toriographic issue is not quite so clear-cut as Richards makes it. Those who see Darwin as an advocate of non-progressivist and anti-teleological thought can indeed cite passages, and even the general drift of his later treatises, in support of such a reading. But I believe Darwin must be read in a more historically layered way than either Richards or the neo-selectionists present. The traces of the early notebook reflections are present alongside additional developments in the drafts of 1842 and 1844. The long manuscript of 1854–56, unfortunately missing the drafts of the embryological and morphological sections of the published *Origin*, is representative of another layer of development. The changes between editions of the *Origin* represent more than textual revisions. They display the complex interplay of different stages of Darwin's thought over a 40-year period of reflection on several questions, particularly those having to do with embryology and generation. There is no difficulty citing direct textual support, at least from the later editions of the *Origin* and his subsequent writings, for the claim that Darwin held non-directional and non-recapitulationist positions. Richards's claim that "recapitulationism [was] a central part of the more general doctrine [of species change] he would defend" (p. 91) is accurate with respect to the genesis of the theory. But it does not represent, to my reading, its most mature public presentations. Without attention to this historical complexity in Darwin's work, the Gould-Bowler historiography becomes a little too easily a straw man.

But these are quibbles. This is, within its scope, a splendid and long-overdue book. I will put my words into action by immediately ordering copies for my next graduate seminar, and I recommend that others do likewise.

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Vignettes: Images of Science

Science. *Science.* SCIENCE. What a wonderful, powerful-sounding word! It instantly induces an atmosphere of pure rationality. It rings loudly a symphony of universal knowledge and understanding. It forcefully projects an aura of all-encompassing order and of control.

—*Joe Rosen*, in *The Capricious Cosmos* (Macmillan)

One of the most pervasive myths of science is the idea that "nothing is known for sure." This adage projects a disarming modesty. Even scientists have been known to fall into the arms of this myth in order to avoid the appearance of dogmatism and arrogance.

—*Milton A. Rothman*, in *The Science Gap: Dispelling the Myths and Understanding the Reality of Science* (Prometheus Books)

In terms of quantity and in terms of analytic inference, it seems to me that science and sports are very much parallel at the level of public concern. A lot of complexity, a lot of tactics, a lot of numbers, and a lot of perhaps poorly understood probabilistic judgments are present.

—*Philip Morrison*, in *When Science Meets the Public* (Bruce V. Lewenstein, Ed.; AAAS)

Ecological Linkages

Nature Conservation 2. The Role of Corridors. DENIS A. SAUNDERS and RICHARD J. HOBBS, Eds. Surrey Beatty, Chipping Norton, NSW, Australia, 1991. xiv, 442 pp., illus., + plates. $A80. From a conference, Western Australia, 1989.

Wildlife corridors have been widely touted as the cure for the ills resulting from habitat fragmentation: extinction of small, isolated populations, deterioration of genetic variability, and inbreeding depression. This book, the proceedings of a conference held in Western Australia, is to my knowledge the first attempt to present in a single volume theory, modeling, empirical results, and management recommendations for wildlife corridors.

The landscape of Western Australia is particularly suited for corridor studies. A far-sighted proclamation in the 1960s resulted in the preservation of wide roadway rights-of-way in a rapidly developing agricultural landscape. Although the initial purpose of the legislation was to preserve wildflowers, today these verges link up remnant patches of habitat and reserves in this highly modified landscape. Approximately one-fourth of the chapters in the book address the Western Australia system. There has been some excellent work done there, represented particularly by the chapters on birds by Lynch and Saunders and by Saunders and de Rebeira.

The publication of this book is extremely timely, as an increasing share of management resources are being directed toward designing, acquiring, and assessing wildlife corridors. By virtue of the book's priority it will certainly be useful. However, this priority also results in the book's main limitation. As yet very few empirical studies on the subject have been completed. Only five of the 38 chapters report on new field research on use of corridors by animals.

The real importance of the book for the wider audience lies in defining the corridor problem and the synthesis of the existing literature. Two modeling studies point out that corridor assessment is really a metapopulation problem. The criterion of a successful corridor is not whether animals occur in the corridor but whether the corridor maintains or enhances overall metapopulation viability of the target species. Chapters by Soulé and Gilpin and by Merriam demonstrate that poorly functioning corridors, those with high mortality rates, can actually decrease metapopulation viability as compared to unlinked fragments. However, as is demonstrated by Nicholls and Margules, in practice the viability of linked populations as compared to isolates is very difficult to determine. Other interesting points that arise out of the chapters on corridor value are the distinction between movement corridors and corridors that serve as habitat.

One shortcoming of the book and probably of corridor research in general at this time is the lack of studies at the level of individual behavior. Corridors need to be designed and assessed in the context of the behavior of the target species. Studies are needed to determine what type of landscape features attract and conduct individual animals through the landscape most efficiently. With the exception of radio-tracking studies on rodents and koalas described in the chapters by Merriam and Prevett, this approach has not been used. The book also fails adequately to identify and address the

differences between corridors that are necessary for demographic rescue and those that are necessary for gene flow. Genetic considerations and consequences of corridors receive short shrift in general. The focus of the management section seems unnecessarily narrow; 7 of the 11 chapters in that section deal with management of Australian roadsides. Management of narrow, "edgy" features such as corridors presents a great challenge and warrants a broader perspective.

The discussion reports and the concluding chapter by the editors help to identify needed research. I agree with the conclusion reached by the conference that despite the lack of explicit empirical support for the utility of corridors in maintaining metapopulation viability, theoretical and natural history considerations dictate that corridors should be pursued in practice as well as in research as a means to repair some of the damage we have done to our natural landscapes and the plant and animal populations contained therein.

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Eustatic Curves

World Atlas of Holocene Sea-Level Changes. PAOLO ANTONIO PIRAZZOLI. Elsevier, New York, 1991. x, 300 pp., illus. $100. Oceanography Series, 58.

This atlas is the latest in a series of studies spawned by International Geological Correlation Program (IGCP) Projects 61 and 200. The IGCP's goal was to determine a globally valid eustatic curve of sea-level rise since the end of the last glaciation, an idea now considered obsolete. Earlier work led to a compilation of sea-level curves for the last 15,000 years by A. L. Bloom (1977), and in the same year Pirazzoli published a compilation for the last 2000 years. When Project 200 collapsed before completion from lack of international input and funding, support continued from the Commission of European Communities and the research was carried out by the French Centre National de la Recherche Scientifique. The present volume is the result of this collaboration.

The present work goes much farther, both in geographic coverage and in quality of presentation, than the 1977 publications. The sea-level curves have been redrafted at a uniform scale for ease of comparison from region to region, estimates of accuracy of altimetric determinations and of dating are included in a good number of cases, and Pirazzoli inserts his evaluations of the quality or validity of some of the data presented. More than 900 curves are presented in 77 figures, which show 4 to 20 curves each for easier reading, and an index map is included with each set of curves. Also, curves of modeled sea-level change for 109 different areas are plotted along with field observations. In addition, many tide-gauge records have been included, commonly covering the last 100 or so years, so that historic trends of sea-level change can be compared with longer term geological changes. The book includes an extensive bibliography and two indexes of authors and of localities.

Pirazzoli, who is one of the most active fieldworkers in the study of coastal changes, introduces the *Atlas* with a historical overview and follows it with a discussion of causes of sea-level change and a review of indicators of sea-level change and the methods of dating them. The closing chapter puts all the information into perspective, stressing the importance of the compilation in human terms as well as its usefulness for modeling the earth parameters (for example, viscosity and rheology).

The coverage is worldwide, but it is by no means uniform. As one might expect, studies have been much more numerous in formerly glaciated areas, in regions of uplift, and in industrially developed countries. The tropics, particularly the coasts of Africa and eastern South America, are very poorly represented.

Pirazzoli states that the *Atlas* "gives an overall impression of relative consistency" (p. 230) in sea-level history in spite of differences in precision from curve to curve and the geographic variations in patterns of sea-level change. This "consistency" is indeed relative: the greatest lesson that has been learned from detailed, local studies of sea-level change is that the possibility of establishing a worldwide eustatic sea-level curve is illusory. This conclusion has developed slowly during the past two decades, as researchers have reported on regional differences in the controls of interactions between the lithosphere and the ocean surface, such as glacio-isostatic adjustments, hydro-isostatic loading of the ocean floor, tectonic movements, and glacier-melting histories. The validity of these differences has been confirmed by geophysical models that predict changing sea-level relations that match the observed field interpretations reasonably well.

The *World Atlas of Holocene Sea-Level Changes* will be a widely used reference for the historical record of sea-level change and for the assessment of the impact of near-future sea-level change at the local scale, particularly in the context of global ("greenhouse") warming. Moreover, the volume provides an excellent general review of the nature of sea-level change that will be most useful for anyone dealing with the history of coastal zone—geologists, archeologists, paleoecologists, and historians.

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Reprints of Books Previously Reviewed

Job Queues, Gender Queues. Explaining Women's Inroads into Male Occupations. Barbara F. Reskin and Patricia A. Roos. Temple University Press, Philadelphia, PA, 1992. $44.95; paper, $18.95. *Reviewed* **252**, 320 (1991).

The Non-Darwinian Revolution. Reinterpreting a Historical Myth. Peter J. Bowler. Johns Hopkins University Press, Baltimore, MD, 1992. Paper, $12.95. *Reviewed* **242**, 1710 (1988).

The Politics of Evolution. Morphology, Medicine, and Reform in Radical London. Adrian Desmond. University of Chicago Press, Chicago, IL, 1992. Paper, $19.95. *Reviewed* **248**, 883 (1990).

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Books Received

Artificial Life II. Proceedings of the Workshop on Artificial Life (Santa Fe, NM, Feb. 1990). Christopher G. Langton *et al.*, Eds. Addison-Wesley, Reading, MA, 1992. xxii, 854 pp., illus. $48.50; paper, $34.50. Santa Fe Institute Studies in the Sciences of Complexity.

Aspects of Synaptic Transmission. LTP, Galanin, Opioids, Autonomic and 5-HT. T. W. Stone, Ed. Taylor and Francis, Philadelphia, PA, 1991. x, 404 pp., illus. $99.

Asymptotic Symmetry and Its Implication in Elementary Particle Physics. S. Oneda and Y. Koide. World Scientific, River Edge, NJ, 1991. xxiv, 346 pp., illus. $48.

Boffin. A Personal Story of the Early Days of Radar, Radio Astronomy and Quantum Optics. R. Hanbury Brown. Hilger, Philadelphia, 1992 (U.S. distributor, American Institute of Physics, New York). vi, 184 pp., illus. $35.

Bottom Line Results from Strategic Human Resource Planning. Richard J. Niehaus and Karl F. Price, Eds. Plenum, New York, 1991. viii, 318 pp., illus. $75. From a symposium, Newport, RI, June 1991.

Boundaries Between Promotion and Progression During Carcinogenesis. Oscar Sudilovsky, Henry C. Pitot, and Lance A. Liotta, Eds. Plenum, New York, 1991. xii, 372 pp., illus. $89.50. Basic Life Sciences, vol. 57. From a conference, Cleveland, Sept. 1988.

The Caring Child. Nancy Eisenberg. Harvard University Press, Cambridge, MA, 1992. x, 192 pp. $22.95; paper, $8.95. The Developing Child.

Combinatories of Train Tracks. R. C. Penner and J. L. Harer. Princeton University Press, Princeton, NJ, 1992. xii, 216 pp., illus. $49.50; paper, $19.95. Annals of Mathematical Studies, 125.

Compelled Compassion. Government Intervention in the Treatment of Critically Ill Newborns. Arthur L. Caplan, Robert H. Blank, and Janna C. Merrick, Eds. Humana, Clifton, NJ, 1992. xii, 336 pp. $39.50. Contemporary Issues in Biomedicine, Ethics, and Society.

Environmental Evolution. Effects of the Origin and Evolution of Life on Planet Earth. Lynn Margulis and Lorraine Olendzenski, Eds. MIT Press, Cambridge, MA, 1992. xx, 405 pp., illus. $29.95.