Vignettes: Comforts of Science

One way in which an increased knowledge of the nature of the physical and biological world can be of value to the individual citizen is through the conferring on him of an increased equanimity, an increased confidence in natural law and order. The well-being of an individual may be greatly impaired by his fear of the unknown, which may far exceed the fear that he would have of a known danger, which he might prepare to meet in a rational way.

—*Linus Pauling*, 1951, as quoted in *Linus Pauling in His Own Words: Selections from His Writings, Speeches, and Interviews* (Barbara Marinacci, Ed.; Simon and Schuster)

Friends, chemist friends, if someone comes before you verbalizing anxiety over a chemical in the environment, don't harden your hearts and assume a scientistic, analytical stance. Open your hearts, think of one of your children waking at night from a nightmare of being run over by a locomotive. Would you tell him (or her), "Don't worry, the risk of you being bitten by a dog is greater"?

—*Roald Hoffman*, in *The Same and Not the Same* (Columbia University Press)

ar had almost completed a dissertation on his chosen topic. Thus, there are the occasional unsurprising entomological errors (for example, p. 81, "this doctoral thesis on the synonymy of the European dragonflies was the first of many publications on the Neuroptera"). As well, his reluctance to provide either modern scientific names or even contemporary common names for many species may leave many entomologists unfamiliar with 19th-century systematics (that is, the vast majority of entomologists) scratching their heads in an attempt to guess just exactly what species are under discussion. Sorensen also has a penchant for presenting data that are utterly uninterpretable from a scientific perspective. Without a statistical analysis, for example, I am considerably more reluctant than Sorensen to ascribe much sociological significance to the fact that "entomologists' families that were engaged in theology account for 21.4 percent of the total whereas families of DAB [Dictionary of American Biography] scientists in the clergy account for only 16.7 percent of the total" (p. 161).

But these are quibbles. This book is a pleasure; Sorensen has done a remarkable job in bringing largely unheralded historical figures to life and in placing the discipline of entomology in a cultural and historical context. In doing so, *Brethren of the Net* is unique. To date, most accounts of this period of entomological history are episodic, fragmentary, purely descriptive, and largely unreadable; whatever its undeniable value as a reference book, for example, Pamela Gilbert's *A Compendium of the Biographical Literature on Deceased Entomologists* (British Museum, 1977) is not a book to curl up with in bed. Though these brilliant, insightful, and innovative individuals are long gone, their legacy endures, and this book is an entirely appropriate, hugely informative, and generally entertaining tribute to their memory.

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Other Books of Interest

The Physical Review. The First Hundred Years. A Selection of Seminal Papers and Commentaries. H. HENRY STROKE, Ed. AIP Press, Woodbury, NY, 1995. xx, 1266 pp., illus., + CD-ROM. $75; to members of AIP member societies, $60.

The Physical Review together with *Physical Review Letters* carries today—and has carried since the 1930s—more physics papers (and more of the most important) than any other journal. Its couple of thousand pages per annum 60 years ago probably then held what today the journal's editor-in-chief, Benjamin Bederson, estimates its 100,000 pages per annum now hold, that is, about one quarter of all published physics literature. To celebrate the centenary of the founding of the *Phys. Rev.* (in 1893, six years in advance of the founding of the American Physical Society, which adopted the journal in 1913) its sponsoring organizations have issued this huge printed volume, and an accompanying CD-ROM, containing the pick of its papers—some 1000 from among the (very roughly) quarter of a million that have appeared in the journal. The selection was limited—with a few exceptions—to papers appearing before 1985 and was left to the discretion of the 14 expert individuals among whom responsibility for physics' several subject areas was divided: E. Gerjuoy (atomic physics), H. Feshbach (nuclear physics), J. L. Lebowitz (statistical physics), P. J. E. Peebles (gravity physics and cosmology), J. A. Simpson (cosmic radiation), P. C. Martin (condensed matter), M. N. Rosenbluth (plasma physics), W. K. H. Panofsky and G. H. Trilling (elementary particle physics experiments), S. Treiman (particle theory), S. Goldstein and J. L. Lebowitz (quantum mechanics), plus M. Hamermesh (the early years) and C. H. Townes (science and technology). Editor Stroke allotted to each of these "area" editors a number of pages—atomic physics got 158 printed pages, particle theory 166, condensed matter 105, particle experiments 133, plasma physics 78, and so on. He provided them with nominations generated by a wide solicitation and left it to them to distribute their pages over the million or so published prior to 1985—subject, of course, to the "exclusion principle" that no paper could be had by more than one editor. Since some of the most important advances—precisely because they were so important—fell in more than one subject area, the pertinent papers are divided up between chapters. Within each chapter, the arrangement of the papers is chronologic. Generally, the papers selected for the printed volume—some 200 of the 1000 on the CD—are skewed toward the earlier years and toward letters (that is, toward *brevity*), while the CD contains a larger proportion of more recent papers and of full accounts of researches. Each area editor has contributed an introduction to his chapter summarizing in 5 to 15 pages the history of that field of physics—that by J. A. Simpson for cosmic rays is especially careful and successful in setting the selected papers in context—and these introductions are enlivened by more than 200 photographs of physicists.

Without being altogether overwhelming, this massive collection is still comprehensive enough to stand as a representation of seven decades (1893–1963) of physical research in the United States, plus two further decades in which the earlier steady trickle among *Phys. Rev.* papers of work done elsewhere was growing at an ever-increasing rate. (The curves crossed shortly after the cut-off date for this collection, and at present *Phys. Rev.* receives more than twice as many manuscripts from abroad as from the United States.) It must be said, however, that readers for whom typographic quality is of importance will be pained by

the relative fuzziness of the 300-dot-per-inch resolution at which the papers are reproduced, both on the CD—the trade-off for so many papers and pages—and in the printed volume, which for economy was printed from the same digitized data. Further, while full bibliographic information is given in the chapter introductions for the papers reproduced in that chapter of the printed volume and in the corresponding section of the CD, there is no means, other than checking each possibly pertinent introduction or mounting the CD and activating its search options, to ascertain whether the CD contains a specific paper sought by the user. Nonetheless, one can only be grateful to the area editors, and, most especially, the volume editor, Henry Stroke, for their great labor putting together this very welcome collection.

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Sin-itiro Tomonaga. Life of a Japanese Physicist. MAKINOSUKE MATSUI, Ed. MYU, Tokyo, 1995. xii, 338 pp., illus., + plates. $50 or ¥5000; paper, $29 or ¥2900. Translated from the Japanese edition (Tokyo, 1980) by Cheryl Fujimoto and Takako Sano. English edition edited and annotated by Hiroshi Ezawa. Distinguished Scientists Series, 3.

Sin-itiro Tomonaga was awarded the 1965 Nobel Prize in Physics (shared with Richard Feynman and Julian Schwinger) for his work in the 1940s in the development of quantum electrodynamics. On his death in 1979 Japanese friends and colleagues collaborated to produce this memorial work that now appears in English. The translation was motivated by the consideration that "Japanese scientists seem to appear, on the part of the world outside the Japanese language sphere, as machines for producing scientific papers, which have no human faces," and indeed the original Japanese title, *Kaiso no Tomonaga Sin-itiro* or "Sin-itiro Tomonaga in Recollections," more aptly describes the work, which is not a biography in the conventional sense but a collection of brief anecdotal essays by Tomonaga himself, members of his family, and acquaintances ranging from elementary school classmates to fellow eminences in science. The contributions are grouped chronologically, but seemingly as much by vintage of acquaintance as by era of Tomonaga's life. The son of a philosophy professor, Tomonaga was educated at Kyoto and spent time in Leipzig with Werner Heisenberg and at the Institute for Advanced Study in Princeton before returning to Japan to take up a series of academic and administrative positions there. Given the purpose of the volume, it offers little in the way of exposition of the content or significance of Tomonaga's scientific work (a source on that subject is Silvan Schweber's *QED and the Men Who Made It*, reviewed in *Science* **266**, 1888 [1994]). The book does, however, include accounts of Tomonaga's laboratory arrangements, dealings with students and colleagues, and readings and writings. Many of the contributors recount informal social occasions, some recurring themes in these accounts being Tomonaga's sickliness as a child, his enjoyment of revels enhanced by alcohol, and the improvement in his spoken English that was wrought (he felt) by the acquisition of American false teeth. There are also accounts of Tomonaga's public activities (among them advocacy of nuclear arms control) and honors received. The text is augmented by over 30 pages of photographs and other illustrations, and a chronology of Tomonaga's life and career and an index to the work are included at the end.

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Books Received

Analytic Element Modeling of Groundwater Flow. H. M. Haitjema. Academic Press, San Diego, 1995. xii, 394 pp., illus., + diskette. $59.95.

Analyzing Interaction. Sequential Analysis with SDIS and GSEQ. Roger Bakeman and Vicenç Quera. Cambridge University Press, New York, 1995. x, 155 pp., + diskette. $59.95; paper, $24.95.

Artificial Minds. Stan Franklin. MIT Press, Cambridge, MA, 1995. xiv, 449 pp., illus. $30.

Bacterial Superantigens. Stucture, Function and Therapeutic Potential. Jacques Thibodeau and Rafick-Pierre Sékaly, Eds. Landes, Austin, TX, 1995 (distributor, CRC Press, Boca Raton, FL). xvi, 241 pp., illus. $99. Molecular Biology Intelligence Unit.

Basic Issues of the History of Nutrition. K. Y. Guggenheim. 2nd ed. Magnes Press, Jerusalem, 1995. 143 pp., illus. $17.

Biomimetics. Design and Processing of Materials. Mehmet Sarikaya and Ilhan A. Aksay, Eds. AIP Press, Woodbury, NY, 1995. xii, 285 pp., illus. $69. AIP Series in Polymers and Complex Materials.

Chiral Reactions in Heterogeneous Catalysis. Georges Jannes and Vincent Dubois, Eds. Plenum, New York, 1995. xvi, 212 pp., illus. $85. From a symposium, Brussels, Oct. 1993.

Circumstellar Matter 1994. G. D. Watt and P. M. Williams, Eds. Kluwer, Norwell, MA, 1995. xvi, 618 pp., illus. $315 or £199 or Dfl. 445. Reprinted from *Astrophysics and Space Science*, vol. 224, nos. 1-2, 1995. From a conference, Edinburgh, Aug.-Sept. 1994.

Classical Mechanics with Maple. Ronald L. Greene. Springer-Verlag, New York, 1995. x, 173 pp., illus. Paper, $29.

Current Protocols in Protein Science. Vol. 1. John Coligan *et al.*, Eds. Wiley, New York, 1995. Variously paged, illus. Looseleaf, $295.

Davenport-Schinzel Sequences and Their Geometric Applications. Micha Sharir and Pankaj K. Agarwal. Cambridge University Press, New York, 1995. xii, 372 pp., illus. $49.95.

Descartes and His Contemporaries. Meditations, Objections, and Replies. Roger Ariew and Marjorie Grene, Eds. University of Chicago Press, Chicago, 1995. viii, 261 pp. $45 or £35.95; paper, $17.95 or £14.25. Science and Its Conceptual Foundations.

Design Issues in Optical Processing. John N. Lee, Ed. Cambridge University Press, New York, 1995. xviii, 274 pp., illus. $59.95. Cambridge Studies in Modern Optics, 16.

Electrophysiology of Mind. Event-Related Brain Potentials and Cognition. Michael D. Rugg and Michael G. H. Coles, Eds. Oxford University Press, New York, 1995. xviii, 220 pp., illus. $75. Oxford Psychology, no. 25.

Elementary Theory of Analytic Functions of One or Several Complex Variables. Henri Cartan. Dover, New York, 1995. 228 pp., illus. Paper, $8.95. Reprint, 1973 ed.

Emergent Forms. Origins and Early Development of Human Action and Perception. Eugene C. Goldfield. Oxford University Press, New York, 1995. xiv, 369 pp., illus. $75; paper, $39.

Explorations in Chemistry. A Manual for Discovery. Nicholas Kildahl and Theresa Varco-Shea. Wiley, New York, 1995. viii, 345 pp., illus. Paper, $38.95.

Farmer's Rights and Plant Genetic Resources. Recognition and Reward: A Dialogue. M. S. Swaminathan, Ed. Macmillan India, Madras, 1995. xii, 440 pp., illus. Rs. 600.

Fire in the Mind. Science, Faith, and the Search for Order. George Johnson. Knopf, New York, 1995. xv, 381 pp., illus. $27.50.

Five Equations that Changed the World. The Power and Poetry of Mathematics. Michael Guillen. Hyperion, New York, 1995. x, 277 pp. $22.95.

The Grizzly Bears of Yellowstone. Their Ecology in the Yellowstone Ecosystem, 1959-1992. John J. Craighead, Jay S. Sumner, and John A. Mitchell. Island Press, Washington, DC, 1995. xxii, 535 pp., illus. $100.

Growth Factors and Tumor Promotion. Implications for Risk Assessment. R. Michael McClain *et al.*, Eds. Wiley-Liss, New York, 1995. xx, 470 pp., illus. $125. Progress in Clinical and Biological Research, vol. 391. From a conference, Austin, TX, Dec. 1993.

Guide to Organizing an International Scientific Conference. Gideon Rivlin. Karger, Farmington, CT, 1995. x, 94 pp., illus. Paper, $68 or DM 93 or SFr 78.

Handbook of Physiology. A Critical, Comprehensive Presentation of Physiological Knowledge and Concepts. Section 11, Aging. Edward J. Masoro, Ed. Oxford University Press, New York, 1995. xii, 681 pp., illus. $165.

Harmonic Approximation. Stephen J. Gardiner. Cambridge University Press, New York, 1995. xiv, 132 pp. Paper, $32.95. London Mathematical Society Lecture Note, 221.

How Maps Work. Representation, Visualization, and Design. Alan M. MacEachren. Guilford, New York, 1995. xiv, 513 pp., illus. $42.

The Human T-Cell Receptor Repertoire and Transplantation. Peter J. van den Elsen, Ed. Springer-Verlag, New York, and Landes, Austin, TX, 1995 (distributor, CRC Press, Boca Raton, FL). xii, 172 pp., illus. $79. Molecular Biology Intelligence Unit.

The Impact of Short Interspersed Elements (SINEs) on the Host Genome. Richard J. Maraia. Landes, Austin, TX, 1995 (distributor, CRC Press, Boca Raton, FL). xvii, 236 pp., illus. $99. Molecular Biology Intelligence Unit.

In Quest of the Sacred Baboon. A Scientist's Journey. Hans Kummer. Princeton University Press, Princeton, NJ, 1995. xxii, 331 pp., illus., + plates. $29.95. Translated by M. Ann Biederman-Thorson.

In Search of Infinity. N. Ya. Vilenkin. Birkhäuser, Cambridge, MA, 1995. vii, 145 pp., illus. $24.50. Translated by Abe Shenitzer.

Linus Pauling. A Life in Science and Politics. Ted Goertzel and Ben Goertzel. BasicBooks, New York, 1995. xviii, 300 pp.; illus., + plates. $27.50.

Liquid Metal Systems. Material Behavior and Physical Chemistry in Liquid Metal Systems 2. H. U. Borgstedt, Ed. Plenum, New York, 1995. xii, 419 pp., illus. $120. From a seminar, Karlsruhe, Germany, March 1993.

Melatonin. From Contraception to Breast Cancer Prevention. Michael Cohen, John Hosimovich, and Amnon Brzezinski. Sheba Press, Fairfax, VA, 1995. xiv, 157 pp., illus. Paper, $65.

The Melatonin Miracle. Nature's Age-Reversing, Disease-Fighting, Sex-Enhancing Hormone. Walter Pierpaoli and William Regelson, with Carol Colman. Simon and Schuster, New York, 1995. 255 pp., illus. $21.

Mending the Ozone Hole. Science, Technology,