"August Kekulé (*front row, center*) became head of one of the most important research schools in German chemistry when he became director of the Chemical Institute at Bonn in 1865." [From *Before Big Science*; Edgar Fahs Smith Collection, University of Pennsylvania]

ment of science: the beginning of the 19th century marked the inception of the professionalization and specialization of the sciences in the university; the 1940s witnessed the birth of government-supported "big science" with the race to utilize nuclear fission for military purposes. The book begins and ends appropriately with chapters on these broader, institutional settings of science.

These dates also coincide closely with important way stations in the development of atomic theory. Shortly after 1800, John Dalton published his first set of relative atomic weights and then his chemical atomic theory. Shortly before 1940, the first successful nuclear fission was achieved. It is atomic theory, of course, that provides the link between chemistry and physics, and it receives a preponderance of attention. However, Nye also has written excellent chapters on the development of 19th-century electromagnetism and thermodynamics. Moreover, embedded within these chapters are nuggets of insight about the comparative developments of chemistry and physics and their interactions. One of my favorites is Nye's differentiation of "physical" from "chemical" phenomena in the first part of the 19th century in terms respectively of reversibility/continuity and of irreversibility/discontinuity. She then depicts how these sciences came to merge their orientations with the development of thermodynamics and physical chemistry.

Inevitably, the short compass of this book and the author's concern for thematic coherence result in deemphasis or even omission of certain developments and perspectives. I shall concentrate on chemistry. Claude-Louis Berthollet's Newtonian vision of a dynamical chemistry also appeared at the start of the 19th century but receives no account here. There is nothing on the development of biochemistry as a field, although Linus Pauling is characterized as "becoming a 'biochemist'" (p. 144) and Nye has important things to say about the role of natural history in the early development of organic chemistry. Indeed, the general question of how new scientific specialties developed in chemistry and physics is not addressed. And the rise of industrial research in chemistry receives only incidental mention. But extensive excursions into these areas would have both lengthened the book considerably and destroyed its coherence.

"Staff and research students in the Chemistry Department at the University of Manchester, 1907–1908. Many chemists attended the weekly Friday physics colloquia organized by Ernest Rutherford, who received the Nobel Prize in Chemistry in 1908." [From *Before Big Science*; *J. R. Soc. Chem.* **78**, 455 (1954)]

One theme that I think might have merited more treatment than the occasional discussion Nye provides is how chemistry and physics compared and contrasted with each other, both in their theoretical orientations and in their laboratory practice. A more sustained consideration of this theme would have been illuminating in itself and enhanced the benefits of uniting the histories of chemistry and physics in one book.

One can, no doubt, spin endless possibilities of what else might have been contained in this book, so vast and variegated is its subject. What Nye has wrought is, in fact, an extraordinarily well-knit and comprehensive historical account of the development of modern physical science. Since this book presumes some technical familiarity with chemistry and physics, it will not serve all the pedagogical needs of the history of this subject. But for students with some scientific background, and for the scientifically literate public, it will provide an admirable overview of the modern history of two of the grandest sciences that have ever flourished.

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Animals and Temperature. Phenotypic and Evolutionary Adaptation. Ian A. Johnston and Albert F. Bennet, Eds. Cambridge University Press, New York, 1996. xvi, 419 pp., illus. $85. ISBN 0-521-49658. Society for Experimental Biology Seminar 59.

Cytology, Genetics, and Molecular Biology of Algae. B. R. Chaudhary and S. B. Agrawal, Eds. SPB Academic, Amsterdam, 1996 (U.S. distributor, Demos Vermande, New York). viii, 439 pp., illus. $140.50 or DFL 225. ISBN 90-5103-126-2.

Developmental Science. Robert B. Cairns, Glen H. Elder Jr., and E. Jane Costello, Eds. Cambridge University Press, New York, 1996. xx, 291 pp., illus. $44.95. ISBN 0-521-49585-7. Cambridge Studies in Social and Emotional Development.

The Eleventh Plague. The Politics of Biological and Chemical Warfare. Leonard A. Cole. Freeman, New York, 1996. viii, 284 pp. $22.95. ISBN 0-7167-2950-4.

Global Change and Terrestrial Ecosystems. Brian Walker and Will Steffen, Eds. Cambridge University Press, New York, 1996. xviii, 619 pp., illus., + plates. $120, ISBN 0-521-57094-8; paper, $39.95, ISBN 0-521-57810-8. International Geosphere-Biosphere Programme Book, 2. From a conference, Woods Hole, MA, May 1994.

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Many-Body Tree Methods in Physics. Susanne Pfalzner and Paul Gibbon. Cambridge University Press, New York, 1996. x, 168 pp., illus. $49.95. ISBN 0-521-49564-4.

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Physics and Chemistry at Oxide Surfaces. Claudine Noguera. Cambridge University Press, New York, 1996. xvi, 223 pp., illus. $64.95. ISBN 0-521-47214-8.

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Transgenic *Xenopus*. Microinjection Methods and Developmental Neurobiology. Schlomo Seidman and Hermona Soreq. Humana, Totowa, NJ, 1996. xviii, 198 pp., illus., + plates. $79.50. ISBN 0-89603-457-7. Neuromethods, 28.