ticulatory musculature and showing reduced articulation of specific word patterns. He produces evidence to demonstrate that patterned electromyographic activity, as well as generalized heightened tension, occurs in such activities as problem solving. However, more sophisticated techniques would be necessary, and are indeed only now becoming available, for detailed reading of the pattern of individual words.

Sokolov describes an interesting series of experiments which show that the amount of articulatory activity in problem solving will depend on the nature of the problem (with more activity for problems with obvious verbal content) and its difficulty. He believes also that there are substantial individual differences in the use of articulatory processing. His experiments with "interference" show the same pattern of the effects of task difficulty. In addition he is able to show interesting interactions between the target and the interfering task. Simple repetition of a single syllable presumably keeps the motor side of the articulatory mechanisms as busy as more complex performance. The effects are not as destructive, however, as recitation of more complex memorized material. Sokolov discusses the meaning of this in connection with his hypotheses about the function of inner speech.

Two general points of view are possible about the function of inner speech. One is that the electromyographic indicators simply represent some kind of overflow phenomenon—they are interesting and useful simply as manifestations of activity at some higher level, and give hints of the possible content. A second possibility, which Sokolov supports, is that the presence of activity in the articulators stimulates sensory activity from the articulators and that this serves a function per se in problem-solving activity. It might conceivably be possible to differentiate these points of view by experimental interference with sensory feedback.

This book is interesting more for the inspiration it offers for future research than for the work is describes. The electromyography of speech is now a rapidly developing field. Sokolov's book is rich in suggestions as to how it might be used as a probe in studying the more elusive areas of problem solving, reading, and short-term memory.

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Psychoneuroendocrinology

Influence of Hormones on the Nervous System. Proceedings of a meeting, Brooklyn, N.Y., June 1970. D. H. FORD, Ed. Karger, Basel, 1971 (U.S. distributor, Phiebig, White Plains, N.Y.). xx, 504 pp., illus. $31.45.

Endocrine secretions play an important role in modulating various aspects of neural function underlying behavior and mood. In turn, psychological factors, such as anxiety, affect pituitary hormone secretion. In recognition of this interplay, a group of scientists representing various basic and clinical disciplines have organized an International Society of Psychoneuroendocrinology. The papers in this book were compiled from the first meeting of this society.

Because of the breadth of the growing field of neuroendocrinology, it is not surprising that this single volume is not truly representative of the various topics which comprise the field. Nevertheless, the 40 chapters give important and interesting insights into several of the more active areas of investigation. A large number of the chapters deal with the role of thyroid hormone in the development and function of the brain. These papers describe a multitude of effects on brain chemistry, physiology, and behavior which result, either directly or indirectly, from thyroid hormone excess or insufficiency. However, very little is known about the basic cellular mechanism of thyroid hormone action, except from the work described by Sokoloff and Roberts concerning a thyroxine-induced mitochondrial factor which stimulates amino acid incorporation in immature brain and immature and adult liver. Other papers provide support for the direct action of thyroxine and certain steroid hormones on the brain by showing that systemically administered radioactive hormones are taken up into nervous tissue. At the cellular level, Chader and Villee examine the binding of estradiol to brain cell nuclei, deVellis and co-workers show that glial cells are targets of adrenal steroid action, and Pfaff and co-workers examine the neurophysiological consequences of testosterone and corticosterone action on the brain.

Neural regulation of endocrine secretion receives limited coverage. Krieger and Krieger examine the effect of putative neurotransmitters, intracerebrally administered, on ACTH secretion, and Kawakami and co-workers examine the role of various limbic structures in modulating ACTH secretion. Papers by Donovan and by Clemens and Shaar examine the neural regulation of gonadotrophin secretion. Steroid hormone effects on behavior and mental performance in mature animals are described by Klaiber and co-workers, by Michael, by Ciaccio and Lisk, and by Dupont and co-workers.

One of the most intriguing topics in this volume is the role of steroid hormones in the ontogeny of sexual behavior and neuroendocrine regulation. Nadler describes the masculinizing effects of intrahypothalamic testosterone implants in baby rats, and Swanson describes the consequences of systemic administration of androgen in newborn hamsters on subsequent reproductive physiology and sexual behavior. Peretz and co-workers extend this type of work on rodents to the rhesus monkey, showing effects of perinatal androgen in determining the gender of threat and play behavior.

The relationships of such psychoneuroendocrine studies to clinical observations on man are dealt with in papers by Abrams, Brambilla and Penati, and the late Max Reiss. The book is dedicated to Reiss.

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Odontology

Dental Morphology and Evolution. A symposium, Englefield Green, England, Sept. 1968. ALBERT A. DAHLBERG, Ed. University of Chicago Press, Chicago, 1971. x, 350 pp., illus. $18.50.

The results of the first international symposium on dental morphology were published in 1967 as Vol. 46, No. 5, pp. 769–992, of the *Journal of Dental Research*. The organization of the second symposium, held in 1968, was largely the work of Percy Butler. The papers given, now available in book form, are divided into three basic but somewhat arbitrary and overlapping groups: Ontogeny, five papers; Phylogeny, six papers; and Morphology, another six papers. Most of these contributions deal with the teeth of primates (notably man) and primitive therians, with only occasional forays into other mammalian orders. I found the book to be rather uneven but instructive reading; I recommend it as a valuable reference work.

The section on ontogeny leads off