

man brain (an incorrect extrapolation from animal data) and the suggestion that tardive dyskinesia may involve increased D_2 receptor density, for which there is no supportive evidence. Nevertheless, this is a useful book with much to offer the reader. It would be a valuable addition to any medical school library, providing a comprehensive source of reference for the medical student, postgraduate researcher, or established medical scientist who wishes to understand more about the vital role of these receptors in normal and pathological brain function.

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Memory and Brain, by Larry R. Squire. New York, Oxford University Press, 1987, 294 pp., \$24.95; \$14.95 (paper).

Humans are typically complacent about their flair for higher mental functioning. Although every facet of the mind has its proponents, the ability to remember has fueled the most species-specific self-congratulation. The immediacy of experience may trick us into taking for granted our ability to perceive, reason, plan and act, and even to verbalize, but that we can remember, at will, much of what has taken place seems particularly magical. Correspondingly, it is around memory that the neuroscientific enterprise is centered, promising ultimate coherence across diverse levels of analysis, a fact that afforded Larry Squire the opportunity to write this book.

Where do memories come from? Where are they when they are not being remembered? Such obtusely formulated questions have generated a spate of biologically incoherent metaphors—stores, boxes, lexicons, pigeonholes in the head—each populated with a different subset of memoranda and bearing distinctive “addresses,” variably “legible” (to whom?) when they are “accessed” (by what?) to be retrieved.

These metaphors imply that the brain squirrels away a shrewdly selected subset of what is experienced against the day when it might usefully be remembered. How vacuous this view is becomes apparent given that the mere passage of time can be remembered. Are we to suppose that every event starts its own personal “temporal register,” which then counts indefinitely just in case the individual might sometime wonder how long it has been since it happened. Lashley was right in judging the search for the engram futile. Specific memories have never been localized to specific sets of neurons or eliminated by inactivating specific sets of neurons. In contrast, research has uncovered much neural machinery that enables remembering. Function is localized, all right, but information is not.

Departing from his generally uncritical stance, Squire refers to “Lashley’s error” (p. 67) in considering the neurons that are active when something is remembered to be widely distributed. However, in his principle of regional mass action, Lashley was exactly on the mark. Within a categorical domain, partial damage does not restrict the set of potential responses but decreases the probability of response across the full set. The experimental findings point to extensive neuronal systems predisposed to respond in specific ways, depending on the eliciting circumstances. No particular response lurks expectantly in its individualized niche.

The lesson has proved hard to learn, not only for cellular neurophysiologists, who fantasize an analogue of human memory in the adaptations of an invertebrate neuron, but also for cognitive scientists, who should know better than to

populate the brain with boxes. “The most likely site of storage is the set of particular cortical processing systems that are engaged during the perception, processing and analysis of the material being learnt” (p. 123). Although clinical neuropsychology has taught us that quite restricted areas of cortex are necessary for particular mental operations, cerebral metabolism studies suggest that quite broad territories are essential even for the most simple of tasks.

The foregoing illustrates what Squire readily concludes: that the study of memory and brain has far to go (p. 24). It has gone farthest in defining systems that facilitate particular types of remembering, such as the reexperiencing of an event as distinct from the automatizing of a response. Although he insists too much on his own pet distinction between procedural and declarative memory, his book serves a much broader purpose than the propagation of a particular doctrine. He introduces attempts to clarify memory at many different levels of analysis, from molecular to behavioral. Coordinating these levels is a task for the future. Squire proceeds from his vantage points in human and primate neuropsychology in his first attempt to render coherent the loose-knit concept of memory “neuroscience.” The reader interested in what is currently held to be important in brain-based memory research could with advantage begin with this pleasantly written introductory text.

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From Learning to Love: The Selected Papers of H.F. Harlow, edited by Clara Mears Harlow. New York, Praeger, 1986, 334 pp., \$55.00.

This book is part of the Centennial Psychology Series, which has been especially designed for courses on the history of psychology. Each volume in the series focuses on one important contributor to the behavioral sciences. The behavioral scientist being honored in this volume is Harry Harlow, an extremely well-known creative, irascible, caring, pioneering, driven psychologist whose work has dramatically affected the field of psychiatry in addition, of course, to psychology and primatology. This book was invited in 1980 and finally published 6 years later.

There may be some interest in knowing what other scientists have been honored with volumes in this series. They include Anne Anastasi (*Contributions to Differential Psychology*), John J. Atkinson (*Personality, Motivation, and Action*), Raymond B. Cattell (*Structured Personality Learning Theory*), William K. Estes (*Models of Learning, Memory, and Choice*), Hans J. Eysenck (*Personality, Genetics and Behavior*), Irving L. Janis (*Stress, Attitudes and Decisions*), David C. McClelland (*Motives, Personality, and Anxiety*), Neal Miller (*Bridges Between Laboratory and Clinic*), Brenda Milner (*Brain Function and Cognition*), O. Hobart Mowrer (*Leaves From Many Seasons*), Charles E. Osgood (*Language, Meaning, and Culture*), Julian B. Rotter (*The Development and Applications of Social Learning Theory*), Seymour B. Sarason (*Psychology and Social Action*), and Benton J. Underwood (*Studies in Learning and Memory*).

In the introductory part of the book there is a summary of the evolution of Professor Harlow’s research written by Clara Mears Harlow, his first and third wife. The basic biographical information, which by itself will be interesting for psychiatrists, is interspersed with personal anecdotes. If you