Physics, Vol. 1. Albert Simon, William B. Thompson, eds. 340 pp. Wiley (Interscience), New York, 1968. $14.95

Mécanique des Fluides, Vol. 2. By Edmond A. Brun, Andre Martinot-Lagarde. 367 pp. Dunod, Paris, 1968.

Ondes Dans Les Plasmas: Physique Spatiale. By Daniel Quemada. 382 pp. Hermann, Paris, 1968. 48 F.

SOLIDS

Cryogenic Properties of Polymers. Tito T. Serafini, Jack L. Koenig, eds. 302 pp. Marcel Dekker, New York, 1967. $13.75

Kinetics and Mechanism of Crystallization: from the Fluid Phase and of the