

EMOTIONS AND MEMORY

2/1/96 revision, Martini, P. 412,517, 2/4/97, 2/3/98, 4 Feb 04, 6 Jan 08, 9Feb09, 2Feb11
 Martini's 6th: 552-554, 8th:

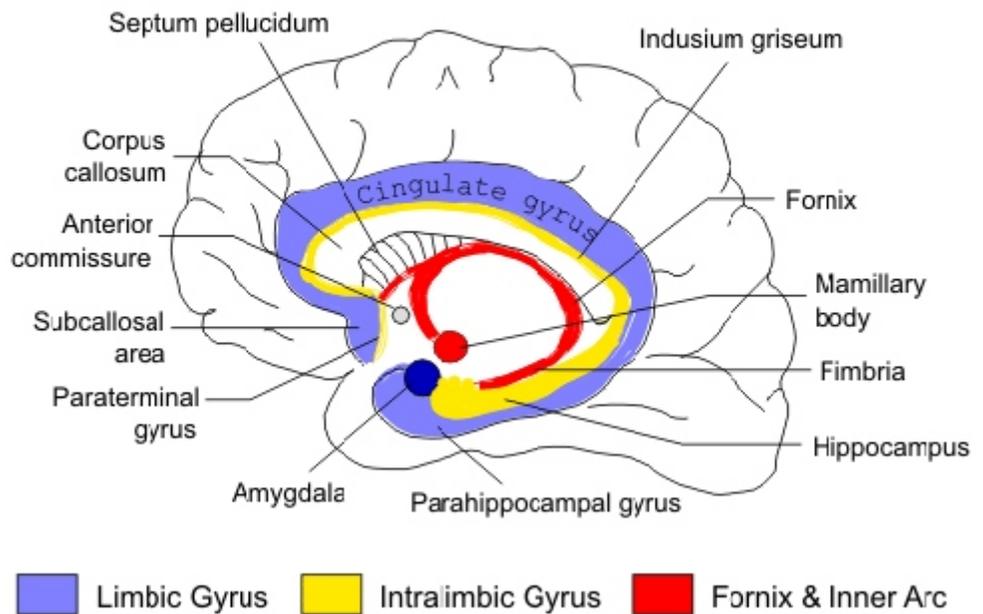
Papez studied rabid subjects: damage to **rhinencephalon**, esp the **hippocampus** (at the floor of the inferior horns of the lateral ventricles) was related to their **emotional instability**
 [Bard and Cannon: damage to thalamus and hypothalamus in animals, noted that autonomic responses were related to emotional states]

LIMBIC FUNCTION: (p 478) (Limbic = edge, border) (between brain stem and cerebrum)
correlates past emotional experience with current stimulus, triggering emotional responses
 Establishes emotional state, drives autonomic responses through hypothalamus
 links conscious cerebral activity with unconscious and autonomic functions
 facilitates memory storage, retrieval
 stimulates or inhibits the reticular formation

DRAW IN SUCCESSION WITHIN CEREBRUM:

Cingulate gyrus part of **paleocortex**, oldest portion of cortex, primitive responses
Amygdala nuclei just anterior to hippocampus, may trigger violent reactions
Hippocampus Long term memory, spacial navigation. In medial temporal lobe. Damaged in Alzheimer's Disease.
Fornix bears tracts carrying fibers fr hippocampus to the hypothalamus
Hypothalamus at the center of the limbic system, carries out emotional effects on vegetative functions (rage, fear, pain sexual arousal pleasure)

The Limbic System



MEMORY (p 550)

Fact memories **cerebral**
 Skill memories **cerebellar and cerebral** more deeply imbedded, recall more clearly at much later time

short term: remember phone numbers long enough to dial
long term: **rehearsal** and **stimulus strength** (including emotional content)
 convert short term into long term, requires protein synthesis, probably to increase synaptic knob synthesis, alter membranes etc.

PHYSIOLOGY OF MEMORY: **rehearsal** tends to favor stimulation of post-synaptic neuron:

- 1: **more neurotransmitter released** threshold more easily reached
- 2: **facilitation:** repeated use leads to **continual release of low levels of neurotransmitter**, making threshold more easily reached
- 3: **increased synaptic connections:** repeated use **stimulates branching of axon tip** forming additional synapses.

Build memory "engrams": facilitated circuits which may cover broad area of brain