

## Essentials extracted

Alexander N. Glazer

**Bioconjugate Techniques.** By Greg T. Hermanson. *Academic*: 1996. Pp. 785. \$99 (hbk); \$49.95 (pbk).

MANY unrelated reasons prompt the chemical modification of peptides, proteins, oligonucleotides, sugars and polysaccharides, lipids and glycolipids. The unifying elements are found in the chemical methods most commonly used and in the preferred (or most readily available) reagents. This book deals with the chemistry of the reactive groups on target molecules; the reagents for crosslinking or tagging molecules; and the many unrelated applications of conjugated molecules — in immunology, as affinity supports, in liposome technology, in the

preparation of proteins labelled with colloidal gold, as enzyme conjugates, in the labelling of nucleic acids, in enzyme conjugation to DNA and so on.

The presentation throughout is that of a laboratory manual. Well-illustrated descriptions of a particular chemical reaction are followed by a detailed protocol and list of references extending into 1994. The coverage of reagents and methods is comprehensive, and sources are given for commercially available compounds. The breadth of coverage inevitably leads to superficial discussion of individual topics, so readers would be well advised also to consult authoritative primary sources. Typographical mistakes, occasional factual errors and stylistic inconsistencies in the reference list mar an otherwise well-produced and useful text. □

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### New in paperback

**Darwin's Dangerous Idea: Evolution and the Meanings of Life** by Daniel C. Dennett. Touchstone, \$16. "Never in the field of scientific endeavour can so great a theory have been so misunderstood by so many with so little reason: but Dan Dennett's book is a marvellous corrective", Mark Ridley, *Nature* **375**, 457 (1995).

**The Consumer's Good Chemical Guide: Separating Facts from Fiction in Everyday Life** by John Emsley. Corgi, £6.99. Winner of the 1995 Rhône-Poulenc Prize for Science Books. "Accessible and entertaining... deserves to be widely read", John Mann, *Nature* **371**, 214 (1994).

**About Time: Einstein's Unfinished Revolution** by Paul Davies. Penguin, £8.99. "Almost every possible aspect of 'time' and its associated scientific and philosophical problems are touched on in this book... [it] can be read easily and most readers will find in it matters of absorbing interest", Peter Landsberg, *Nature* **375**, 548 (1995).

**Evolution and Healing: The New Science of Darwinian Medicine** by Randolph M. Nesse and George C. Williams. Phoenix, £7.99. "A needed preventive measure against the enduring, endemic nineteenth-century consciousness about nature that pervades medical thinking near the turn of the twenty-first century — a vaccine, one might say, against the lulling delusions of pre-Darwinian thought... [the authors] give both physicians and lay readers a chance to remedy, quite painlessly, the ignorance of evolution that expensive educations have usually left them with", Melvin Konner, *Nature* **375**, 641 (1995).

**The Third Culture: Beyond the Scientific Revolution** by John Brockman. Touchstone,

\$14. "Brockman has assembled two-dozen voluble scientists, most of them with a commitment to popular exposition, and in interviews, from which the editor's prompts have been expunged, gives them their head... mainly the tributes go something like this: 'Jack is one of my most cherished friends. No-one can have a higher opinion of him than I and I think he is an unctuous, boneheaded little creep'", Walter Gratzer, *Nature* **375**, 743 (1995).

**Marie Curie: A Life** by Susan Quinn. Addison-Wesley, \$16. "Quinn has produced a magisterial piece of work... wonderful in its depth and detail, so much so that it will be years, if ever, before this account is displaced", June Goodfield, *Nature* **374**, 831 (1995).

**The Coming Plague** by Laurie Garrett. Penguin, £12.50. Winner of the 1996 Pulitzer prize, this is an impressively encyclopaedic account of the threat posed by newly emerging viruses.

**A Moment on the Earth: The Coming Age of Environmental Optimism** by Gregg Easterbrook. Penguin, \$14.95. The author of this controversial tome contends that most Western environmental trends are improving and suggests that we should adopt a 'middle path' — an approach that recognizes the seriousness of current human abuses of the environment but also the strength and enduring power of nature.

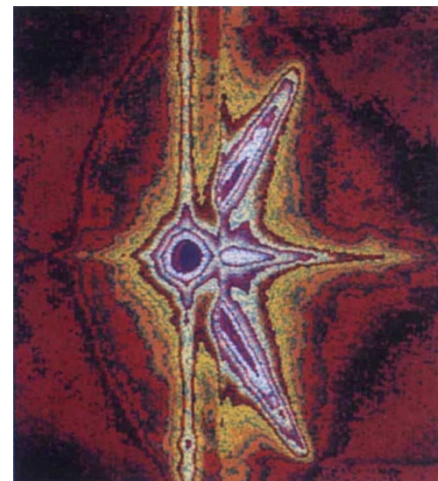
**Selected Journals and Other Writings** by John James Audubon, edited by Ben Forkner. Penguin, \$15.95. Audubon is famous for his vivid paintings of American birds, several of which are reproduced here. But this volume is mainly a showcase for his lesser-known literary talent: journals, letters, bird biographies, a memoir of his early years and stories of the American frontier.

## Not just saying no

Philip St J. Russell

**Photonic Crystals: Molding the Flow of Light.** By John D. Joannopoulos, Robert D. Meade and Joshua N. Winn. *Princeton University Press*: 1995. Pp. 137. \$35, £30 (hbk).

PHOTONIC crystals provide a good instance of how the intuitive tools developed for one field can lead to a cascade of new possibilities in another. These transparent



Light redirected out of the plane of a two-dimensional photonic lattice. Credit: Paul Gourley at Sandia National Laboratories.

dielectrics, periodically structured on a micron scale, mimic for photons many of the richly varied phenomena seen when electrons interact with semiconductor crystals. Perhaps the most famous is the photonic band gap, which, following its conception by Eli Yablonovitch in the late 1980s, had a difficult birth. Doubts were initially raised about whether it could exist at all (unlike the electronic band gap, it does not appear naturally). Now well established, its ability to 'say no' to photons within a certain colour range has caught the imagination of researchers worldwide.

Photonic crystals affect light in many other counter-intuitive ways. For example, they allow the normally super-fast photons to stand still, potentially enhancing all kinds of light-matter interactions. *Photonic Crystals* is a timely and well-written account of this new field (alas in cgs units), and is full of colourful computer-generated illustrations. That the curves are often rather 'bumpy' (too few computed points) and not always completely accurate (the evanescent field distributions on pages 50 and 52 should not be exactly in step with the layers) does not really detract from the book's value and importance. □

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