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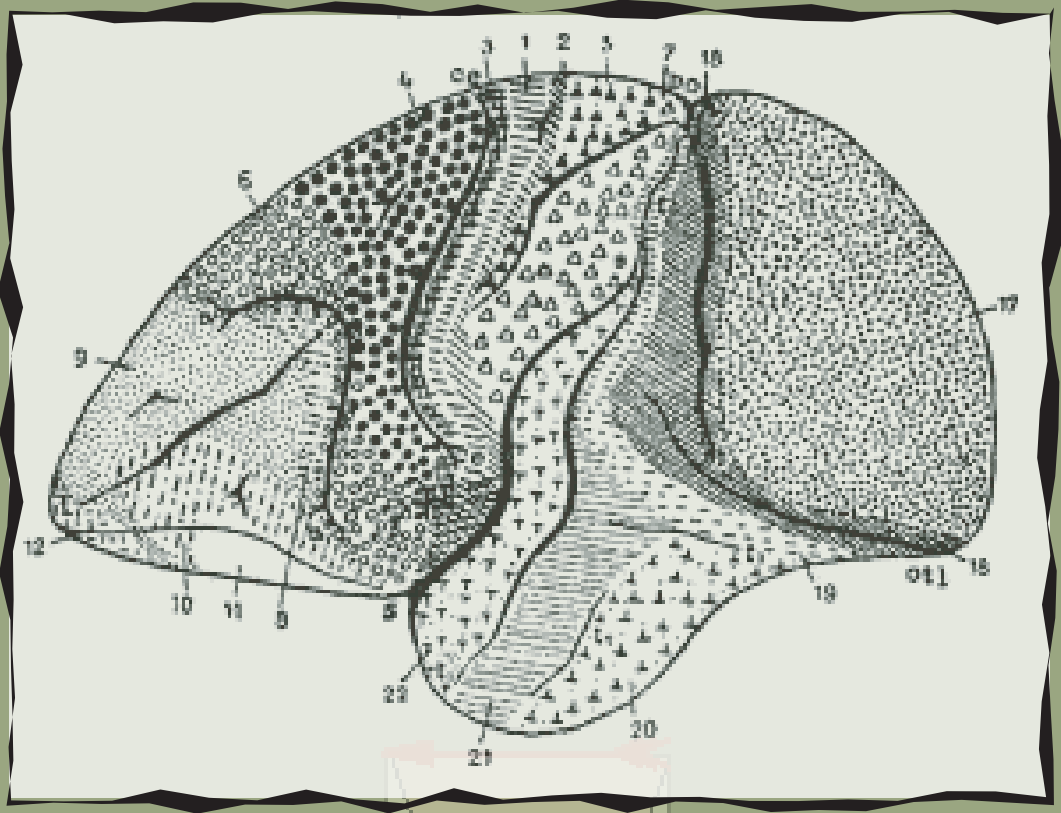

Look and See: How the Brain Does It

A small region of the primate retina provides high-acuity vision. Successful analysis of the visual scene therefore requires repeated shifts in gaze to direct this area to regions of the visual field we wish to analyze in detail. Each shift in gaze requires a choice in the selection of the site to be looked at next, followed by the execution of a saccade. This is a complicated task that involves numerous brain structures, yet is carried out with the greatest of ease attesting to the remarkable processing capacity of the visual and oculomotor systems. The central theme that has emerged from the research carried out in my laboratory is that visually guided saccadic eye movements are controlled by two processing systems, the anterior and the posterior, and that these two systems are involved in different aspects of eye-movement control. The anterior system, originating in the frontal and medial eye fields of the frontal lobe, has direct access to the brain stem oculomotor centers whereas the posterior system, originating in the occipital and parietal lobes that includes areas V1, V2 and the lateral intraparietal area (LIP), passes through the superior colliculus. Several lines of evidence gathered in my laboratory have established that the posterior system is essential for the generation of short-latency saccades that are important for responding quickly to suddenly appearing stimuli in the environment, whereas the anterior system plays a central role in selecting the target to which the center of gaze is to be shifted after each fixation and in planning sequences of saccadic eye movements for the exploration of the visual scene.

Vision Research Seminar Series

Monday, October 20, 2003 • 4:00 p.m. • 115 Wilson Hall

(Refreshments prior to seminar)

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