search and in training investigators, for the next 6 years. During this period he became dean of the University of California School of Medicine.

In 1920, he accepted the invitation of wise Rush Rhees, president of the University of Rochester, to be the dean and organizer of the newly planned medical school there. The main supporters of this new school—a "post Flexner Report school"—were George Eastman and Abraham Flexner, representing the General Education Board of the Rockefeller Foundation. Under Whipple's guidance and management, the School of Medicine and Dentistry has had a brilliant and beneficial career, thoroughly educating medical students for basic and clinical studies and service, and providing, in an original manner, for the development of scientists and teachers in the fields of dentistry and oral pathology.

For many years, as an influential adviser on local, national, and international medical research affairs, Whipple was one of the men who guided policies and actions of the Rockefeller Foundation and the Rockefeller Institute for Medical Research.

A book review does not have the space for even a list of Whipple's honors, or for more than a brief mention of his love of the out-of-doors and his prowess as a hunter and fisherman. He can catch a trout or tarpon on approximately the same tackle. He can shoot a pheasant coming or going, at any altitude. He can dispense wisdom with shrewdness and a twinkle. All of these characteristics, and more, can be traced through the excellent index at the end of this volume.

STANHOPE BAYNE-JONES
Washington, D.C.

Ideal Topic, Perfect Author

An Introduction to Molecular Kinetic Theory. Joel H. Hildebrand. Reinhold, New York; Chapman and Hall, London, 1963. xii + 105 pp. Illus. Paper, $1.95.

Recently many attempts have been made to extend the textbook treatment of important topics in chemistry in order to challenge serious students, but few if any have been so successful as this volume. Kinetic theory is an ideal topic for such treatment, and Joel Hildebrand is the perfect author. His humor and unmatched teaching skills are continually evident in the many well-chosen topics he has here joined together.

After a discussion of the ideal gas, which includes degrees of freedom of polyatomic molecules and interesting discussions of sound velocity and sedimentation gradient, real gases are treated. Various equations of state are presented, and the discussion of real gases ends with sections on intermolecular forces and gas mixtures. The latter topics provide a smooth transition to the last section on liquids, solids, and solutions. Here Hildebrand gives a concise summary of his own treatments of solubilities and regular solutions.

The treatment throughout is sufficiently rigorous for a serious freshman student to find it profitable, but mathematics is used only to the degree necessary for the topic at hand. Primary emphasis is placed on understanding concepts rather than on the derivation of formulas. Occasionally, calculus is required, and the author wisely includes it in a way that should demonstrate to the student the utility of the mathematics he is studying, without discouraging the student who knows no calculus. Imaginative questions that, like the rest of the book, should introduce the student to the joy of actually thinking are provided at the end of two chapters.

Hildebrand's book should serve well its intended purpose—that of stimulating the beginning science student. It should be required reading for all who teach high school or college science. It most certainly is enjoyable reading for anyone interested in fundamental science.

ROBERT A. PLANE
Department of Chemistry,
Cornell University

Hybrid Corn

Professor's Story of Hybrid Corn. Herbert Kendall Hayes. Burgess, Minneapolis, Minn., 1963. vi + 237 pp. Illus. $6.50.

Hybrid corn has been called "the most far-reaching development in applied biology of this century." The statement may well be true. Owing to the development of hybrid corn and the improved cultural practices that have accompanied its use, acre yields of corn in the United States have exactly doubled in the 30-year period between 1929 and 1959. Now hybrid corn is contributing significantly to increased food production in the countries of Latin America and of southern Europe.

Herbert Kendall Hayes was one of the pioneers in this revolutionary development, and he trained many of the plant breeders who later participated in it. In this slender volume written after his retirement, Hayes, the dean of American plant breeders, describes the early studies in theoretical genetics—made by George H. Shull, Edward East, Donald F. Jones, and Hayes himself—which furnished the basis for the methods of hybrid corn production. His personal acquaintance with these pioneers and with their studies has enabled him to write an interesting account of the early days in the development of hybrid corn.

The larger part of the book is devoted to technical aspects of producing hybrid corn: selecting and testing the inbred strains, employing the inbred strains in various kinds of hybrids, breeding for resistance to disease and insects and for chemical composition and other special purposes. On all of these aspects the author writes from personal experience and from a wide acquaintance with the extensive published literature. The final chapter, "What of the future," stresses the need for basic research on heterosis, the biological phenomenon that the production of hybrid corn has so successfully exploited. There is an extensive bibliography which, however, contains some curious omissions. Otherwise the book represents an objective, authentic, interesting, and readable account of the highly successful application of theoretical genetics to the improvement of America's principal food plant.

PAUL C. MANGELSDORF
Botanical Museum,
Harvard University

The Platte River Syndrome

Natural History. Richard A. Pimentel. Reinhold, New York; Chapman and Hall, London, 1963. xii + 436 pp. Illus. $9.75.

This is certain to be a controversial text because it is so easy to point to it as an example of the Platte River syndrome—a mile wide and 6 inches

deep. The origin of life is covered in a page, adaptation of mammals in a page, bird migration in four paragraphs, green algae in a page and half, angiosperms in three pages, diptera in a paragraph, ciliates in a page, hurricanes in a paragraph, "galaxy organization" in two paragraphs, and "organization of the universe" in four paragraphs. This list could be greatly extended.

Yet is this kind of criticism really justified? Is there not a great need for the means whereby the average citizen and the statesman alike can become scientifically literate over a rather broad spectrum? In fact this book devotes about 80 pages to geology and other earth sciences, 200 to the classification of plants and animals, and 100 to ecology *sensu strictu*. There is clearly much of genuine value, accurate, up-to-date, simply stated, and worth knowing. Each chapter is provided with a truly admirable list of references. With very few exceptions, the many line drawings are both pleasing and informative.

There are obvious places that could profit by reworking in a second edition. The treatment of evolution, especially on the important theoretical side, is very weak. To the innocent student such statements as "variation is primarily due to heredity and environmental influence upon the basic hereditary pattern" will not sound like natural selection but rather like Buffon and Saint-Hilaire's theory of direct environmental action on the germ plasm. The discussion of orthogenesis needs to be sharpened up. There is no discussion of the principle of competitive exclusion, surely one of the most nearly universal and most revealing principles of ecology, and one which can be found in Darwin long before its more recent reformulation by Gause and by Hardin. The book is a courageous attempt at a worthy objective. I wonder if it would not have had a sharper focus and a more incisive style had its title been "Ecology"?

GAIRDNER B. MOMENT
Department of Biological Sciences, Goucher College

New Books

Biological and Medical Sciences

Advances in Biochemistry. Proceedings, Summer School in Biochemistry (Srinager, India), 1962. P. S. Sarma, Ed. Indian Inst. of Science, Bangalore, 1963. 459 pp. $5.

Advances in Biology of Skin. vol. 4, *The Sebaceous Glands.* Proceedings, Brown University symposium (Providence, R.I.), 1962. 272 pp. Illus. $12.50.

Being-in-the-World. Selected papers of Ludwig Binswanger. Translated from the German by Jacob Needleman. Basic Books, New York, 1963. 380 pp. Illus. $10. Papers selected by Needleman in consultation with Binswanger. Needleman has provided an introduction in which he discusses the origins of Binswanger's ideas, their evolution, and their relevance.

Biochemical Clinics. An integrated series of international symposia. vol. 2, *The Kidney.* I. Newton Kugelmass. Donnelley, New York, 1963. 543 pp. Illus.

Chemotaxonomie der Pflanzen. vol. 2, *Monocotyledoneae.* R. Hegnauer. Birkhauser, Basel, Switzerland, 1963. 540 pp. Illus. SF. 98.

The Ecology of North America. Victor E. Shelford. Univ. of Illinois Press, Urbana, 1963. 632 pp. Illus. $10.

Epizootiology of Cancer in Animals (*Annals of the New York Academy of Sciences*, vol. 108, art. 3, pp. 617–1326). Harold E. Whipple, Ed. New York Acad. of Sciences, New York, 1963. Illus. Paper, $10.

The Evolution of the Metazoa. Jovan Hadzi. Pergamon, London; Macmillan, New York, 1963. 511 pp. Illus. $14.

Expression of the Emotions in Man. Peter H. Knapp, Ed. International Universities Press, New York, 1963. 363 pp. $7.50. Papers and discussions from the symposium held at the 1960 annual meeting of the AAAS (New York).

The Flowering Process. Frank B. Salisbury. Pergamon, London; Macmillan, New York, 1963. 246 pp. Illus. $8.50.

Food Technology the World Over. vol. 1, Europe, Canada and the United States, and Australia. Martin S. Peterson and Donald K. Tressler, Eds. Avi Publishing Co., Westport, Conn., 1963. 550 pp. Illus. $15.

Hypnosis and Suggestion in Psychotherapy. A treatise on the nature and uses of hypnotism. H. Bernheim. Translated from the second revised edition by Christian A. Herter. University Books, New Hyde Park, N.Y., 1963. 444 pp. $10. The first part of this book (nine chapters on the nature of hypnosis) was first published in French in 1848 (the original title was *suggestive Therapeutics*); the second part (two chapters and 105 case studies) was published in 1886, with a new preface in 1887. The English translation appeared the following year. In an eight-page introduction Ernest R. Hilgard places the book in context and attempts to "highlight just enough of [Bernheim's] ideas to urge the reader to go on and explore for himself."

International Review of Connective Tissue Research. vol. 1. David A. Hall, Ed. Academic Press, New York, 1963. 415 pp. Illus. $14.

Life and the Physical Sciences. Harold J. Morowitz. Holt, Rinehart, and Winston, New York, 1963. 128 pp. Illus. Paper.

Les Maladies des Plantes Maraîchères. C. M. Messiaen and R. Lafon. Institut National de la Recherche Agronomique, Paris, 1963. 153 pp. Illus. F21.

Medical Terminology. A programmed text. Genevieve Love Smith and Phyllis E. Davis. Wiley, New York, 1963. 183 pp. Appendixes. Illus. Paper. $3.95.

Modern Developments in Audiology. James Jerger, Ed. Academic Press, New York, 1963. 458 pp. Illus. $12.

Morphometry of the Human Lung. Erwald R. Weibel. Academic Press, New York, 1963. 163 pp. Illus. $12.

Pharmacology of the Carotid Body Chemoreceptors. S. V. Anichkov and M. L. Belen'kii. Translated from the Russian edition (Leningrad 1962) by R. Crawford. Pergamon, London; Macmillan, New York, 1963. 239 pp. Illus. $8.50.

Phylogeny and Evolution of Crustacea. Proceedings of a conference (Cambridge, Mass.), 1962. H. B. Whittington and W. D. I. Rolfe, Eds. Museum of Comparative Zoology, Harvard Univ., Cambridge, Mass., 1963. 204 pp. Illus.

The Physiological Basis of Mental Activity (*Electroencephalography and Clinical Neurophysiology*, suppl. No. 24). Proceedings of a symposium (Mexico City), October 1961. Raul Hernandez Peon, Ed. Elsevier, New York, 1963. 295 pp. Illus. $16.

Psychology in Relation to Medicine. R. M. Mowbray and T. Ferguson Rodger. Livingstone, London; Williams and Wilkins, Baltimore, Md., 1963. 407 pp. Illus. $8.25.

Psychopharmacology Handbook. vol. 2, 1960. *Animal Research in Psychopharmacology.* Central nervous system effects. Edited and compiled by Leon S. Otis, John J. Bosley, and Lucy Birzis. U.S. Public Health Service, 1963 (available from GPO, Washington, D.C.). 545 pp. Paper, $3.

Radiation and Radiomimetic Chemicals. Comparative physiological effects. L. A. Elson. Butterworth, Washington, D.C., 1963. 132 pp. Illus. $5.

The Rat Brain. A stereotaxic atlas of the forebrain and lower parts of the brain stem. Joachim F. R. König and Renate A. Klippel. Williams and Wilkins, Baltimore, Md., 1963. 168 pp. Illus. $15.

Restoration of Function After Brain Injury. A. R. Luria. Translated from the Russian edition (Moscow 1948) by Basil Haigh. Pergamon, London; Macmillan, New York, 1963. 291 pp. Illus. $10.

The Science of Genetics. Charlotte Auerbach. Harper, New York (© 1961), 1964. 284 pp. Illus. Paper. $1.85.

Smoking and Health. Report of the Advisory Committee to the Surgeon General. U.S. Public Health Service, Washington, D.C. (order from GPO, Washington, D.C.). 405 pp. Paper, $1.25.

The Soybean. Genetics, breeding, physiology, nutrition, management. A. G. Norman, Ed. Academic Press, New York, 1963. 249 pp. Illus. Paper, $6.50.

Strahlenschutz in Forschung und Praxis. vol. 3. Hans-Joachim Melching, Hans Robert Beck, Hans-Adolf Ladner, and Eberhard Scherer. Rombach, Freiburg, Germany, 1963. 336 pp. Illus. DM. 58.80.

Tretichnyee Flory Zapadnoy Sabiri (Tertiary Floras of Western Siberia). P. I. Dorofeyev. Komarov Botanical Inst., Acad. of Sciences of the U.S.S.R., Moscow, 1963. 346 pp. Illus.