pains to insure a high degree of mutual understanding among themselves and this potent body of advisor-research workers. The present report speaks briefly of the vexing fear that the existence of much money for a given area of scholarship may distort a university or college program. There is the even more vexing, because unspoken, fear that scholars may come to be measured in terms of their grant money rather than their intellectual abilities.

It is a little startling to me to find the statement: "Research Grants however, and particularly those sponsored by the Federal Government, seem to be concentrated in a relatively few institutions of higher learning." The implication of this statement is that other institutions are neglected. So far as life sciences are concerned at least, federal funds do turn out, in fact, to be distributed roughly in proportion to academic populations of states. What more could be asked?

Since "sponsored research" deals mainly with scientific research, it is natural that the present volume is biased in that direction. Working next door to this scientific mountain may have profound effects on the life of a nonscientific researcher, and this deserves most serious attention within the educational world. It is indeed important that studies such as the one under consideration be carried out, that the results be published and widely discussed. To survive, the academic institution needs to know thoroughly what its aims and ideals really are and develop policies to achieve them.

I commend to the attention of the committee an earlier report (1605) on university policies contained in a volume entitled *The Advancement of Learning*. In it, Francis Bacon quotes Diogenes who, upon being asked "How it happened that Philosophers followed the rich, and not the rich the Philosophers?" replied "Because the Philosophers know what they want, but the rich do not."

H. BURR STEINBACH
Department of Zoology,
University of Minnesota

Introduction to the Theory of Neutron Diffusion. vol. 1. K. M. Case, F. de Hoffmann, and G. Placzek. Los Alamos Scientific Lab., Los Alamos, N.M., 1953. viii + 174 pp. Illus. Paper, $1.25. (Order from Supt. of Documents, GPO, Washington 25.)

This slim volume is based on a series of lectures given by G. Placzek in 1949 on methods of treating the one-velocity diffusion problem in homogeneous, isotropic media. It includes "Streaming in vacuum," "Purely absorbing media," "The equations for a general medium," "Uniform infinite medium with isotropic scattering," and "Application of the results obtained for the uniform infinite medium to the solution of finite problems." This last chapter, unfortunately, is cut off after a single application (to the source-free half-space). The remaining applications are promised in the projected volume II.

Although the subject matter is limited, it is basic and well chosen. The treatment is clear, detailed, and thorough. Included are many extremely useful tables and curves (for example, on the escape probabilities for uniform sources in purely absorbing media). Especially noteworthy and impressive is the thorough discussion of the approach to the asymptotic (diffusion) density in strongly absorbing media.

BERNARD T. FELD
Department of Physics,
Massachusetts Institute of Technology

Structure of Molecules and Internal Rotation. San-Ichiro Mizushima. Physical chemistry, a series of monographs. Eric Hutchinson, Ed. Academic Press, New York, 1954. x + 244 pp. Illus. $6.

The work discussed in this book is closely related to that of Mizushima and his colleagues at the University of Tokyo during the past two decades. The book is organized into two parts, the first of which deals with a description of the development of the investigations on internal rotation. The second part presents a more detailed explanation of some of the theoretical aspects of the problem and a description of experimental methods.

Ethane and its derivatives are treated in considerable detail. A summary is given of the results of investigations using infrared absorption, Raman scattering, dipole moment data, electron diffraction, and heat-capacity measurements. The interpretation of these studies is developed to show support for the model that describes the liquid and gas phases as consisting of a mixture of *trans* and *gauche* rotational isomers. The *trans* form seems, in general, to be stabilized in the crystalline state. The influence of internal hydrogen bonding is briefly covered, and the nature of the potential barrier hindering internal rotation is discussed in connection with the treatment of thermal data.

A chapter is devoted to simple molecules, other than ethane derivatives, that may show internal rotation. Rotational, or orientational, isomerism in cyclic molecules is also treated. The remainder of part I is devoted to a discussion of more complicated systems, such as long-chain hydrocarbons, polypeptides, and related compounds. The various possibilities of extended, folded and helical peptide chain structures are discussed in terms of rotational orientation about appropriate bonds. Experimental evidence for one or another of these structures in specific proteins is cited.

Part II begins with a description of several experimental techniques used or developed by the group at the University of Tokyo. A brief introduction to the theory of normal vibrations is followed by application to special cases involving torsional oscillation, again with emphasis on ethane derivatives. One section is devoted to the vibrations of long-chain molecules, and one to sum and product rules applicable to rotational isomers. Finally, the analysis of the Raman and infrared spectra of dichloroethane is given as an example.

The book constitutes an interesting introductory account of the application of studies in infrared and Raman spectroscopy to simple molecules having internal rotational or torsional vibrational degrees of freedom. The possible extension of these results and/or techniques to the elucidation of structures for more complex molecules is discussed and illustrated by some examples.

PAUL C. CROSS
University of Washington
Department of Chemistry

The Structural Chemistry of Proteins. H. D. Springall. Academic Press, New York; Butterworths, London, 1954. x + 376 pp. Illus. $6.80.

The author states that this book grew out of a course of lectures given to undergraduates in the final year of an "Honours School of Chemistry" and to postgraduate research workers. After an introduction defining the biological importance of the proteins and considering the amino acids derived by hydrolysis, Springall discusses successively the chemical methods of peptide synthesis, the fibrous proteins, the globular proteins, and finally the analytic chemistry of the proteins and amino acids. Each chapter has a self-contained biblography, and there are author and subject indexes as well as an index of "named" proteins and peptides. Each chapter has a reasonably detailed introductory summary of its subject, which should serve to orient the student in the subject and its literature.

The chapters on fibrous and globular proteins contain discussions of physicochemical methods applicable to proteins including x-ray and electron beam diffraction, infrared and ultraviolet absorption, electrophoresis and sedimentation. The relationship of these studies to molecular sizes and shapes and to the various detailed models of folded, pleated, and helical peptide chains is clearly stated.

The chapter on analytic chemistry of proteins and amino acids sets forth the various methods used for the estimation of amino acids in hydrolyzates, as well as the newer methods for sequence determination, and discusses the results of these, always with the thought expressed or implied that knowledge of the "covalent" sequences is basic to an understanding of the biological nature of proteins. The book properly emphasizes that, upon this covalent structure, a noncovalent specific structure characterizes proteins, especially the globular group.

No consideration is given to ion binding by proteins, except insofar as hydrogen-ion binding is a tool in analytic determination, and the description of denaturation phenomena is skimpy.

The book should be valuable as a guide to chemistry majors who have had standard organic and physical chemistry courses, to chemists who are not familiar with its field, and to biologists who would like to know what the chemists are talking about.

MILTON LEVY
Department of Biochemistry, New York University College of Medicine

A Short Textbook of Colloid Chemistry. B. Jirgensons and M. E. Straumanis. Wiley, New York; Pergamon, London, 1954. (Rev. version of *Kurzes Lehrbuch der Kolloidchemie,* 1949.) xvi + 420 pp. Illus. $8.

This little book is a completely revised version of the authors' *Kurzes Lehrbuch der Kolloidchemie,* which was published in 1949. The short first part concerns itself with defining the colloid field of physical chemistry and with the definitions and classifications needed for its understanding. The reader of the first part will acquire only a superficial knowledge of the subject.

The larger second section of the book is filled with a vast amount of experimental facts on colloids, together with statements of the applicable theories. The authors leave one with the impression that they have not left out a single bit of information that they considered at all useful. There is a good deal of very recent matter presented in a rather convincing manner. However, the whole subject fails in logical development. For example, chapters 9–11 concern themselves with the size, shape, and structure of colloids, and these are followed by one on the preparation of such systems. Again thixotropy, a colloidal process, is briefly discussed in a section following that on mechanical properties of polymers when it ought to appear under coagulation. A student would grasp the subject far better if it were presented without so many facts but in a logical manner—that is, all work on colloidal processes following a full knowledge of the properties of colloids and their extended surfaces.

The book is well illustrated and will be useful as a source of much factual information. Some authors' names are spelled incorrectly, and the initials of several are incorrect. However, the format makes for easy reading.

LLOYD H. REYERSON
School of Chemistry,
University of Minnesota

New Books

Time's Arrow and Evolution. Harold F. Blum. Princeton Univ. Press, Princeton, N.J., ed. 2, 1955. 219 pp. $4.50.

Seashores. A guide to shells, sea plants, shore birds, and other natural features of American coasts. Herbert S. Zim and Lester Ingle. Simon & Schuster, New York, 1955. 160 pp. Paper, $1; cloth, $1.95.

Grassland Farming. George H. Serviss and Gilbert H. Ahlgren. Wiley, New York; Chapman & Hall, London, 1955. 146 pp. $2.96.

Lehrbuch und Atlas der Anatomie des Menschen. Band II, *Eingeweide Nervensystem-Sinnesorgane.* Fr. Kopsch. Thieme, Stuttgart, Germany, 1955 (U.S. distrib.: Intercontinental Medical Book Corp., New York 16). 768 pp. $15.35.

Introduction to Social Welfare. Walter A. Friedlander. Prentice-Hall, New York, 1955. 683 pp. $9.

The Genus Nicotiana. Origins, relationships and evolution of its species in the light of their distribution, morphology and cytogenetics. Thomas Harper Goodspeed. Chronica Botanica, Waltham, Mass.; Stechert-Hafner, New York, 1954. 536 pp. $12.50.

Origins of Resistance to Toxic Agents. A symposium. M. G. Sevag, Roger D. Reid, and Orr E. Reynolds, Eds. Academic Press, New York, 1955. 471 pp. $12.

The Human Adrenal Cortex. Ciba Foundation Colloquia on Endocrinology, vol. VII. G. E. W. Wolstenholme and Margaret P. Cameron, Eds. Little, Brown, Boston, 1955. 665 pp. $10.

Bergsonian Philosophy and Thomism. Jacques Maritain. Trans. by Mabelle L. Andison and J. Gordon Andison. Philosophical Library, New York, 1955. 383 pp. $6.

Machine Translation of Languages. Fourteen essays. William N. Locke and A. Donald Booth, Eds. Massachusetts Inst. of Technology, Cambridge; Wiley, New York; Chapman & Hall, London, 1955. 243 pp. $6.

Analysis of Insecticides and Acaricides. A treatise on sampling, isolation, and determination, including residue methods. Francis A. Gunther and Roger C. Blinn. Interscience, New York–London, 1955. 696 pp. $14.

Information Processing Equipment. M. P. Doss, Ed. Reinhold, New York, 1955. 270 pp. $8.75.

Astronomical Cuneiform Texts. vol. I, *Introduction the Moon,* 278 pp.; vol. II, *The Planets Indices,* 233 pp.; vol. III, *Plates.* O. Neugebauer, Ed. Lund Humphries, London, 1955. £5 5s. per set.

The Roger Adams Symposium. Papers presented at a symposium in honor of Roger Adams at the Unversity of Illinois, Sept. 3–4, 1954. Wiley, New York; Chapman & Hall, London, 1955. 140 pp. $3.75.

Der Briefwechsel von Johann Bernoulli. Band I. Herausgegeben von der naturforschenden gesellschaft in Basel. Birkhauser, Basel, 1955. 531 pp.

The Gifted Student as Future Scientist. Paul F. Brandwein. Harcourt, Brace, New York, 1955. 107 pp. $2.

The Collected Works of George Abram Miller. vol. IV. Univ. of Illinois, Urbana, 1955. 458 pp. $7.50.

Handbook of Food and Agriculture. Fred C. Blanck, Ed. Reinhold, New York; Chapman & Hall, London, 1955. 1039 pp. $12.50.

Theory of Functions of a Real Variable. I. P. Natanson. Trans. by Leo F. Boron and Edwin Hewitt. Ungar, New York, 1955. 277 pp. $6.50.

Chemistry of Carbon Compounds. vol. III, pt. A, *Aromatic Compounds.* E. H. Rodd, Ed. Elsevier, New York–London, 1954. 685 pp. $17.50.

Approximations for Digital Computers. Cecil Hastings, Jr., Jeanne T. Hayward, and James P. Wong. Princeton Univ. Press, Princeton, 1955. 201 pp. $4.

Personal Adjustment and Mental Health. Alexander A. Schneiders. Rinehart, New York, 1955. 587 pp. $5.

Annual Review of Plant Physiology. vol. 6. Daniel I. Arnon, Ed. Annual Reviews, Stanford, Calif., 1955. 505 pp. $7.

Ancient Education. William A. Smith. Philosophical Library, New York, 1955. 309 pp. $3.75.

The Biology of a Marine Copepod *Calanus finmarchicus* (Gunnerus). S. M. Marshall and A. P. Orr. Oliver & Boyd, London, 1955. 188 pp. 21s.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

Transactions of the American College of Cardiology. vol. IV, 1954. Simon Dack and Bruno Kisch, Eds. The College, New York, 1955. 319 pp.

Astronomy. Vocatonal and professional monograph. No. 72. Freeman D. Miller. Bellman, Cambridge, Mass., 1955. 32 pp. $1.

An Engineering Interpretation of the Economic and Financial Aspects of American Industry. vol. XI, *The Automotive Industry.* George S. Armstrong & Co., Inc., New York, 1955. 87 pp.

Some Polyclad Flatworms from the West Indies and Florida. vol. 104, No. 3341. Libbie H. Hyman. Smithsonian Institution, Washington, 1955. 35 pp.

Footing the Hospital Bill. Pamphlet No. 222. Elizabeth Ogg. Public Affairs Pamphlets, New York, 1955. 28 pp. $0.25.

The Ford Foundation Report 1954. The Foundation, New York, 1955. 114 pp.