specialists to pursue further any topic of interest. The chapters deal with the central nervous system, with the sense organs having to do with taste, smell, equilibration, vision, and hearing, with the complex actions and interactions of the endocrine glands and their effect on other bodily functions, with the various problems of sex, secondary sexual characters, and of reproduction, and with those of energy metabolism, thermoregulation, and body temperature. The other topics covered are less often included in physiological treatises, but they clearly have physiological "roots"; these are flight, breeding seasons, migration, long-distance orientation, the nature and analysis of behavior, and demographic aspects of bird populations—such as longevity, sex ratio, territorial behavior, and the natural regulation of population numbers.

The contributing authors are R. H. J. Brown, D. S. Farner, J. A. Gibb, R. A. Hinde, E. O. Höhn, J. R. King, the late G. Kramer, A. J. Marshall, A. Portmann, R. J. Pumphrey, W. Stingelin, and E. Witschi. To them and to those who gave of their time and energy to the first volume of this highly useful compendium are due the continuing gratitude of all who have occasion to use the volumes.

HERBERT FRIEDMANN
Los Angeles County Museum, Los Angeles, California

Modern Physics for Laymen

The Atom and Its Nucleus. George Gamow. Prentice-Hall, New York, 1961, 153 pp. $1.95.

Atomic Physics Today. Otto R. Frisch. Basic Books, New York, 1961. vii + 254 pp. Illus. $4.50.

The Atom and Its Nucleus is both brief and densely packed with ideas. It is carefully organized with a definite continuity that begins with the early chemical evidence for the existence of atoms. The next four chapters present the experiments and the theoretical ideas which led up to the modern view of atomic structure. The development is well handled, within the limitations of extreme brevity.

The two chapters on radioactivity seem less impressive, perhaps because so many others have dealt with this topic on the popular level. The later chapters come alive when the author discusses the atomic nucleus, nuclear reactions, and the great variety of newly discovered elementary particles.

The careful reader who remembers some elementary algebra and elementary physics will find this book a rewarding summary of the highlights of atomic physics. There is very little mathematics, but this minimum is quite essential to the presentation. One can hardly criticize the author for the inevitable defects of a condensed treatment, but one can criticize the publisher for what seems to be hurried production with errors that will trouble the reader. The illustrations, in particular, show signs of undue haste; for example: I think the reader will wonder how the Davisson Germer experiment could produce a circular diffraction pattern. In one or two other cases the caption and the figure do not agree with each other, nor with the text.

Atomic Physics Today is a collection of articles and lectures and is therefore less rigidly organized. It is almost entirely qualitative and requires a minimum of technical background. Several chapters of this book, also, are devoted to developing the modern picture of atomic structure. In addition, Frisch covers such topics as the economics of nuclear power, the biological effects of radiation, and the use of radioisotopes in medical research and treatment. It should therefore appeal to a much wider audience than *The Atom and Its Nucleus*.

Perhaps the most worthwhile part of *Atomic Physics Today* is the section which describes the "hardware" of modern physics. Here the author does a remarkable job of explaining and putting in proper perspective various devices such as the bubble chamber, nuclear emulsions, scintillation counters, and other instruments essential to particle physics. He gives an excellent summary of the techniques of experimental physics, giving proper credit to the vital instruments which enable us to "see" elementary particles, but which are not so glamorous as the well-publicized accelerators.

The chapters on nuclear models and elementary particles are good, but perhaps suffer from being entirely nonmathematical and from making minimum use of illustrations. The concluding chapters present an interesting speculation about the notion of causality in relation to quantum theory and a well-argued justification for basic research. In spite of the limitations of a wholly verbal approach this may be an excellent first book for the adult with no previous exposure to physics.

In summary, both books endeavor to present modern physics to the nonphysicist; they differ in style and content, and each will appeal to a different group of readers.

MALCOLM K. SMITH
Science Teaching Center, Massachusetts Institute of Technology

Administration in Education

Governance of Colleges and Universities. John J. Corson. McGraw-Hill, New York, 1960. vii + 209 pp. $5.50.

The author of this book, the director for an international management consultant firm, who himself has had broad experience not only in business management but also in higher education as a professor and as a trustee, has investigated the obligations and responsibilities of college and university regents, administrators, and faculties. From a survey of institutions of higher education representative of private, public, and denominational colleges and universities with enrollments varying from 800 to 27,000 students, he has sought to determine how such schools are governed and how their governance might be improved.

The study was made to elucidate the general theory behind decision making in such institutions and to determine at what level decisions are made and how they are carried out. Unprecedented demands are about to be made upon colleges and universities because of the imminent increase in the numbers of students, the necessity of adapting higher education to the needs of modern society, and the need to continue to stimulate creativity.

Governance in colleges and universities differs from that of businesses and industries in that it serves a multiplicity of purposes. It must therefore be more dispersed than that of a typical business. The problems of decision making are carefully analyzed from the viewpoint of the board of trustees, the president, the deans, the department chairman, and the faculties. Among the problems are whether the final authority in matters of education policy should be delegated to the faculty, to what extent the faculty should act as advisors to the president and deans, and whether the president should hold himself apart