

The Study of Memory

Remembering Reconsidered. Ecological and Traditional Approaches to the Study of Memory. ULRIC NEISSER and EUGENE WINOGRAD, Eds. Cambridge University Press, New York, 1988. x, 390 pp., illus. \$44.50. Emory Symposia in Cognition, vol. 2. From a conference, Atlanta, GA, Oct. 1985.

Most contemporary psychologists would agree that a proper understanding of human memory will contribute greatly to, and may even constitute a necessary condition of, progress in cognitive science. But there would likely be less agreement concerning the most efficient route to attaining such an understanding. In 1885, a German scientist named Hermann Ebbinghaus published a pioneering study that laid out one approach to a scientific psychology of memory. He reported a series of tightly controlled laboratory experiments on learning and remembering of artificial materials that were carefully constructed to minimize possible bias contributed by pre-existing, real-world knowledge. Although Ebbinghaus's studies remain unique in the psychological literature—he served as his own (and only) experimental subject, memorizing thousands of nonsense syllables—his commitment to controlled laboratory experimentation has exerted a profound influence on the field since the publication of the groundbreaking 1885 monograph.

The Ebbinghausian approach to the study of memory has not been without its critics. The eminent French psychologist Pierre Janet expressed skepticism about it in the early years of the 20th century, and the British psychologist Sir Frederic Bartlett launched a more extensive and better-known attack in 1932. But the most recent and influential challenge was advanced by in the late 1970s by Ulric Neisser. Neisser expressed disappointment with the lack of progress made by laboratory studies of memory and chided psychologists for almost entirely ignoring real-world manifestations of memory in favor of a narrow focus on laboratory study of artificial phenomena. According to Neisser, the experimental study of memory lacked ecological validity and had suffered for it. Neisser urged psychologists to summon the courage to step outside the confines of the laboratory and adopt an ecological approach concerned with functionally important, naturally occurring memory phenomena. During the past decade, a growing number of cognitive psychologists have heeded Neisser's call.

In *Remembering Reconsidered*, Neisser and Eugene Winograd have assembled a collection of papers that explore various aspects of

the ecological approach to memory. One immediately striking feature of the book is that it strikes a conciliatory tone toward the laboratory approach. Whereas one could have easily interpreted Neisser's previous writings as suggesting that the laboratory approach ought to be abandoned altogether, the subtitle of the present volume—"Ecological and Traditional Approaches to the Study of Memory"—implicitly acknowledges the laboratory approach's "right to exist." Moreover, both of the editors develop this theme explicitly in their contributions. Part of the reason for this, no doubt, is that laboratory-oriented studies of memory have flourished during the past decade, producing a variety of important data and novel theoretical frameworks.

The contributions to *Remembering Reconsidered* are of uniformly high quality and contain a wealth of new facts about manifestations of memory in various real-world contexts; they also provide provocative discussions of methodological, conceptual, and theoretical issues. Consider just a few highlights. William Brewer describes an ingenious method for investigating people's memory of naturally occurring, everyday "happenings" that would no doubt have pleased Ebbinghaus himself. Brewer

equipped participants in his study with electronic beepers that were programmed to sound at random intervals; subjects were instructed to record where they were, what they were thinking, and other aspects of what was happening when the beepers sounded. Brewer then collected the protocols and tested subjects' memory at various times after the recorded events by providing them with different aspects of the events as retrieval cues. Brewer's data revealed, among other things, the crucial importance of spatial location in memory for naturally occurring everyday episodes. Wanda Wallace and David Rubin report a study of memory for a folk ballad—"The Wreck of the Old 97"—in which they were able to analyze systematically various transformations in the structure and content of the ballad made by five folk singers, as well as by undergraduates who learned the ballad. They found that alterations in reproduction were related to internal constraints in the structure of the ballad. Katherine Nelson summarizes important developmental studies in which she analyzed naturally occurring pre-sleep "monologues" of a two-to-three-year-old child that contained frequent reference to past events. Nelson observed striking evidence for long-term recall of single

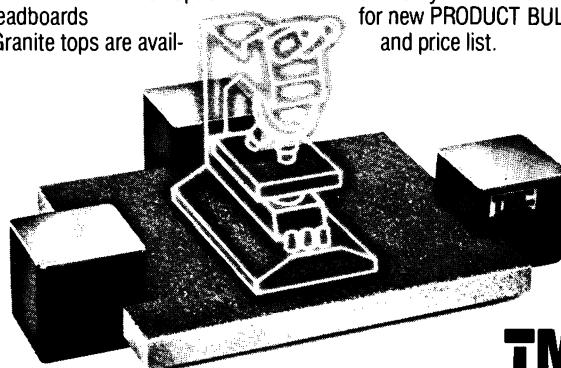
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events that had occurred as long as two to six months prior to a particular monologue.

On the basis of these and other chapters in *Remembering Reconsidered*, it seems indisputable that the ecological approach has provided a wealth of new and interesting empirical facts about memory and has also contributed clever methodologies that serve to broaden significantly the scope of memory research. It is less clear, however, that ecological studies have led to any novel or important theoretical insights into the nature of memory. In fact, it is perhaps ironic that most of the exciting recent theoretical developments in memory research have emerged from within the walls of the laboratory. Thus, for example, the documentation of striking dissociations between explicit and implicit tests of memory has led to new distinctions among forms of memory; mutually productive links have been established between cognitive studies of intact memory on the one hand and neuropsychological and neurobiological investigations of memory disorders on the other, leading to a variety of promising ideas; and powerful new computational models deriving from notions of parallel distributed processing have been advanced. Ecological studies have played a minor if any role in these developments. Significantly, the two chapters in the present volume that are richest in new theoretical ideas are based on laboratory studies of implicit and explicit memory (Larry Jacoby) and computational approaches to cognition (Lawrence Barsalou).

As is demonstrated by *Remembering Reconsidered*, the ecological approach has clearly served the admirable purposes of expanding the scope of memory research and providing the psychological study of memory with a base in naturalistic observation that it lacked previously. But it remains to be seen whether it will play a significant role in advancing theoretical understanding of the nature of human memory.

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Some Other Books of Interest

Introduction to the Study of Meiofauna. ROBERT P. HIGGINS and HJALMAR THIEL, Eds. Smithsonian Institution Press, Washington, DC, 1988. 488 pp., illus. \$39.95.

This volume is concerned with a category of invertebrates—the “meiobenthos,” in a term coined in 1942—inhabiting marine and freshwater sediments and defined in terms of size, a practical criterion proposed

here being retention on a 42- to 1000-micrometer sieve. As several contributors note, a rapid growth of research on these organisms occurred in the 1960s in association with both a renewed interest in animal ecology and the development of better techniques, with the result that meiofaunal research can now help elucidate basic questions in ecology and phylogenetics. With this volume the editors hope further to promote the development of this “young discipline.” The group of papers opening the volume includes a “prospectus” and brief history of meiofaunal research and chapters summarizing what is known about the ecology of marine (Bruce C. Coull) and freshwater (Robert W. Pennak) meiofauna. A second group of papers deals with methodological matters—the assessment of abiotic and biotic environmental factors, sampling equipment and strategies, sample and organism processing, culture and experimental techniques, and data handling. Techniques for studying the smaller nanobenthos are also described. The third and final section of the book (p. 238ff.) is a taxon-by-taxon summary of the meiofauna, beginning with a discussion of “taxonomic and curatorial considerations” by Higgins and including accounts by various authors of the 40 groups, from Sarcostigophora to Tunicata. Subject and taxonomic indexes complete the book.—K.L.

Reptile Egg-Shells. SEM Atlas. H. HERMANN SCHLEICH and WERNER KÄSTLE. Fischer, Stuttgart, 1988 (U.S. distributor, VCH, New York). viii, 123 pp., illus. \$44.50.

Noting that reptile eggs, being harder to find and preserve and seemingly less variable, have attracted little attention relative to bird eggs, Schleich and Kästle here set out, by means of scanning electron micrographs, “to present a broad view of different shell types, to demonstrate general construction principles and to present detailed comparative descriptions” of reptile egg shells. In an introductory chapter they outline the general characteristics of reptile eggshells and the features that differentiate those of the orders Crocodylia, Testudines, and Squamata, briefly survey the literature starting with von Baer (1837), describe study techniques and shell constituents, and discuss functional morphology. The main body of the book consists of 45 plates, each occupying a page and comprising several parts and accompanied by a page of description and other information, often including structural drawings. Some 70 Recent species—including 35 snakes, 4 crocodiles, and 1 amphibaenian—are represented. The last seven

plates, preceded by a brief literature survey, show fossil sauropsid shells or deposits, tentatively assigned to seven groups, from nine European Tertiary sites. The volume includes a bibliography and an index.

—K.L.

Books Received

Competition in the Health Care Sector. Ten Years Later. Warren Greenberg, Ed. Duke University Press, Durham, NC, 1988. vi, 153 pp., illus. \$15. Reprinted from the *Journal of Health Politics, Policy and Law*, vol. 13, no. 2.

Computational Techniques for Fluid Dynamics. C. A. J. Fletcher. Springer-Verlag, New York, 1988. 2 vols. Vol. 1, Fundamental and General Techniques. xiv, 409 pp., illus. \$59.50. Vol. 2, Specific Techniques for Different Flow Categories. xii, 484 pp., illus. \$69.50. Springer Series in Computational Physics.

Conformal Field Theory and Solvable Lattice Models. M. Jimbo, T. Miwa, and A. Tsuchiya, Eds. Academic Press, San Diego, CA, 1988. xii, 426 pp., illus. \$59.50. Advanced Studies in Pure Mathematics, vol. 16. Based on a symposium, Kyoto, Japan, May 1986.

Conformational Motion and Disorder in Low and High Molecular Mass Crystals. B. Wunderlich *et al.* Springer-Verlag, New York, 1988. viii, 137 pp., illus. \$71.50. Advances in Polymer Science, vol. 87.

Electrophoresis '88. Claus Schäfer-Nielsen, Ed. The Protein Laboratory, University of Copenhagen, 1988 (U.S. distributor, VCH, New York). 502 pp., illus. Paper. \$95. From a meeting, Copenhagen, Denmark, July 1988.

Electrophysiology of the Sinatrial and Atrioventricular Nodes. Todor Mazgalev, Leonard S. Dreifus, and Eric L. Michelson, Eds. Liss, New York, 1988. xiv, 354 pp., illus. \$65. Progress in Clinical and Biological Research, vol. 275. From a symposium, Anaheim, CA, Nov. 1987.

Extinction and Survival in the Fossil Record. G. P. Larwood, Ed. Published for the Systematics Association by Clarendon (Oxford University Press), New York, 1988. x, 365 pp., illus. \$90. Systematics Association Special Volume no. 34. From a symposium, Durham, U.K., Sept. 1986.

Fabry-Perot Interferometers. G. Hernandez. Cambridge University Press, New York, 1988. xvi, 343 pp., illus. Paper, \$29.95. Cambridge Studies in Modern Optics. Reprint, 1986 ed.

The Forebrain of Reptiles. Current Concepts of Structure and Function. Walter K. Schwerdtfeger and Wilhelmus J. A. J. Smets, Eds. Karger, Basel, 1988. x, 182 pp., illus. \$117.50. From a symposium, Frankfurt am Main, F.R.G., Aug. 1987.

Forest and Crop Biotechnology. Progress and Prospects. Frederick A. Valentine, Ed. Springer-Verlag, New York, 1988. xx, 466 pp., illus. \$59. From a colloquium, Syracuse, NY, April 1985.

Formation and Evolution of Low Mass Stars. A. K. Dupree and M. T. V. T. Lago, Eds. Kluwer, Norwell, MA, 1988. xvi, 462 pp., illus. \$119. NATO Advanced Science Institutes Series C, vol. 241. From an institute, Viano do Castelo, Portugal, Sept.-Oct. 1987.

The Microenvironment of the Human Thymus. Marion D. Kendall and Mary A. Ritter, Eds. Harwood, New York, 1988. xii, 306 pp., illus. \$84. Thymus Update, vol. 1.

Models in Statistical Physics and Quantum Field Theory. Harald Grosse. Springer-Verlag, New York, 1988. x, 151 pp., illus. Paper, \$27.50. Trieste Notes in Physics.

Molecular Genetics and Immunoanalysis in Blood Coagulation. J. C. Giddings. Horwood, Chichester, U.K., and VCH, New York, 1988. 304 pp., illus. \$126. Ellis Horwood Series in Biomedicine.

Molecular Inclusion and Molecular Recognition. Clathrates II. E. Weber, Ed. Springer-Verlag, New York, 1988. x, 246 pp., illus. \$89.50. Topics in Current Chemistry, vol. 149.

Neural and Massively Parallel Computers. The Sixth Generation. Branko Souček and Marina Souček. Wiley-Interscience, New York, 1988. xx, 460 pp., illus. \$49.95.

The Persistence of Error. Essays in Development Epistemology. Robert Kalechovsky. University Press of America, Lanham, MD, 1987. vi, 73 pp. \$17.25; paper, \$8.75.