

Though this book provides a powerful and engrossing social portrait of the World War II years, it cannot tell us anything about the lasting effects of these experiences upon children. First of all, it is not a scientific study. It would be impossible, for example, to find a control group with which to compare this population. A second problem is the letters themselves. Recall memory is extraordinarily fallible. We tend to recollect as our own experiences happenings that we heard about or read about. For example, one girl who was at Pearl Harbor on the morning of 7 December 1941 remembers the Japanese planes flying so low she could, from her second-story window, see the pilot's faces. Though that is possible, it seems highly unlikely. A more probable explanation is that she heard adults exaggerate their own accounts in this way and proceeded to reconstruct this as her own lived experience.

It is really impossible to determine to what extent the memories recounted in these letters are veridical and to what extent they are encrusted with non-experienced embellishments. Memory is not a video tape. The author, however, is silent on this issue of reconstructive memory. He seems to accept the stories told to him as valid accounts of young people's wartime experiences.

The problem seems to be that Tuttle has confounded historical and psychological methods of investigation. Though these approaches can be meaningfully integrated (as, for example, in the writings of Erik Erikson on Luther and Gandhi), the task requires a creative amalgam of historical and psychological methodologies and concepts. Although Tuttle attempts such an integration in the concluding chapters of the book, his effort is unsuccessful. In any case, this conceptual melding should have been done before, rather than after, the data collection.

Despite the implication of its subtitle, therefore, this book adds little to our knowledge of the lasting effects of wartime experiences, such as family uprooting and father absence, on the children who underwent them. Viewed as social history, however, rather than as psychological research, *Daddy's Gone to War* is a compelling work that illuminates some of the heretofore dark niches of the years of World War II. Indeed, after reading this book, the reader can't help wishing that there had been Tuttles to write comparable histories of the Civil War and Revolutionary War years.

David Elkind
Department of Child Study,
Tufts University,
Medford, MA 02155, USA

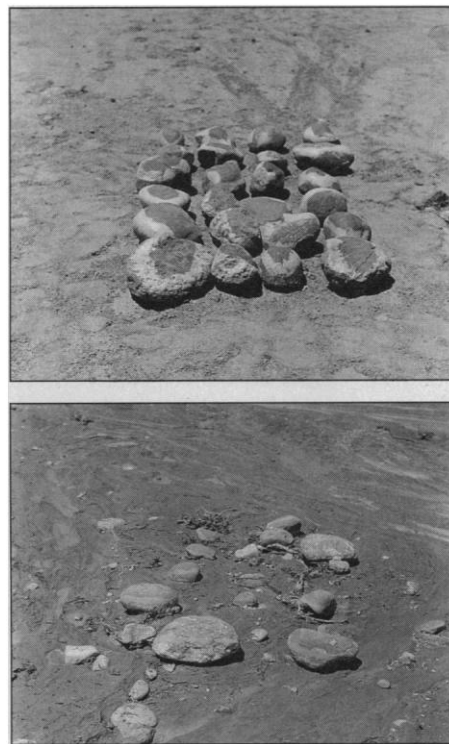
Fluvial Ways

A View of the River. LUNA B. LEOPOLD. Harvard University Press, Cambridge, MA, 1994. xiv, 298 pp., illus. \$39.95 or £31.95.

Luna B. Leopold is responsible for perhaps the most important research on rivers over the past 50 years. In this very personal book he reflects upon that experience, providing insights that go far beyond mere research results. The narrative weaves the scientific discoveries of Leopold's long career with crisp descriptions of how those discoveries were achieved and sage comments on current and future directions for scientific inquiry. In the last regard it is reminiscent of that seminal work *Fluvial Processes in Geomorphology*, written by Leopold with M. Gordon Wolman and the late John P. Miller, which, though published 30 years ago, is still read with profit today.

There is an anecdote of Leopold's that conveys something about the scientific genius that emerges through *A View of the River*. One of Leopold's many important contributions involves the understanding of the successive deeps and shallows that one encounters along the course of natural river channels. Well known to fishing enthusiasts, deep pools of slow-moving water alternate at regular spacing with shallow riffle bars over which the river water moves more swiftly. Shortly after his classical work on this problem in the 1960s, Leopold met a Scottish river scientist, Tom Stuart. Asked about his work, Stuart replied, "I talk to fish." Stuart described how his work on salmon and trout behavior had revealed aspects of river flow at gravel bars that Leopold had not recognized in his own work. It is through such close attention to nature and an open mind for connections among seemingly unrelated phenomena, rather than in stuffy textbook analyses of river mechanics and sediment transport, that important discoveries are made.

If I were forced to name a more important fluvial geomorphologist than Leopold, only one obvious candidate comes to mind: Grove Karl Gilbert (1843–1918). Like Leopold, Gilbert advocated scientific writing that goes beyond mere exposition of results to contribute understanding of the real-world methods by which scientists are led to their conclusions. Too much modern writing on so-called "scientific" methodology is concerned with the logic of how scientific results are explained and justified rather than with the human endeavors, both in reasoning and practical action, by which they were achieved. In this regard, Gilbert was careful to distinguish between scientific investigators and theorists. It is an



Top, Twenty-four "painted rocks of 6 sizes that were placed in a streambed near Santa Fe as part of an experiment to evaluate the effect of rock spacing on propensity to be moved by the flow." Bottom, "One of the rock groups after having been subjected to storm flow." [From *A View of the River*]

unfortunate trend in modern hydrology, bolstered by the increasing ease of computer simulation and by various metaphysical rationalizations, that theory has come to assume a kind of moral ascendancy. Though both Gilbert and Leopold are well known for their theoretical contributions, their central concerns are those of the investigator: inspiration from natural phenomena in their real-world settings, the invention of hypotheses to explain those phenomena, and the creative application of quantitative measurement to test them.

Gilbert asserted a hundred years ago, "The great investigator is primarily and preeminently the man who is rich in hypotheses." *A View of the River* contains a treasure of hypotheses. Moreover, the whole book is centered around one grand hypothesis that assumes a number of scientific forms. The author believes that "the enunciation of a general hypothesis of river action would be useful to both specialists and the public." He proposes that chance plays a major role in local changes of river form and action. Though physical laws apply, these do not determine some singular response. Rather, adjustments are made to a most probable form, arising from the processes of energy expenditure by the river. This adjustment is illustrated by detailed discussion of the



Meanders of the East Fork of the Popo Agie River near Boulder, Wyoming. "The ubiquity of the meander pattern is typified by [this illustration]. The heterogeneous composition of bed particles leads to interaction among all sizes. As a result, the bed material does not lie uniformly distributed along a channel but bunches up in bars or riffles, which represent concentrations separated by pools or relative deficiencies in grains. These accumulations or channel bars tend to deflect the thread of flowing water toward a bank, with consequent erosion and initiation of a bend. Therefore, the shape, cross section, and flow within the channel take on the character of meanders. . . . Meanders represent a most probable configuration that is a compromise between minimum total work and uniform distribution of power expenditure." [From *A View of the River*]

pool-and-riffle sequence (noted above), the shapes of meander curves, the longitudinal profiles of rivers, the structure of drainage networks, and the hydraulic geometry of river channels.

A View of the River summarizes and updates many of the now-classical concepts that Leopold and his colleagues introduced into modern quantitative geomorphology. It provides lucid descriptions of the random-walk analog to channel network development and the entropy principle as applied to the minimum-variance statistical expression of channel forms. Leopold shows how field measurements led him to seek analogs from thermodynamics (the entropy principle) and the energy of machines (stream power) to explain river phenomena. Detailed calculations are employed not to impress the reader with their rigor but to illustrate important natural phenomena. Thus, flood routing illustrates channel dynamics, and channel geometry surveys illustrate the nature of bankfull discharge, the rate of flow when the water surface is at floodplain level.

One of Leopold's famous essays is entitled "A Reverence for Rivers." The motivation behind *A View of the River* seems to stem from this reverence. Leopold begins his preface with a sobering admonition: "We in the United States have acquiesced to the destruction and degradation of our rivers, in part because we have insufficient knowledge of the characteristics of rivers and the effects of our actions that alter their

form and process." It is a tragedy that some of this crime upon nature has been perpetrated by those who claim scientific principles as their foundation of thought. Such claimants may be well versed in the theoretical results of river science, but they can hardly be experienced in the investigation of real rivers. As Gilbert employed it, and as Leopold ably reasserts, investigation inevitably leads to a kind of reverence for object investigated. *A View of the River* is a book of science, but it is filled with such reverence.

Vic Baker

Department of Geosciences,
University of Arizona,
Tucson, AZ 85721, USA

Books Received

The American Museum of Natural History's Book of Dinosaurs and Other Ancient Creatures. Joseph Wallace. Simon and Schuster, New York, 1994. 144 pp., illus. \$25.

Australian Vegetation. 2nd ed. R. H. Groves, Ed. Cambridge University Press, New York, 1994. xviii, 562 pp., illus. \$79.95.

Bacterial and Bacteriophage Genetics. 3rd ed. Edward A. Birge. Springer-Verlag, New York, 1994. xvi, 454 pp., illus. \$49.50.

Biology of α^2 -Macroglobulin, Its Receptor, and Related Proteins. Wolfgang Borth *et al.*, Eds. New York Academy of Sciences, New York, 1994. xii, 521 pp., illus. Paper, \$140. Annals of the New York Academy of Sciences, vol. 737. From a conference, Woods Hole, MA, Oct. 1993.

Chaos, Dynamics, and Fractals. An Algorithmic Approach to Deterministic Chaos. Joseph L. McCauley. Cambridge University Press, New York, 1994. xxiv, 323 pp., illus. Paper, \$27.95. Cambridge Nonlinear Science Series, vol. 2. Reprint, 1993 ed.

Chemical Reactor Development. From Laboratory Synthesis to Industrial Production. Dirk Thoenes. Kluwer, Norwell, MA, 1994. xvi, 347 pp., illus. \$150 or £96 or Dfl. 240.

Diagnostic Interviewing. 2nd ed. Michel Hersen and Samuel M. Turner, Eds. Plenum, New York, 1994. xiv, 401 pp. \$47.50.

Diagrammatics. The Path to Feynman Rules. Martinus Veltman. Cambridge University Press, New York, 1994. xii, 284 pp., illus. Paper, \$29.95. Cambridge Lecture Notes in Physics, 4.

Ethics and Environmental Policy. Theory Meets Practice. Frederick Ferré and Peter Hartel, Eds. University of Georgia Press, Athens, 1994. xviii, 283 pp., illus. \$45; paper, \$20. From a conference, Athens, GA, April 1992.

Experiments in Heat Transfer and Thermodynamics. Robert A. Granger, Ed. Cambridge University Press, New York, 1994. xviii, 278 pp., illus. \$59.95; paper, \$24.95.

Factors of Soil Formation. A System of Quantitative Pedology. Hans Jenny. Dover, New York, 1994. xviii, 281 pp., illus. Paper, \$9.95. Reprint, 1941 ed.

Foams. Fundamentals and Applications in the Petroleum Industry. Laurier L. Schramm, Ed. American Chemical Society, Washington, DC, 1994. xiv, 555 pp., illus. \$109.95. Advances in Chemistry Series, 242.

A Guide for Use in Planning, Conducting, and Reporting Research Projects. 2nd ed. Paul Westmeyer. Thomas, Springfield, IL, 1994. xviii, 173 pp. \$41.95; paper, \$26.95.

A Guide to Reproduction. Social Issues and Human Concerns. Irina Pollard. Cambridge University Press, New York, 1994. xvi, 410 pp., illus. \$69.95; paper, \$24.95.

TO ANYONE WHO THINKS THAT CARBOHYDRATE
SEPARATION MIGHT HAVE
REACHED ITS PEAK.....
WELL IT HASN'T

Signal™ fluorescent labelling and GlycoSep™ HPLC columns allow cost-effective, quantitative and preparative profiling of charged and neutral glycans.

Signal™ Fluorescent Labelling
Signal™ is a simple, convenient method of fluorescent labelling a glycan pool. The technique utilizes 2-aminobenzamide (2-AB) in a validated, 2 step procedure that labels glycans efficiently (>85%) and non-selectively at the reducing terminus.

GlycoSep™ High Resolution Glycan Profiling

GlycoSep™ is an HPLC based kit that allows 2 dimensional profiling of 2-AB labelled glycans, providing reproducible, quantitative results. As no high pH conditions are used, structural integrity is assured and sample isolation and work-up is easy.

To find out how Signal™ and GlycoSep™ can extend your carbohydrate-related research, call us today.

800-722-2597



Oxford GlycoSystems Inc. Cross Island Plaza, 133-33 Brookville Boulevard, Rosedale, New York 11422 U.S.A.