Book Reviews

Louis Pasteur: Free Lance of Science. René J. Dubos. Boston: Little, Brown, 1950. Pp. 418. $5.00.

Louis Pasteur: Free Lance of Science is no ordinary biography. It is science history and a story of the life of a man who left a deep imprint on scientific thinking and progress and an exposition of the philosophy of his time. The influence of Pasteur's heredity and his personality on his accomplishments is cleverly brought out. By drawing upon some intimate sketches of those people who influenced him most and by blending those sketches with Pasteur's contributions, Dr. Dubos has succeeded in producing a book that is at the same time both a fine addition to the history of science and a source of excellent entertainment.

Much of all the insight into Pasteur's life and times that the book affords is accomplished by sprinkling into the narrative carefully selected passages from his letters, speeches, and memoirs, and seasoning it well with pertinent quotations taken from utterances of his contemporaries and those of earlier scientists and philosophers.

Among these many quotations one may be mentioned that reveals the beauty of Pasteur's philosophy. "The Greeks have given us one of the most beautiful words of our language, the word 'enthusiasm'—a God within. The grandeur of the acts of men is measured by the inspiration from which they spring. Happy is he who bears a God within!"

Many of us who find burdens in and out of government predominately absorbing energies which would otherwise be employed in investigative pursuits must admire the man, Pasteur, who was also able to participate in the affairs of the community to the same degree and with the same driving spirit that characterized his behavior in the laboratory. "He managed to remain faithful to the laboratory while serving society" and was a "fervent scientist and an effective citizen," says the author. His profound sentimentality, the will to work, his urge to create and, finally, his indomitable will are all clearly portrayed to demonstrate the direction of his entire life and productivity.

Many of Pasteur's utterances find application today. We are quick to realize that times have not changed materially, except for the lapse in years. As an example, we find him quoted as follows: ". . . two contrary laws seem to be wrestling with each other nowadays: the one, a law of blood and of death, ever imagining new means of destruction and forcing nations to be constantly ready for the battlefield—the other, a law of peace, work and health, ever evolving new means for delivering man from the scourges which beset him."

In spite of his intense nationalism, Pasteur realized the international scope of science. He said, "Science knows no country because knowledge belongs to humanity, and is the torch that illuminates the world." Could he have been anticipating such possibilities as a National Science Foundation when he added, "Science is the highest personification of the nation because that nation will remain the first which carries the furthest the works of thought and intelligence"?

In speaking before the Academy of Sciences, in one of the many controversies he engaged in there, Pasteur revealed his penetrating awareness and analysis of the bureaucratic evils experienced in his day. What he said there serves to us a warning and incentive to fight such dangers abusive to our present system as we would fight the plague: "It is the subtle danger that arises from the assumption by an official body, however distinguished, of responsibilities beyond its real competence." This word of caution should be remembered by everyone upon whom responsibility rests in directing students or research, either by active administration or in the distribution of funds. How many young inspired students of science have become mere technicians through bad advice and unimaginative direction? How many scientific advances have been delayed through misdirection of funds that might have been available if those responsible for this distribution had had the vision and courage that might be reasonably expected of men in such positions?

Pasteur had a philosophy of research that many of us might imitate. "For him, experimental techniques and procedures of observation were never an end unto themselves, but only tools, to be used for the solution of a problem and to be abandoned as soon as more effective ones became available." He was not "satisfied with formulating the theoretical basis of the process . . . but took an active interest in designing industrial equipment. . . ." His well-known statement, "There are no such things as pure and applied science—there are only science, and the applications of science," is typical of his thinking. He also said, "It is not without utility to show the man of the world, and the practical man, at what cost the scientist conquers principles, even the simplest and the most modest in appearance."

Although the author does give emphasis to Pasteur's contributions to science and to mankind, he does not neglect to indicate that Pasteur had a personal side beset with many human frailties. Neither does he do an injustice to Pasteur's contemporaries by slighting either the importance of their contributions or the effect of the "laborious efforts of the 'unknown soldiers' of science" and philosophers who preceded him.

It is hard to realize that the infant biology only three quarters of a century ago was fraught with heated debates over the then highly controversial subjects of "spontaneous generation," the "germ theory" of disease, and the means by which practical immunization might be attained. Dr. Dubos has handled his subject matter skillfully. He has succeeded in convincing the reader of Pasteur's genius and the scientific productivity of his period, of the influences of his heritage on his

career, and the great influence of his work and philosophy on succeeding generations.

The book is to be highly recommended as being factually sound, intellectually stimulating, even exciting at times, and bright with human interest and personal anecdotes.

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Einführung in die Zoologische Nomenklatur durch Erläuterung der Internationalen Regeln. Second edition. Rudolf Richter. Frankfurt, Germany: Verlag Waldemar Kramer, 1948. Pp. 252. 8.50 DM.

In this *Introduction to Zoological Nomenclature* Dr. Richter, for many years a member of the International Commission on Zoological Nomenclature and a distinguished paleontologist and nomenclaturist, has presented the most complete and best organized study of the subject that this reviewer has seen. The major portion of the work, after an introductory discussion (69 pp.) on general questions of nomenclature, is devoted to the articles of the *International Rules.* Each is discussed in turn, often in considerable detail and with numerous examples, in a plan reminiscent of, but more elaborate than, an early work by Stiles (1905, "The international code of zoological nomenclature as applied to medicine," *Hygienic Lab. Bull.* 24). In final sections, the author has listed the generic names that have been placed on the "Official List," genotype designations passed upon by the International Commission, and published works that have been suppressed for nomenclatorial purposes.

Although the discussions are of course not official interpretations, nomenclaturists will find much of interest in the author's views, especially on such subjects as family names, the Law of Priority, and homonymy.

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Scientific Book Register

External Morphology of the Primate Brain. Cornelius J. Connolly. Springfield, Ill.: Charles C. Thomas, 1950. 378 pp.; illustrated. $10.00.

Introduction to Theoretical Physics, 5 vols. Max Planck. Reissue; translated by Henry L. Brose. ***General Mechanics,*** Vol. 1, 272 pp. ***The Mechanics of Deformable Bodies,*** Vol. II, 234 pp. ***Theory of Electricity and Magnetism,*** Vol. III, 247 pp. ***Theory of Light,*** Vol. IV, 216 pp. ***Theory of Heat,*** Vol. V, 301 pp. New York: Macmillan, 1949. Illustrated. $3.00 a volume.

Medical Entomology. 2nd ed. Robert Matheson. Ithaca, N. Y.: Comstock Publ., 1950. 612 pp.; illustrated. $7.50.

Quantitative Ultramicroanalysis. Paul L. Kirk. New York: John Wiley; London: Chapman & Hall, 1950. 310 pp.; illustrated. $5.00.

Physiology of Heat Regulation and the Science of Clothing. L. H. Newburgh, Ed. Philadelphia-London: W. B. Saunders, 1949. 457 pp.; illustrated. $7.50.

Earth Waves. L. Don Leet. Cambridge, Mass.: Harvard Univ. Press; New York: John Wiley, 1950. 122 pp.; illustrated. $3.00.

The Sandhill Cranes. Lawrence H. Walkinshaw. Bloomfield Hills, Mich.: Cranbrook Institute of Science, 1949. 201 pp.; illustrated.

The Transuranium Elements: Research Papers. Glenn T. Seaborg, Joseph J. Katz, and Winston M. Manning. New York: McGraw-Hill, 1949. 1733 pp.; illustrated. 2 vols., $15.00 a set.

Physiology of the Eye: Optics. Vol. 1. Arthur Linksz. New York: Grune & Stratton, 1950. 334 pp., illustrated. $7.50.

Metabolism and Function: A Collection of Papers Dedicated to Otto Meyerhof on the Occasion of His 65th Birthday. D. Nachmansohn, Ed. New York: Elsevier Publ., 1950. 348 pp.; illustrated. $7.00.

Franciscan Awatovi: The Excavation and Conjectural Reconstruction of a 17th-Century Spanish Mission Establishment at a Hopi Indian Town in Northeastern Arizona. Ross Gordon Montgomery, Watson Smith, and John Otis Brew. Cambridge, Mass.: Peabody Museum, Harvard University, 1949. 361 pp.; illustrated. $5.85 paper; $8.35 cloth.

The Sea Shore. C. M. Yonge. London, S.W.1: Collins Publ., 1949. 311 pp., illustrated. 21 s. net.

Malariology: A Comprehensive Survey of All Aspects of This Group of Diseases from a Global Standpoint, 2 vols. Mark F. Boyd, Ed. Philadelphia: W. B. Saunders, 1949. 1643 pp.; illustrated. $35.00 a set.

Vitamin Methods, Vol 1. Paul György, Ed. New York: Academic Press, 1950. 571 pp.; illustrated. $10.00.

Terrestrial Radio Waves: Theory of Propagation. H. Bremmer. New York: Elsevier, 1949. 343 pp.; illustrated. $5.50.

Principles of a New Energy Mechanics. Jakob Mandelker. New York: Philosophical Library, 1949. 73 pp.; illustrated. $3.75.

Chemical Constitution and Biological Activity. W. A. Sexton. London, W.C.2, Engl.: E. & F. N. Spon, 1949. 412 pp.; illustrated. 55s. net.

Introductory Botany. Alexander Nelson. Waltham, Mass.: Chronica Botanica, 1949. 479 pp.; illustrated. $3.75.

Geology Applied to Selenology: The Shrunken Moon, IV. J. E. Spurr. Winter Park, Fla.: J. E. Spurr, 1949. 207 pp.; illustrated.

Die Anaskosporogenen: Hefen, 2. H. A. Diddens and J. Lodder. Die Hefesammlung des "Centraal-Bureau voor Schimmelcultures": Beiträge zu einer Monographie der Hefearten. New York: Interscience; published in Amsterdam, 1942. 511 pp.; illustrated. $9.00.