schist-eclogite zones. Unlike most Phanerozoic (dominantly Mesozoic) high-pressure belts, eclogitic pods and complexes in a variety of Siberian, Uralian, and Mongolian orogenic zones of the U.S.S.R. have late Proterozoic or mid-Paleozoic crystallization ages (Soblev *et al.*), as indicated by geologic relationships and rubidium-strontium and uranium-lead radiometric dating. Some Russian eclogites are associated with ultramafic diapirs and may represent deep upper-mantle fragments, whereas others reflect high - pressure – intermediate - temperature conditions appropriate to basal portions of thick continental crust (see also Newton); still others occur as clasts in olistostromes, as extensive tracts of glaucophane schist, and as ophiolite-decorated suture zones. Overviews and details of recrystallization and contemporaneous deformation in Phanerozoic Japan—type-locality for paired metamorphic belts—are presented (Banno; Kunugiza *et al.*; Toriumi and Masui; Maekawa). Owing to post-convergence terrane reshuffling, some of the original pairings have been obliterated. The final chapter (Yokayama *et al.*) summarizes mid-Tertiary blueschist-eclogite facies metamorphism in New Caledonia and documents the mineral parageneses, spacing, and shallow dips of isogradic surfaces, as well as an apparent increase in thermal gradient in the more intensely recrystallized rocks. According to these authors, geologic data are not in accord with profound burial; hence pressures exceeding 10 kbar required by mineral thermobarometry are postulated to reflect tectonic overpressures at relatively shallow crustal levels.

This memoir brings together for the first time integrated, modern observational, theoretical, and laboratory data bearing on this tectonically significant suite of rocks. Impressive because of their near ubiquity are the described association of high-pressure–low-temperature mineral assemblages with oceanic crust and deep-sea sediments, serpentinized mantle material, imbricate thrust belts, and tectonic melanges and the virtual confinement of these provocative features to Phanerozoic convergent plate junctions. Protoliths are extremely variable in composition, and pressures of metamorphism evidently ranged from approximately 4 to 25 kbar. The compendium has been meticulously edited and is abundantly illustrated but lacks a subject index. It is required reading for metamorphic petrologists and tectonicians and will be useful for many years to come.

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Memory Systems

Synapses, Circuits, and the Beginnings of Memory. GARY LYNCH with commentaries by GORDON M. SHEPHERD, IRA B. BLACK, and HERBERT P. KILLACKEY. MIT Press, Cambridge, MA, 1986. xii, 124 pp., illus. $22.50. The Cognitive Neuroscience Institute Monograph Series. A Bradford Book.

In this interesting monograph Gary Lynch, one of the most innovative and productive researchers on the neurobiology of memory, sets forth his ideas on the cellular mechanisms that underlie memory in the brain and the network of neurons that participate in memory storage. Though the book can be criticized for its selective presentation of data and its brief or nonexistent treatment of alternative ideas, it offers a valuable glimpse into the reasoning of an active scientist who is attempting to make sense of an array of incomplete and often inconsistent data.

Though written for a general neuroscience audience, the book assumes familiarity with long-term potentiation (LTP) and central nervous system anatomy. After a flawed introduction by Michael Gazzaniga, in which the development of the brain-slice technique and the discovery of LTP are incorrectly attributed to Lynch, Lynch briefly describes his theory of LTP, according to which glutamate receptors are unmasked through the action of Ca^{2+} on the fodrin-degrading enzyme calpain. However, little of the book is devoted to the extensive work of Lynch and his colleagues on LTP and the LTP correlates of calpain-fodrin manipulations. Rather, in a surprising departure from his past focus on the hippocampus, Lynch introduces the olfactory system as a model for studying the associative interconnections, termed combinatorial circuits, widely thought to be required for memory and cognitive systems.

The olfactory system was chosen as a model because of its unusually clear combinatorial neuronal architecture. Lynch's emphasis on combinatorial systems and the specific features of the olfactory system provides an intriguing alternative to topographic theories that concern cerebellum–brainstem and hippocampus–neocortex, among other systems. Although he implicitly contrasts the combinatorial and topographic approaches, Lynch gives little consideration to topographic ideas and none to conceptual similarities between topographic and combinatorial memory theories. Notwithstanding his statement that the olfactory modality "has direct and well-defined connections with subcortical structures that play a prominent role in human memory" (p. 3), there are many differences between olfactory learning and memory and more commonly studied systems. The validity of the approach, as always, will depend on the ability of the model to provide insight into brain processes in memory. The book is sure to generate controversy (at one point Lynch writes, "It seems unlikely that behavioral pharmacology can be used satisfactorily to test hypotheses about memory") and to stimulate new thought and experiments.

The book closes with three papers described as commentaries. Gordon Shepherd presents a fascinating analysis of the possible role of dendritic spines in plasticity, showing by means of computer modeling the interactions between adjacent spines. Ira Black describes recent findings of the flexibility of transmitter systems and provides a needed contrast to Lynch's emphasis on postsynaptic processes. Herbert Killackey reviews the conference that spawned this book and discusses the role of neocortical anatomy in focusing ideas about the brain's memory systems. These are not strictly commentaries, as they go beyond Lynch's theses, but they are well worth reading in their own right.

As with many theories in their early stages, there are holes and inconsistencies in Lynch's work. Yet it is a testimony both to Lynch and to the rapid advances in the study of brain substrates of memory that such ideas can be seriously advocated and considered.

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Comparative Ecology

Ecology and Natural History of Desert Lizards. Analyses of the Ecological Niche and Community Structure. ERIC R. PIANKA. Princeton University Press, Princeton, NJ, 1986. xii, 209 pp., illus., + plates. $45; paper, $19.95.

Lizards have been touted as model organisms in ecology, and Eric Pianka's efforts have played a major role in focusing the attention of ecologists on these fascinating animals. In addition, Pianka's detailed quantitative observations on resource partitioning in assemblages of lizards have become paradigmatic of an entire approach to community ecology. Thus this monograph, an overview and synthesis of Pianka's empirical work, will be greeted with interest.

The monograph is organized through the descriptive comparison of lizard communities in three desert ecosystems. The Great Victoria desert in Australia, the Kalahari semi-desert of Africa, and the Great Basin–