

concepts of nonequilibrium thermodynamics to such areas as membrane transport, nerve impulse, muscular contraction, photobiology and even prebiotic and biological evolution. Although Volkenstein frequently refers the reader back to the second chapter, the later chapters provide still further mathematical development.

Chapter 8 is on nonlinear chemical dynamic processes in biology. To illustrate the kinetics of nonlinear processes Volkenstein discusses oscillatory chemical reactions, which result from autocatalytic reactions in which there is a periodic disturbance. He shows how such reactions can reduce the "biological clock" to a "chemical clock" controlled by periodic enzymatic reactions or photosynthesis. He also shows how these nonlinear chemical systems can be applied to such phenomena as membrane transport, enzymatic oscillations and the fibrillation of cardiac muscle membrane, and he suggests that other biological systems be examined in this way. Of particular interest is his well-illustrated summary of Russian work in this area. Oscillations in growth due to periodic disturbances are now being investigated as a cause of variations in animal populations as well as in plant growth.

The 600 pages of the two volumes are not sufficient space to develop all of the topics and concepts Volkenstein mentions, and he concentrates on those that are of immediate interest to him; he summarizes results in other areas with references and underived equations.

The volumes contain over 1300 references, with perhaps 95% of these in English-language journals and books. There are no problems or sample calculations as one would find in a conventional textbook.

These books represent a significant contribution to the literature of biophysics, and scientists in the field will appreciate the enormous amount of time that the author must have spent in assembling and summarizing this body of knowledge.

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Gamma-Ray Astronomy. *Cambridge Astrophysics Series.* P. V. Ramana Murthy, A. W. Wolfendale. 248 pp. Cambridge U. P., New York, 1986. \$49.50. *Text*

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Multiple-Photon Excitation and Dissociation of Polyatomic Molecules. *Topics in Current Physics 35.* C. D. Cantrell, ed. 288 pp. Springer-Verlag, New York, 1986. *Price not stated. Compendium*

Orbitals, Terms and States. M. Gerloch. 176 pp. Wiley, New York, 1986. \$31.95. *Text*

Perturbations in the Spectra of Diatomic Molecules. H. Lefebvre-Brion, R. W. Field. 420 pp. Academic, New York, 1986. \$80.00 hardcover, \$44.95 paper. *Monograph*

Spectroscopy of Molecular Excitons. *Springer Series in Chemical Physics 16.* V. L. Broude, E. I. Rashba, E. F. Sheka. 271 pp. Springer-Verlag, New York, 1985. \$48.00. *Monograph*

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Biophysical Effects of Steady Magnetic Fields. *Springer Proceedings in Physics 11.* Proc. Wksp., Les Houches, France, February 1986. G. Maret, J. Kiepenheuer, N. Boccara eds. 231 pp. Springer-Verlag, New York, 1986. DM 84.00

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Positron Studies of Solids, Surfaces, and Atoms. Proc. Symp., Waltham, Mass., December 1984. A. P. Mills, W. S. Crane, K. F. Canter, eds. 335 pp. World Scientific, Singapore (US dist. Taylor and Francis, Philadelphia), 1986. \$37.00

Sino-Japan Bilateral Workshop on Statistical Physics and Condensed Matter Theory. Proc. Wksp., Shanghai, April 1986. X. Xide, ed. 381 pp. World Scientific, Singapore (US dist. Taylor and Francis, Philadelphia), 1986. \$56.00

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