for Kennedy's own interpretation of the constructive theory holds that such inferences are unconscious in nature.) (ii) It can be demonstrated that properties of the optic array can be unambiguously informative about their environmental origins. What more is needed for effortless, generally veridical perception?

Kennedy's analysis of the richness and completeness of the information available in the optic array, undertaken in the service of defending the registration theory of ordinary perception and extending this theory to picture perception, is a valuable contribution. But his oversimplified interpretation of the constructive theory blinds him to the fact that he has in no sense refuted the constructive theory blinds him to the the heart of the constructive theory is not so much the contention that inferences about the visual world must be made on the basis of impoverished and hopelessly ambiguous sensory information (though ambiguity and incompleteness are sometimes encountered, to be sure), but rather the idea that perception is a *selective process* by which incoming sensory information is integrated and encoded. The task, then, becomes one of specifying not only the stimulus variables that influence these selective mechanisms—such as Gestalt principles of organization and "figural goodness"—but also the nature of the internal processes that transform sensory input, as complete and informative as it may be, into perceptual experience.

The selective and constructive nature of perception is evident at a variety of levels, from the neural mechanisms for information reduction and recombination known to exist in the primate visual system, to higher-order mechanisms such as attention and expectancy. Moreover, viewing perception as a constructive process provides a framework for understanding other internal, constructive processes—such as mental imagery, which can occur in the absence of any appropriate external stimulus.

While the constructive theory portrays the perceptual process as actively and selectively building an internal representation of the visual environment, the registration theory, championed by Kennedy, ascribes to the perceiver no more than the ability to be "tuned to the invariants of structure" in the optic array (p. 45). Kennedy's view of ordinary perception prevents his analysis of picture perception from considering such matters as the possible effects of expectancy and context on perception of pictorial representations. Missing, also, is any mention of the relevant work on scene analysis and picture grammars emerging from the field of artificial intelligence. Yet despite these shortcomings, Kennedy's book, as an attempt to extend a unified theoretical position to the perception of a variety of pictorial displays, may stimulate other perceptual psychologists to consider and explore the fascinating problem of pictorial representation.

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Neuroscience

Essays on the Nervous System. A Festschrift for Professor J. Z. Young. R. BELLAIRS and E. G. GRAY, Eds. Clarendon (Oxford University Press), New York, 1974. viii, 512 pp., illus. $43.50.

More than a decade has passed since we faced the challenge of writing a discussion of an article by J. Z. Young addressed to the problem of the twinned brain. We can still recall the excitement—and the anguish—as we read his closely reasoned arguments, drawn with equal grace from data on structure, on function, and on behavior. His stimulus led us into constructions that we had not previously considered, and although our effort is disappointing, even embarrassing, to us on current rereading, it is at least indicative of Young's enduring capacity to stir ferment in younger minds.

The volume under review appears to provide another example of this phenomenon. In celebration of Young's 67th birthday, Bellairs and Gray have put together a bound document which fulfills almost all the potentialities of "festschriftery" with virtually none of its drawbacks. Here is a pride of talented neuroscientists, all marked by their present, or past association with Young, giving status reports of the fields they know best. Unlike most contributors to volumes of this kind, the majority show commendable restraint in quoting their own work, draw broadly on the work of others, and come close to offering us a handbook in microcosm. Most of the classic handbooks in neuroanatomy and physiology, and their modern counterparts, seem cut from similar goods; attempting to be definitive, they end up being interminable. Not so here, where excellent judgment on the part of the contributors, or sensible editorial control, or both, have made most of the chapters broad as to sampling, rich in content, concise in form, and sometimes audacious in conclusions.

As might be expected, the material is varied, ranging from ontogeny and differentiation, through synaptic morphology in a half dozen different systems, to respiratory neurons, the eternal problem of pain, and the possible central sites for learning. We found Wall's reformulation and extension of the gate theory of pain and Nadel and O'Keefe's discussion of hippocampal function in terms of cognitive mapping courageous if speculative. Similarly Colonnier weaves an ever-enriching fabric in cortical synaptology and spatial relations, and Boycott performs similar functions for the retina. Knowles recreates the early excitement over the concept of neurosecretion, and Merrill not only finds a function for medullary respiratory neurons but describes hitherto uncertain details of reticular axonal pathways with rather elegant antidromic microelectrode methodology.

It is necessary only to add that the editors have done the reader the courtesies of providing more than adequate indexes at the end and a businesslike history of the Anatomy Department at University College London, both before and during Young's stewardship, at the beginning. The Oxford University Press has performed its usual workmanlike job of supporting the project with solid binding, good typography, and satisfactory photographic reproduction. Unquestionably, this most satisfying volume does honor to Young, both in word and in deed.

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Honoring Dirac

The Physicist's Conception of Nature. Proceedings of a symposium, Trieste, Italy, Sept. 1972. JAGDISH MEHRA, Ed. Reidel, , 1973. xxiv, 840 pp., illus. $85.

To celebrate Dirac's 70th birthday in 1972, a mammoth conference was organized at the International Center for Theoretical Physics in Trieste. Dirac himself was there, together with the