

# CENTRAL VISUAL SYSTEM DEFICITS

**It is easier to say where than it is to explain how.**

**- Wilder Penfield (1965) Brain and Conscious Experience**

- I. Localization of function - history
  - A. Phrenology - Gall
  - B. Anti-phrenology - Flourens
  - C. Localization of language - Broca & Wernicke
  - D. Anti-localization - Lashley
  - E. Localization of memory - Penfield
  - F. Cerebral hemispheric asymmetry - Sperry
- II. Association areas of cerebral cortex
  - A. Occipital, extrastriate visual areas
    - 1. Higher visual processing
      - a. V4 - color perception
      - b. MT - motion perception
  - B. Parietal
    - 1. Spatial localization and directed attention
    - 2. Ablation effects
      - a. Dominant hemisphere
        - (1) agraphia, dyslexia, constructional apraxia, poor recall for long series of digits, right-left confusion
      - b. Nondominant hemisphere
        - (1) hemineglect & spatial disorientation
  - C. Temporal
    - 1. Object recognition
    - 2. Agnosia
      - a. prosopagnosia
  - D. prefrontal
    - 1. dorsolateral (principal sulcus in macaque monkeys)
      - a. Role in cognition and motor planning
        - (1) ablation causes deficit in tasks requiring short-term spatial memory
    - 2. inferior prefrontal convexity
      - a. role in organization of motor responses