

* READING HOSPITAL SCHOOL OF HEALTH SCIENCES MEDICAL IMAGING PROGRAM

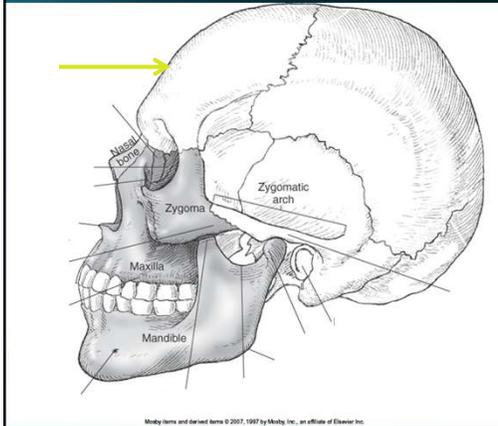
CROSS SECTIONAL ANATOMY-2022



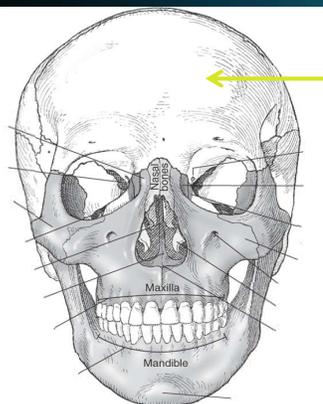
Head Anatomy

1

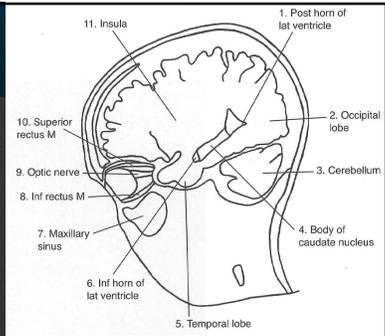
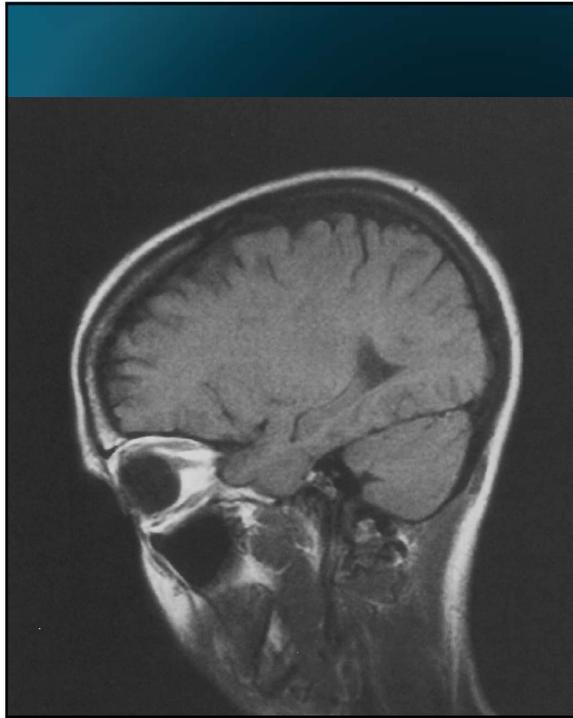
* Frontal Bone



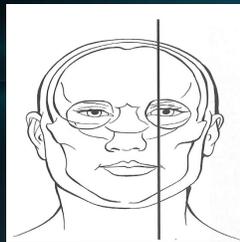
- **Location:** Forms forehead, anterior part of skull and roofs of orbits



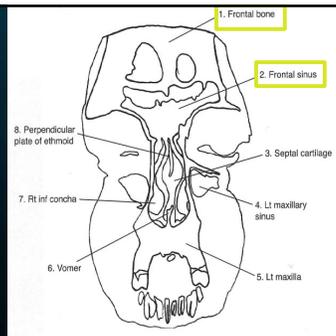
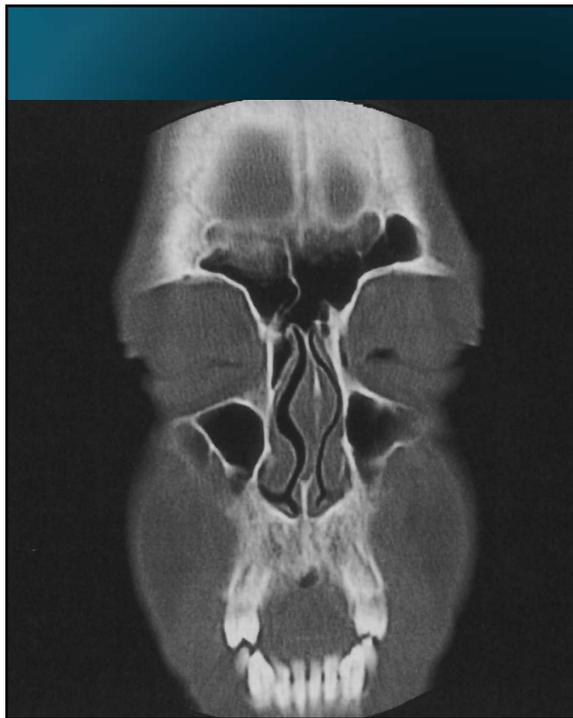
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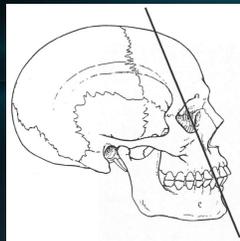
Book 34



3

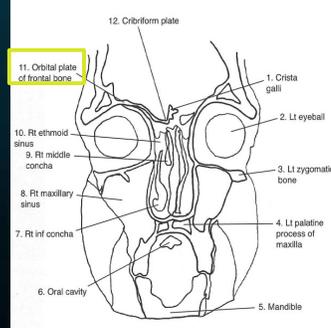


Book 82

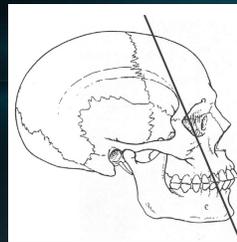


4

- **Orbital Plate** - Forms the roof of the orbits

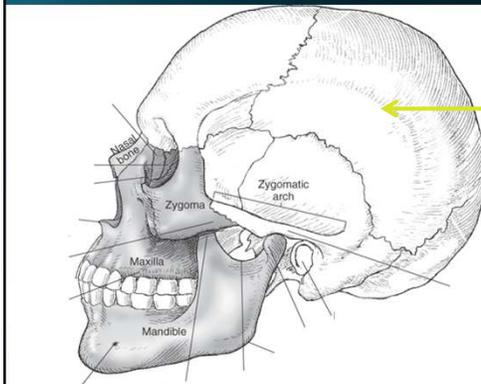


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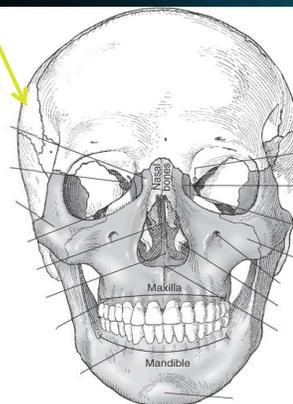


5

* Parietal Bones

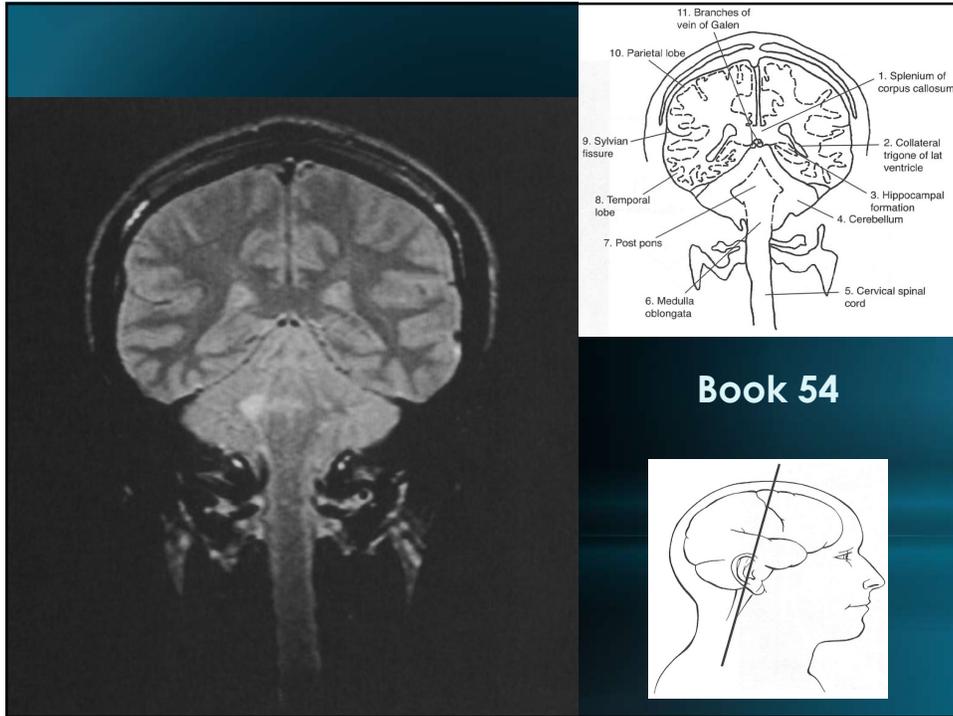


- **Location:** Behind the frontal bone, above the temporal bones and in front of the occipital bone



- **Function:** Pair of flat bones that form much of the lateral walls and roof of the cranium

6



7

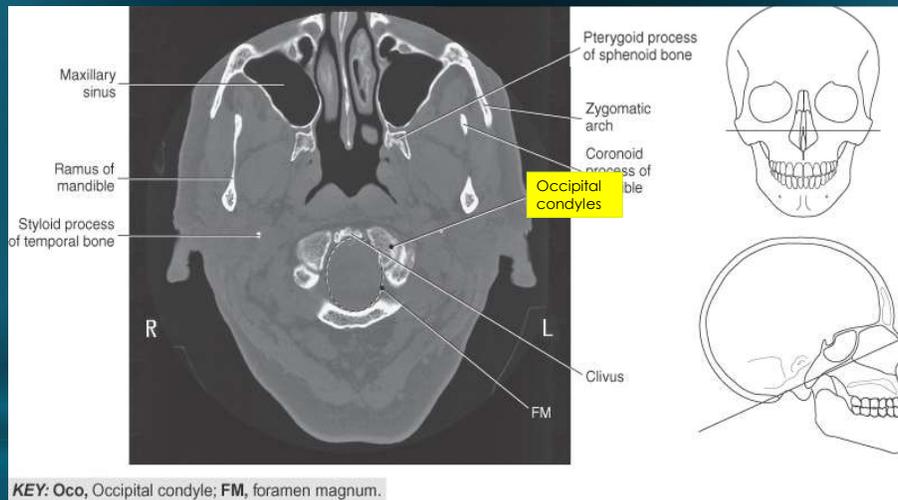
* Occipital Bone

- **Location:** Forms posterior/inferior cranium
- **Function:** Contains largest opening in the skull: Foramen Magnum

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8

* Occipital Bone

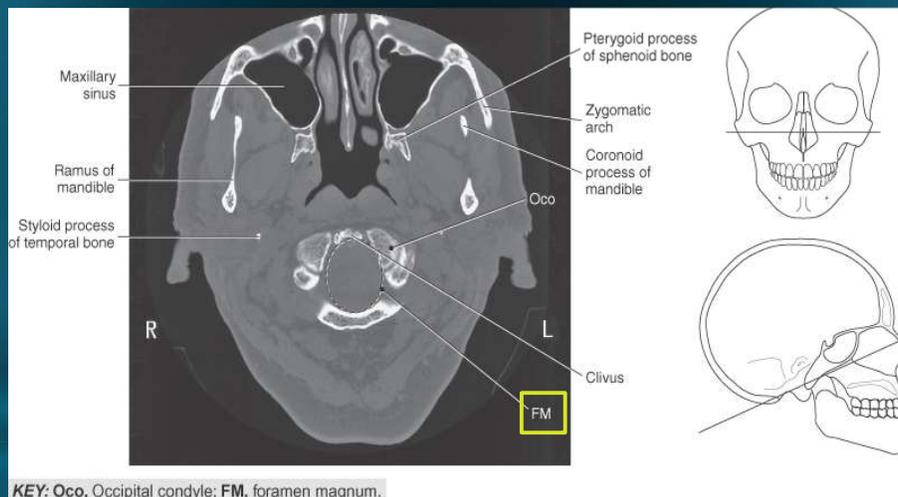


KEY: Oco, Occipital condyle; FM, foramen magnum.

Occipital Condyles: Articulate with the superior articular process of C1

9

* Occipital Bone



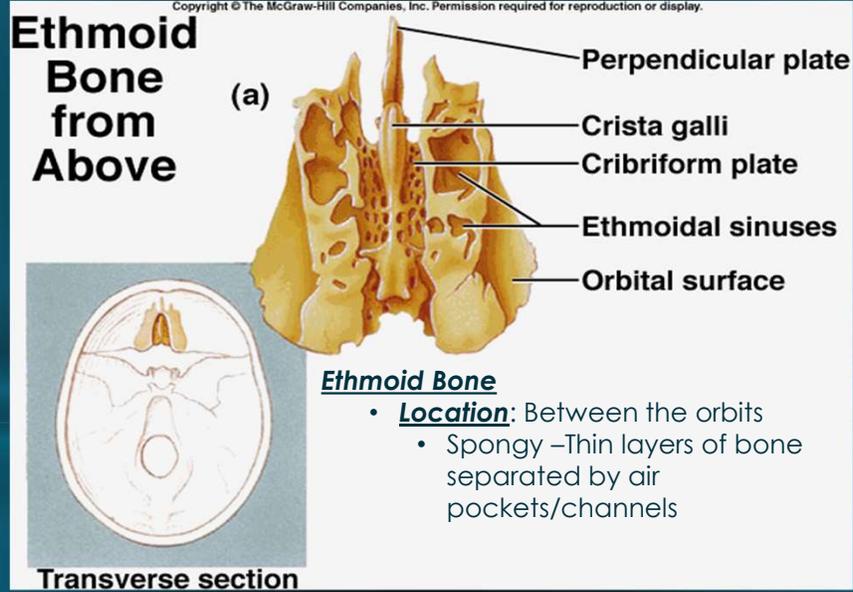
KEY: Oco, Occipital condyle; FM, foramen magnum.

Foramen Magnum

- Location: Base of occipital bone
- Function: Transmits spinal cord

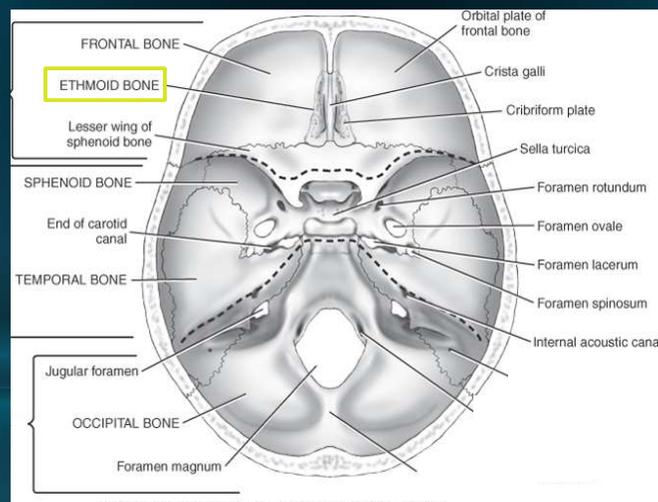
10

* Ethmoid Bone



11

* Ethmoid Bone

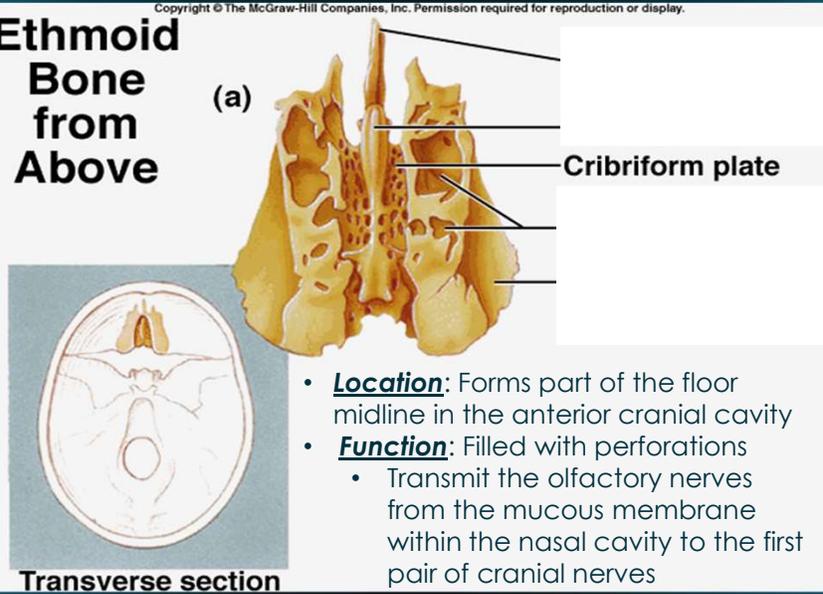


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* Ethmoid Bone

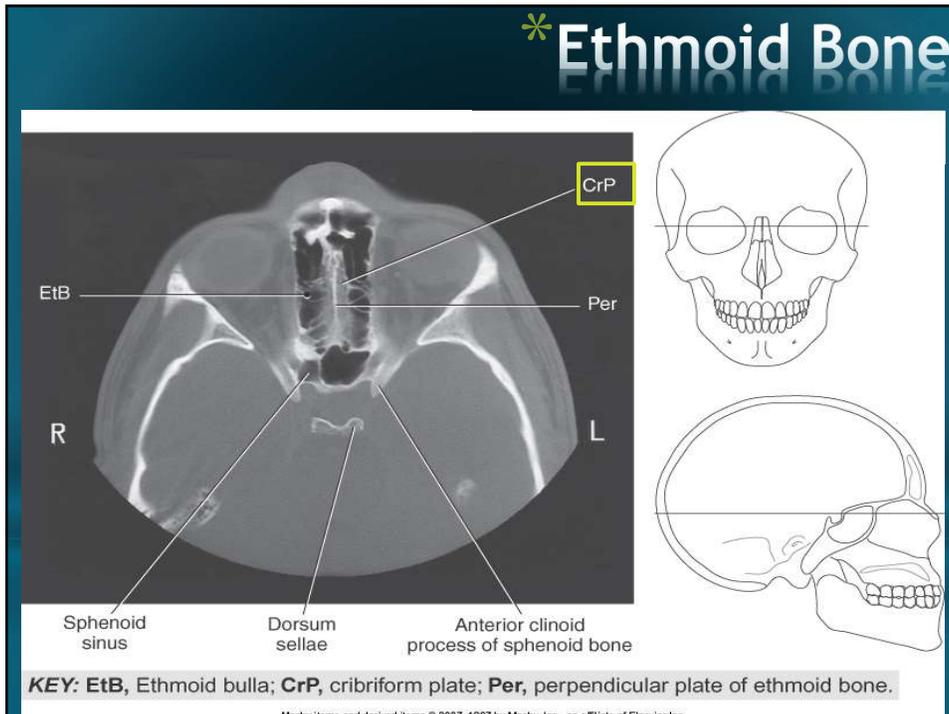
Ethmoid Bone from Above

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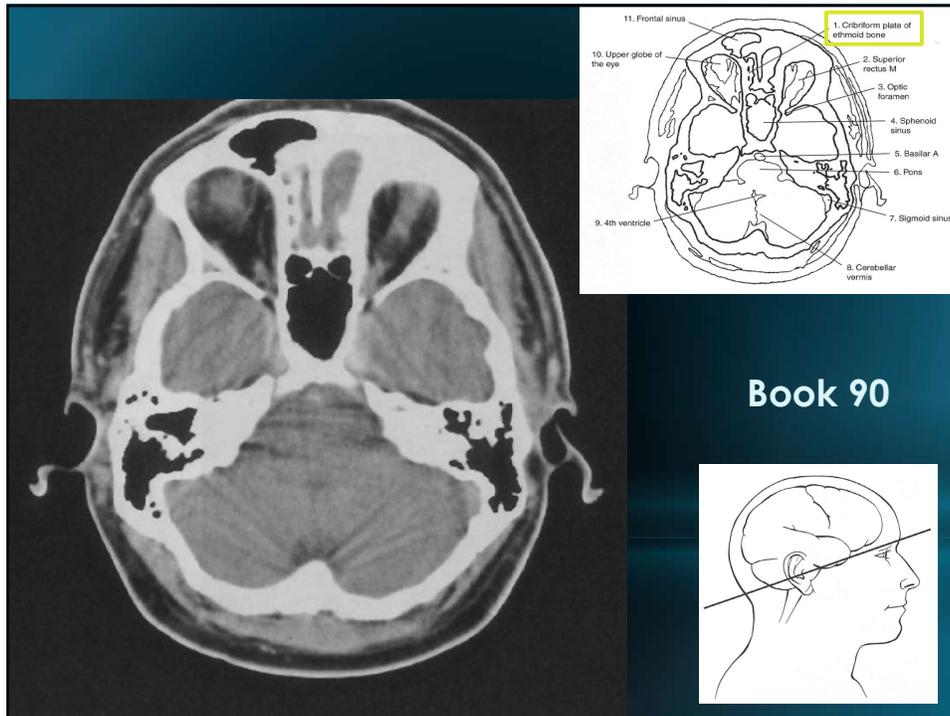


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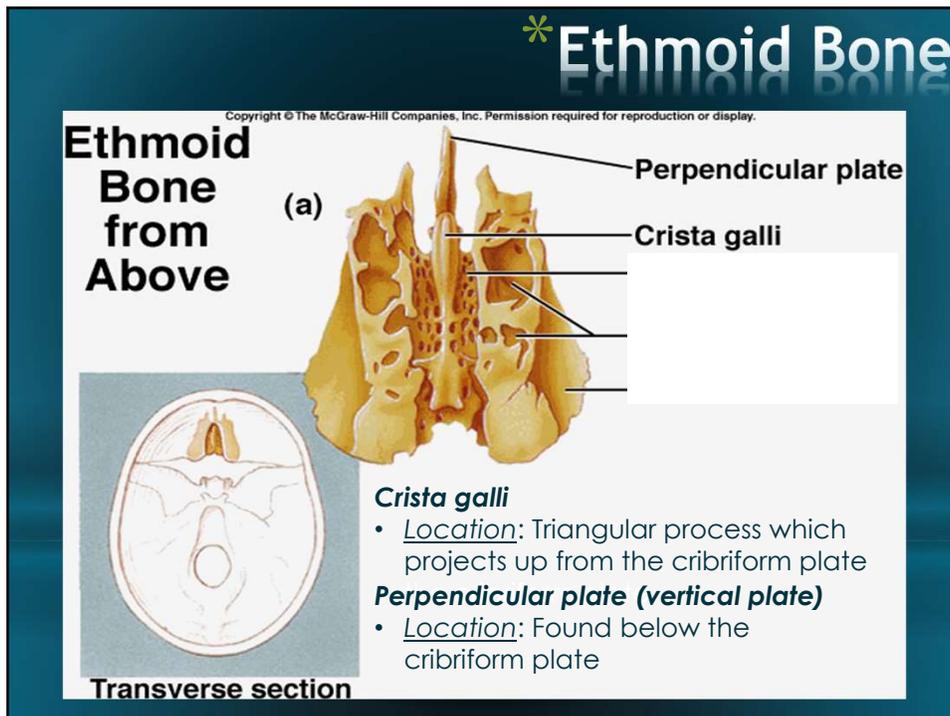
* Ethmoid Bone



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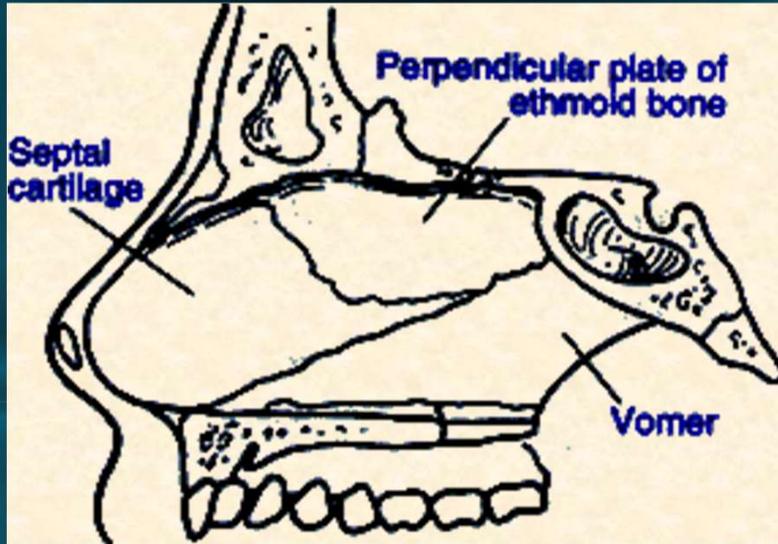


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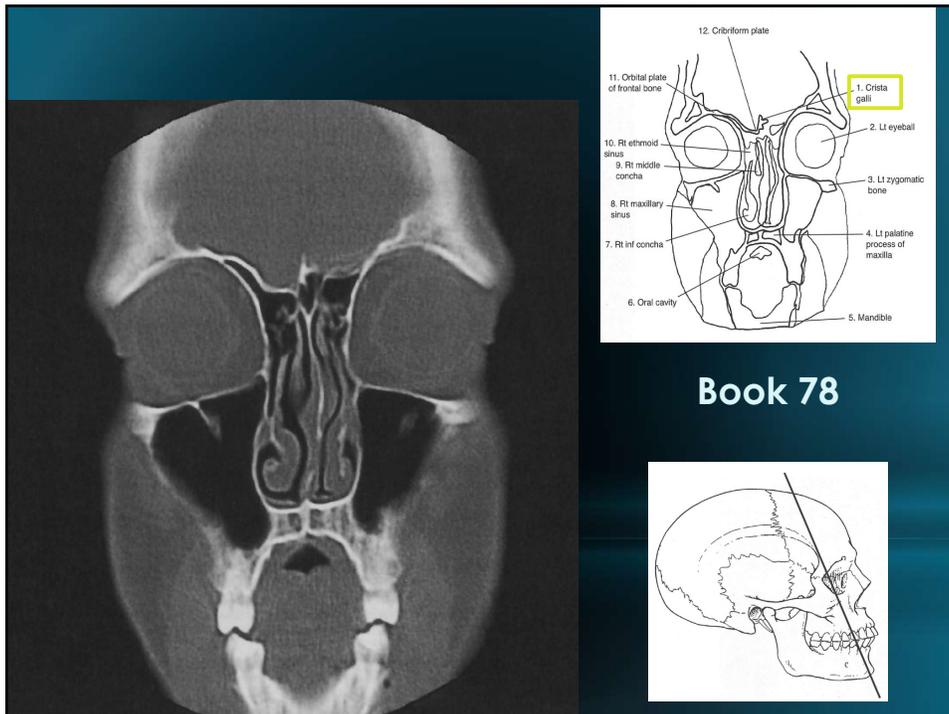


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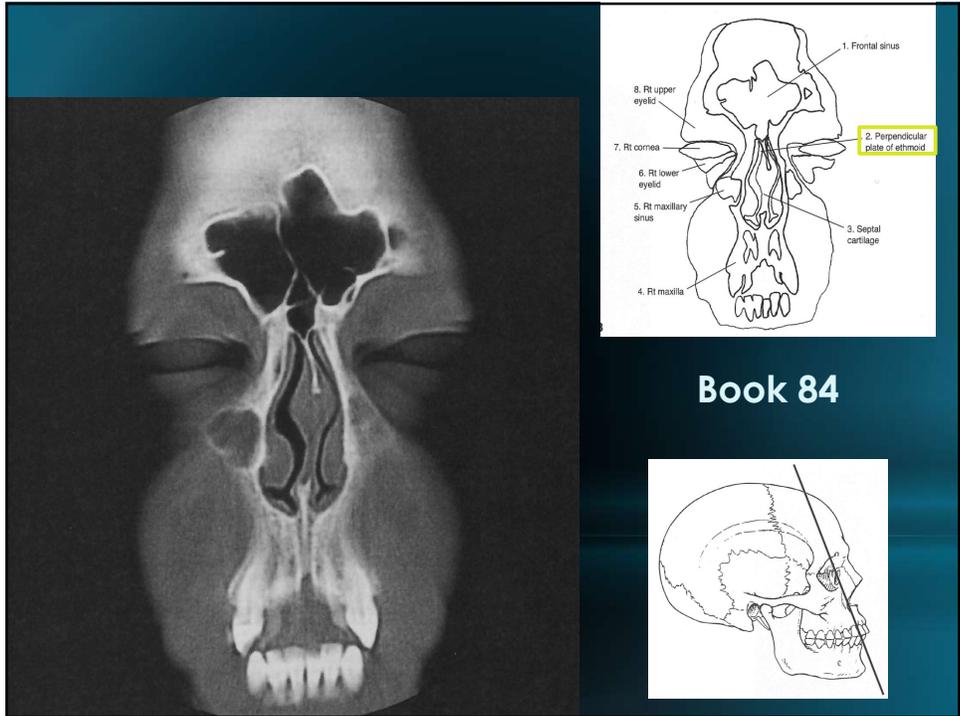
* Ethmoid Bone



17



18



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* Ethmoid Bone

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Ethmoid Bone from Above

Transverse section

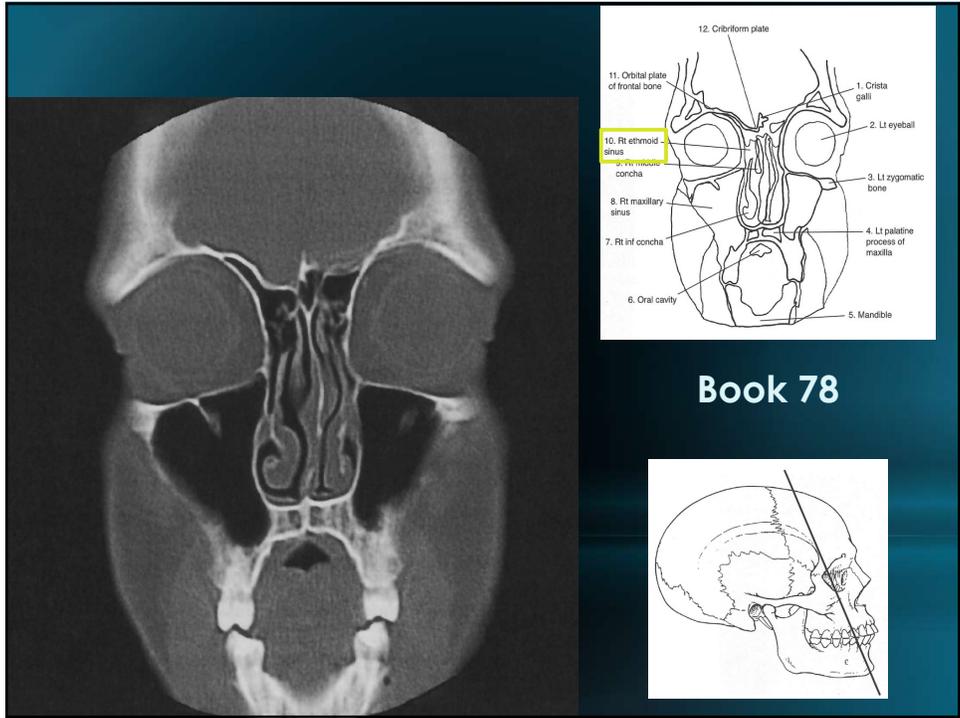
(a)

Ethmoidal sinuses

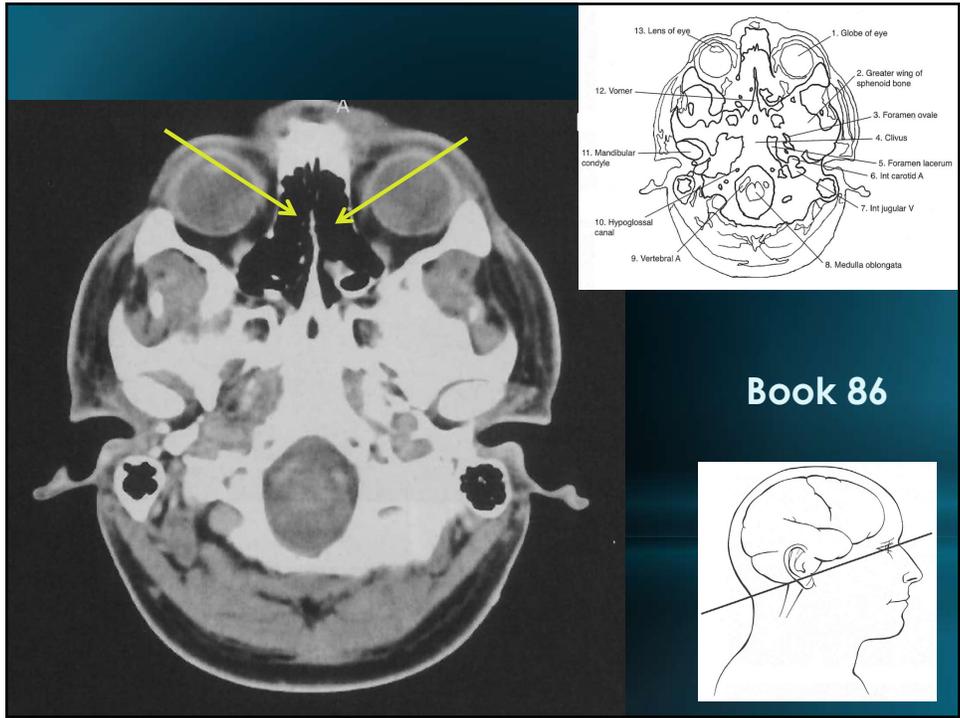
Sinuses (air cells) - Number varies from 3-18 cells

- **Location:** Left and right of the nasal cavity
- **Function:** Drain into nasal cavity; Connect with sphenoid sinus

20

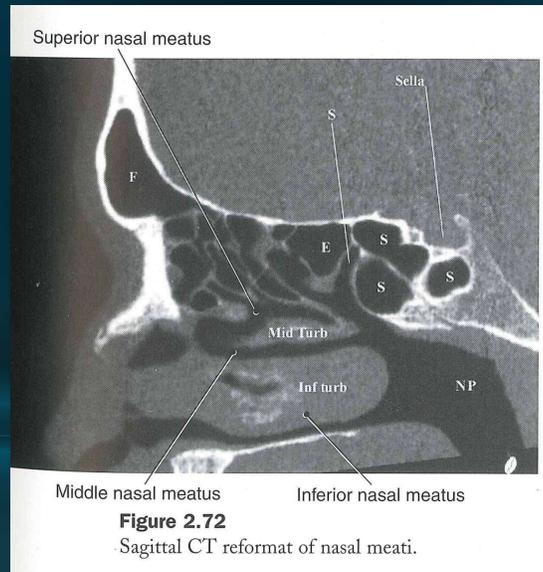


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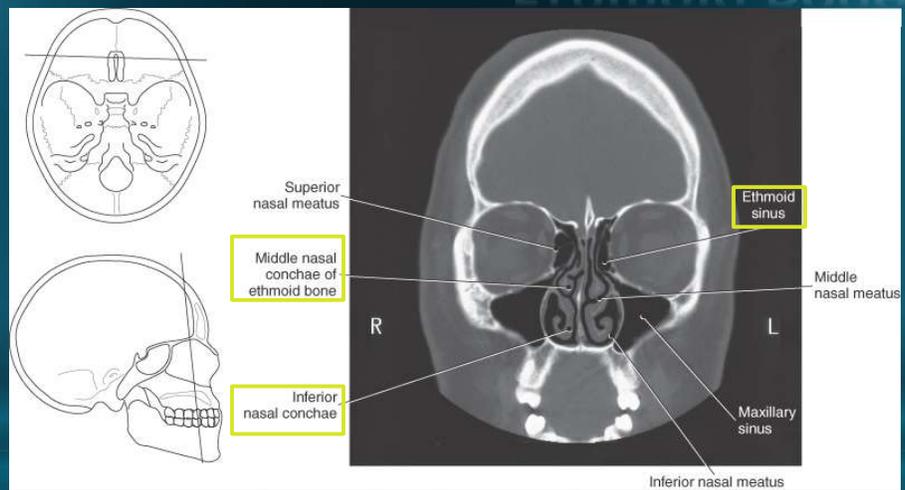
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* Ethmoid Bone



23

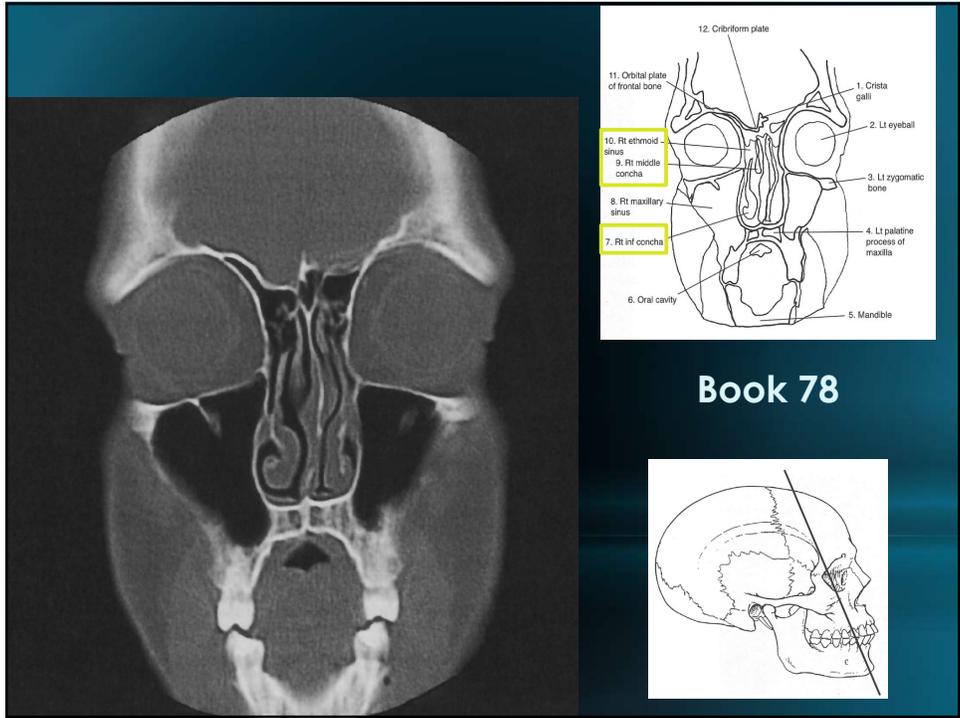
* Ethmoid Bone



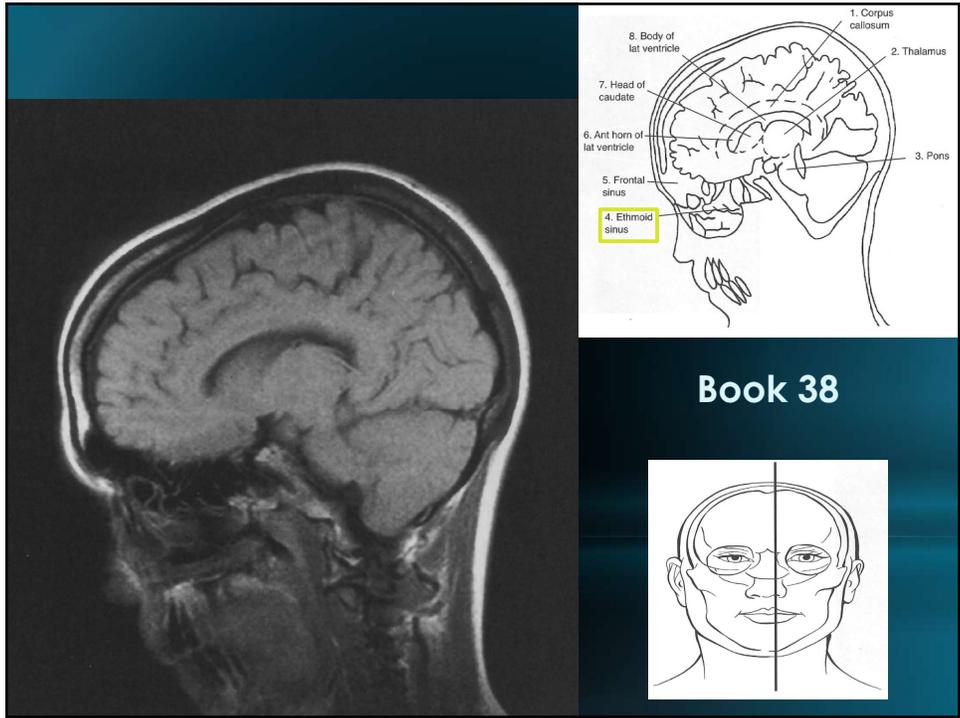
Nasal Conchae

- **Location:** Two seashell-shaped bones on either side of the ethmoid
- **Function:** Provide circulation and filtration of air before it reaches the lungs

24

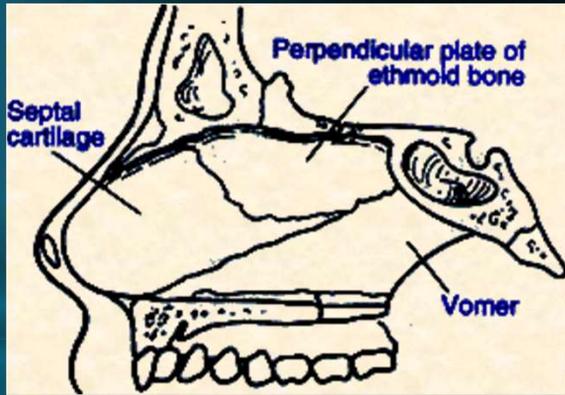


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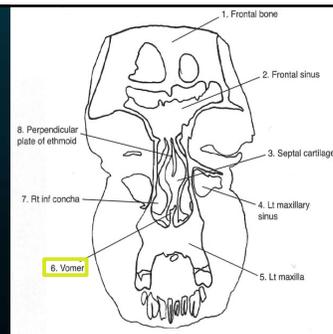
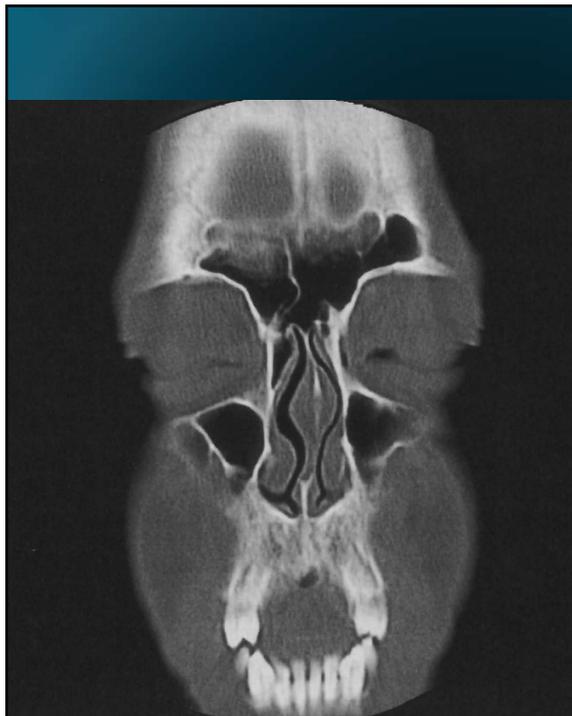
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*Vomer

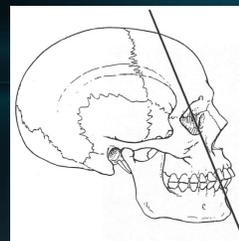


- **Location:** Thin, flat bone extending from the hard palate to the perpendicular plate of ethmoid
- **Function:** Posterior part of nasal septum

27

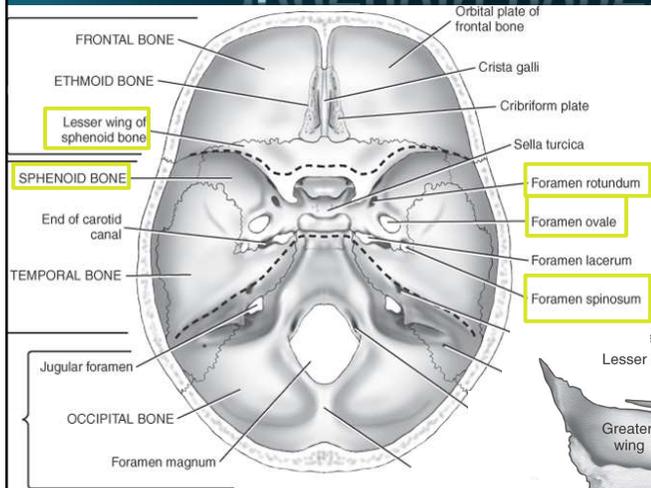


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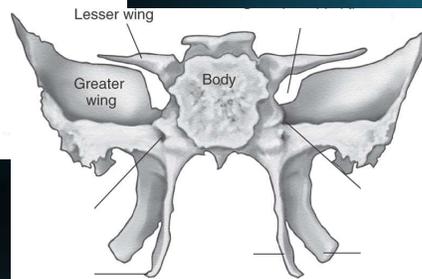


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* Sphenoid Bone- "Keystone of Cranium"

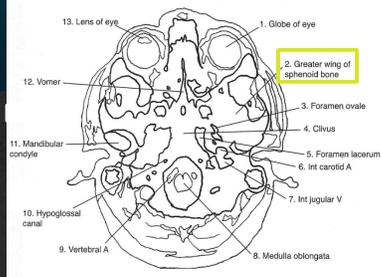
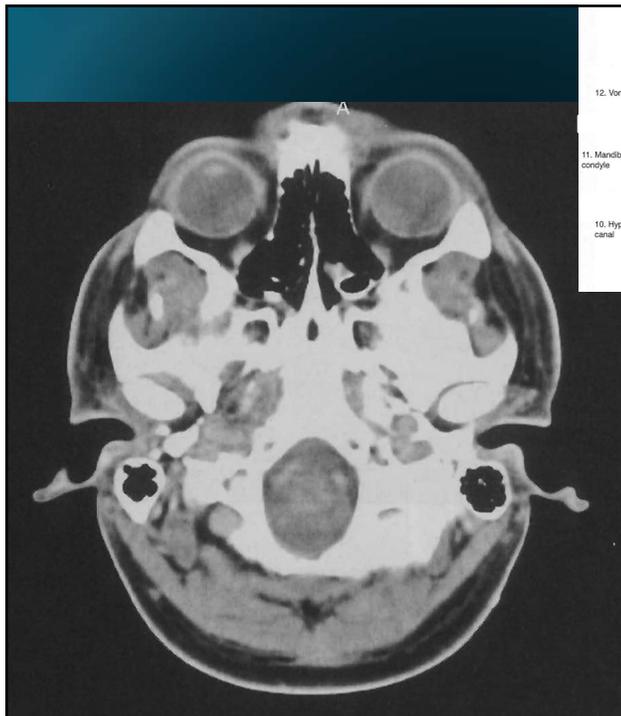


- **Location:** Found on the floor of the cranium
 - Lateral to the sella turcica

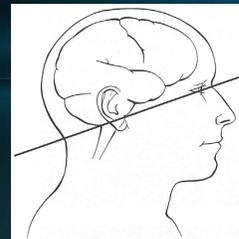


- **Function:** Articulates with all other cranial bones

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* Sphenoid Bone

Sella Turcica

* Location: “Saddle-shaped” structure between anterior and posterior clinoid processes

* Function: Houses the pituitary gland

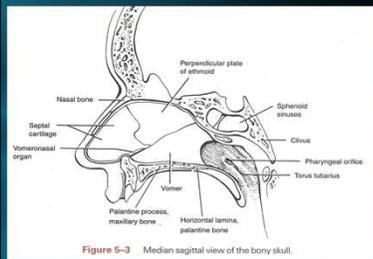
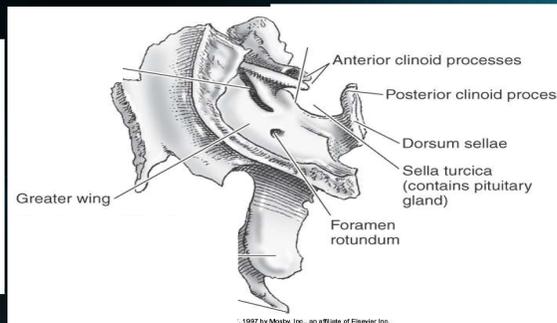
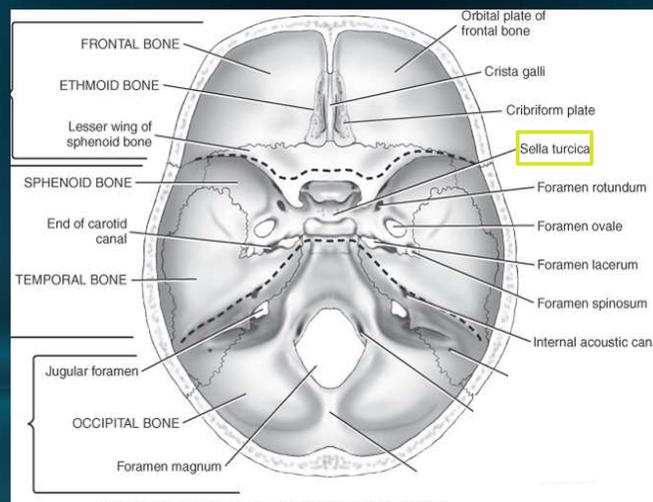


Figure 5-3 Median sagittal view of the bony skull.



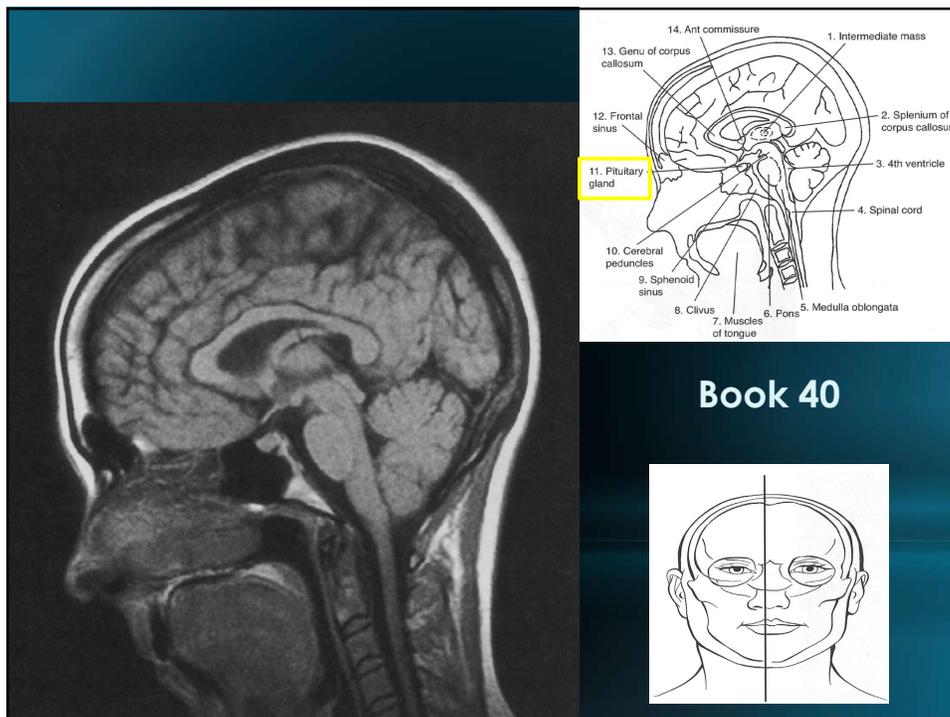
31

* Sphenoid Bone



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* Sphenoid Bone

Anterior and Posterior Clinoid Processes

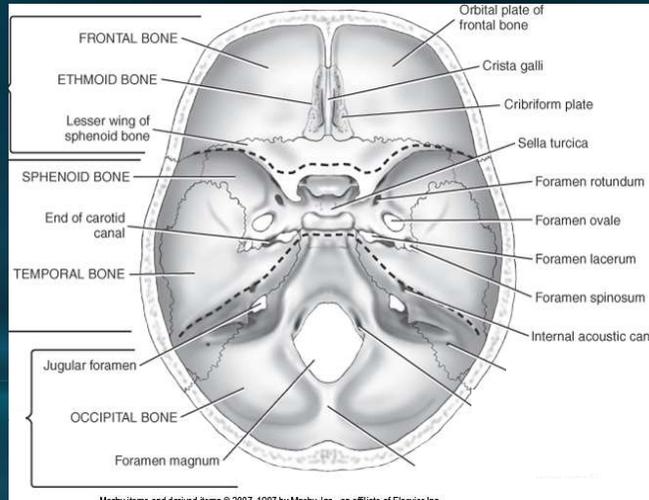
- * Location: Surround the sella turcica
- * Function: Provide attachment for dura mater
 - * Anchor pituitary within sella turcica

Figure 5-3 Median sagittal view of the bony skull.

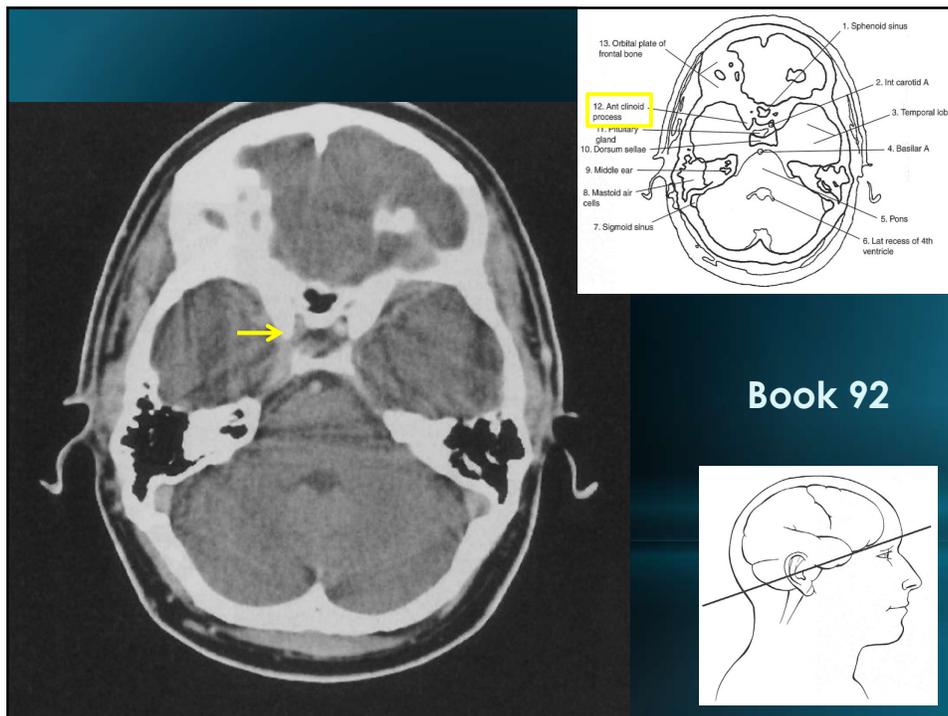
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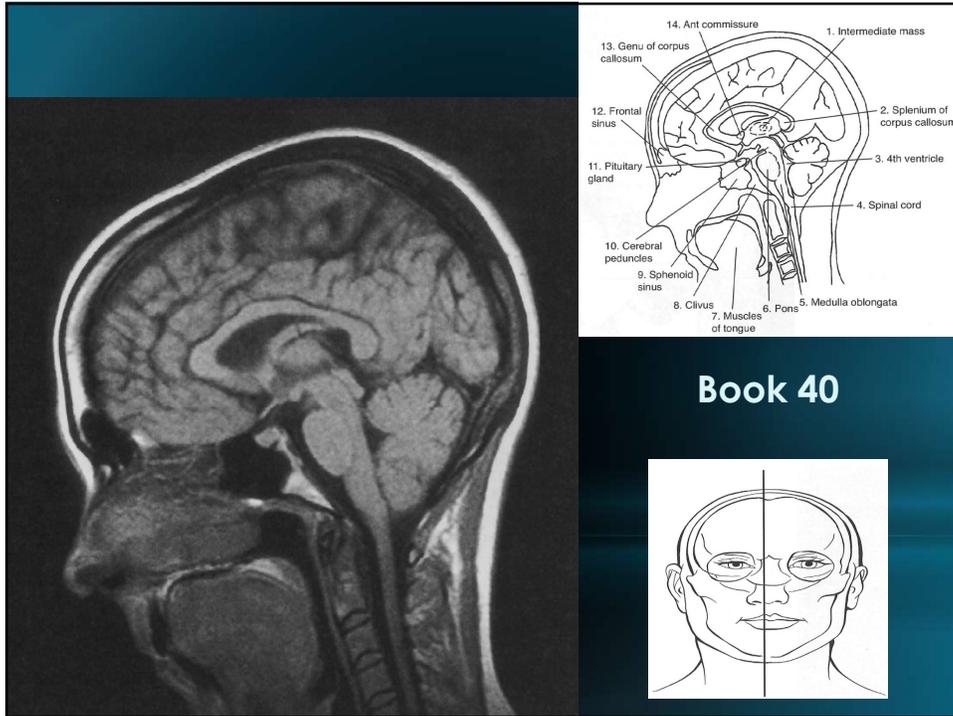
* Sphenoid Bone



35



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37

* Sphenoid Bone

Dorsum sellae

- * Location: Posterior boundary of sella turcica
- * Contains posterior clinoid processes
- * Function: Forms upper part of clivus

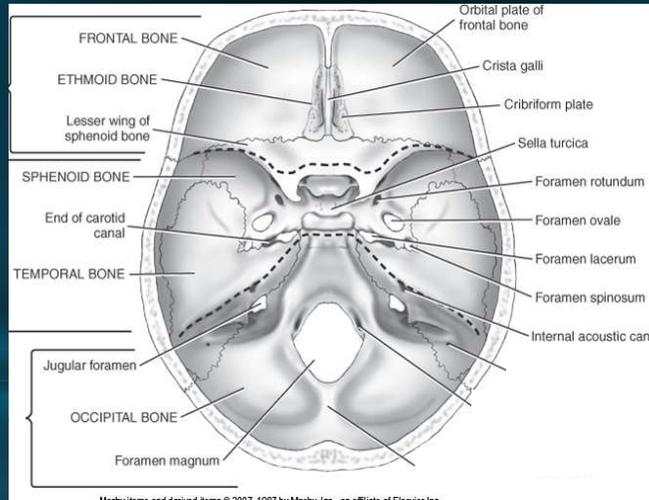
Figure 5-3 Median sagittal view of the bony skull.

Anterior clinoid processes
Posterior clinoid process
Dorsum sellae
Sella turcica (contains pituitary gland)
Foramen rotundum
Greater wing

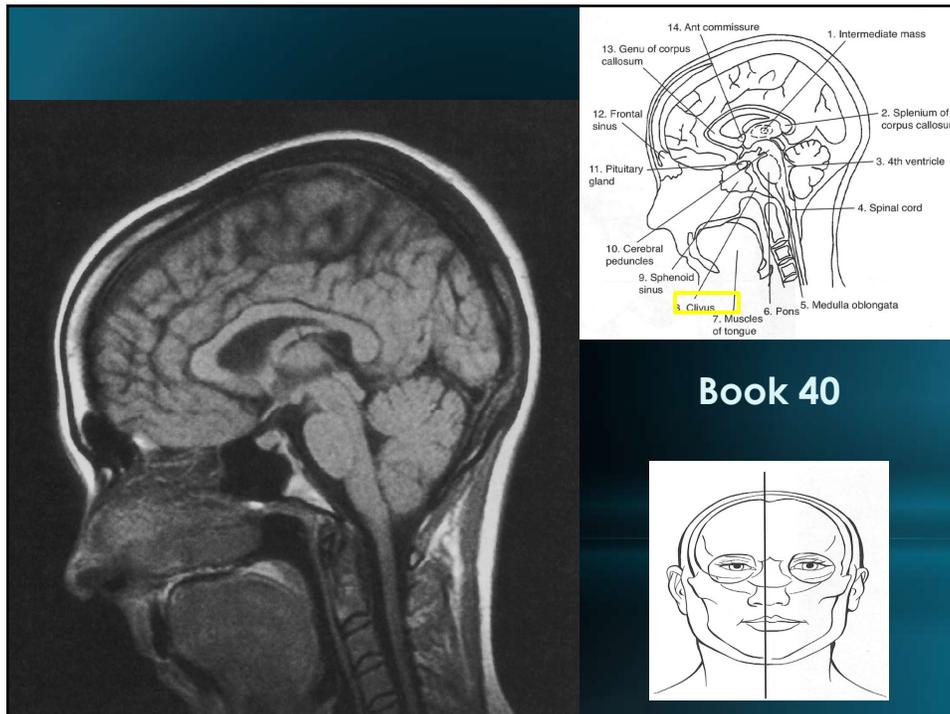
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* Sphenoid Bone



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40

* Sphenoid Bone

Clivus

- * **Location:** Bony structure between the dorsum sella and the foramen magnum
- * Upper part formed by body of sphenoid
- * Lower part formed by basilar part of occipital bone

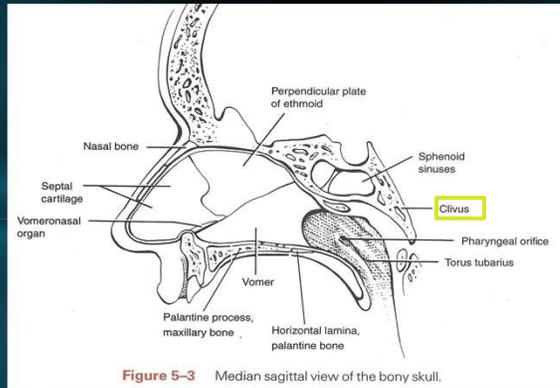
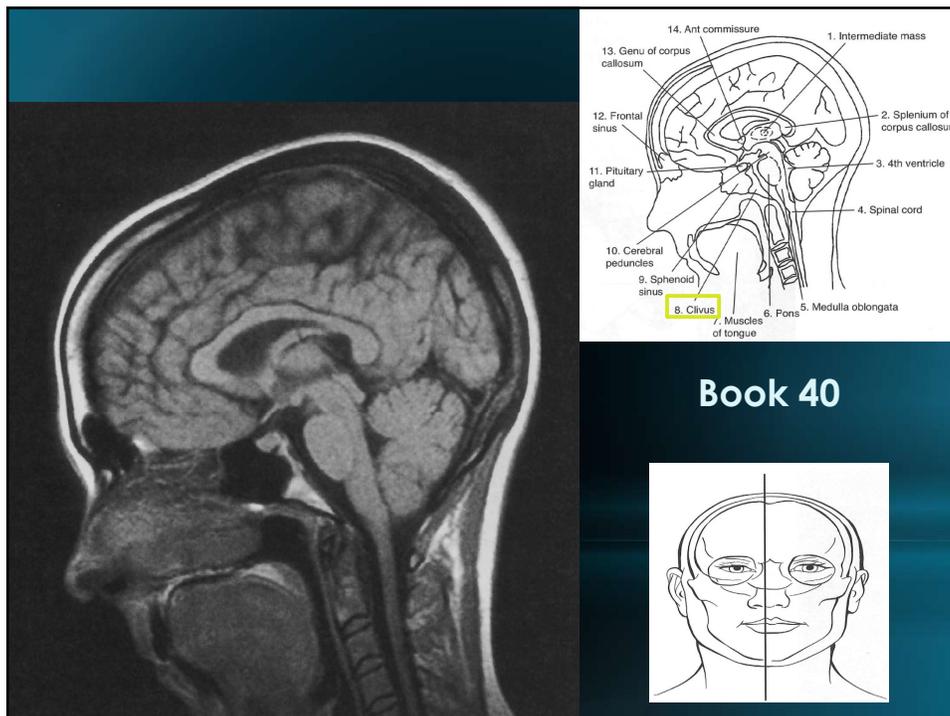
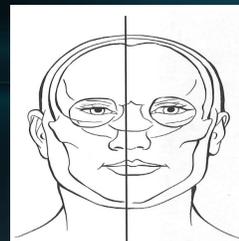


Figure 5-3 Median sagittal view of the bony skull.

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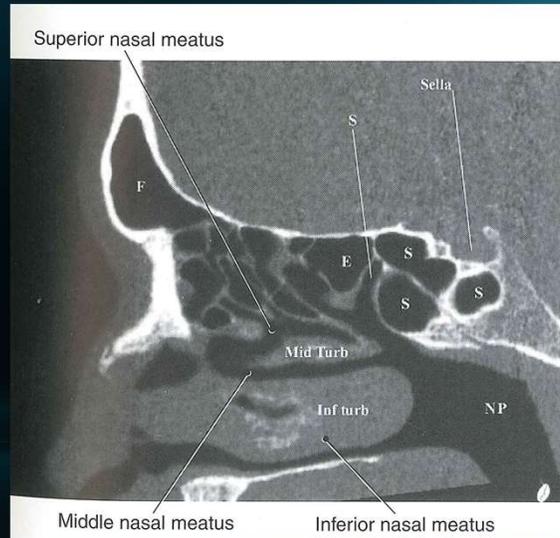
* Sphenoid Bone

Sinus

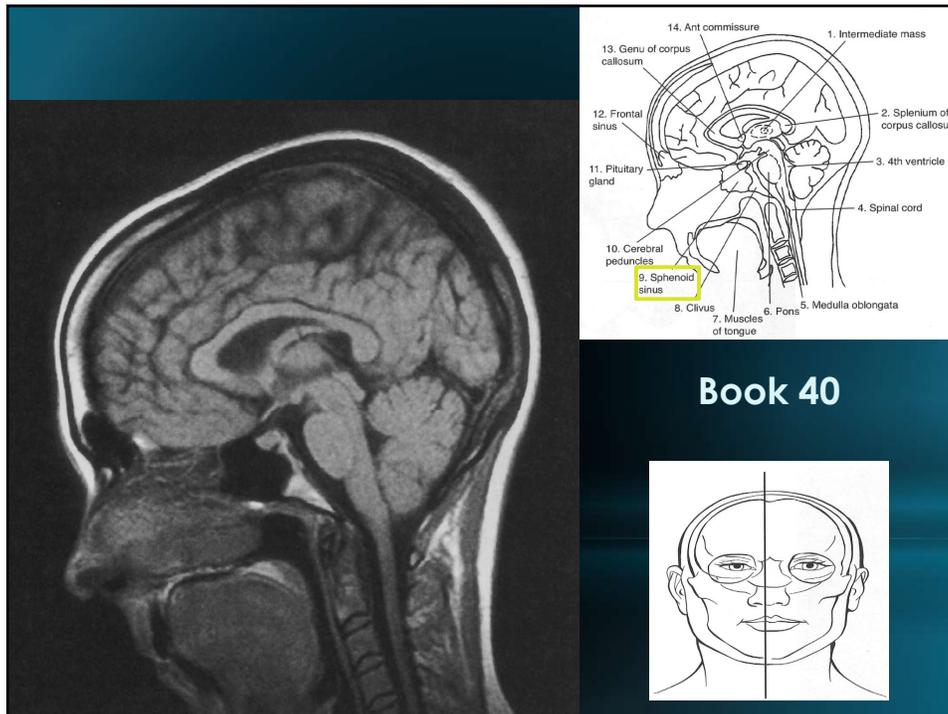
* Location:

Central portion of Sphenoid; Inferior to sella turcica

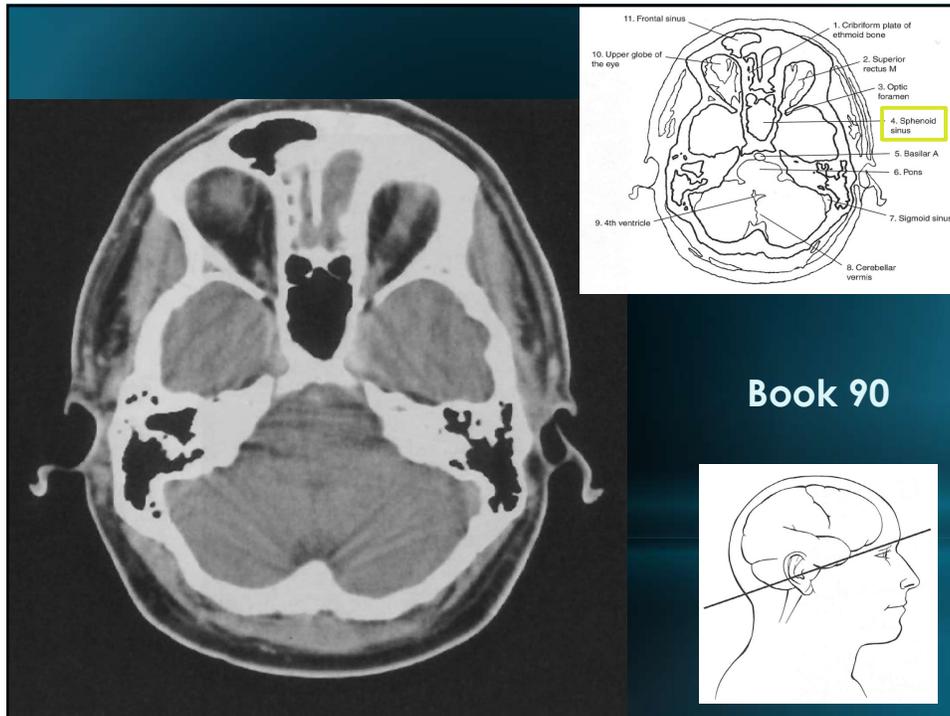
* Contains two or more air cells divided by a septum



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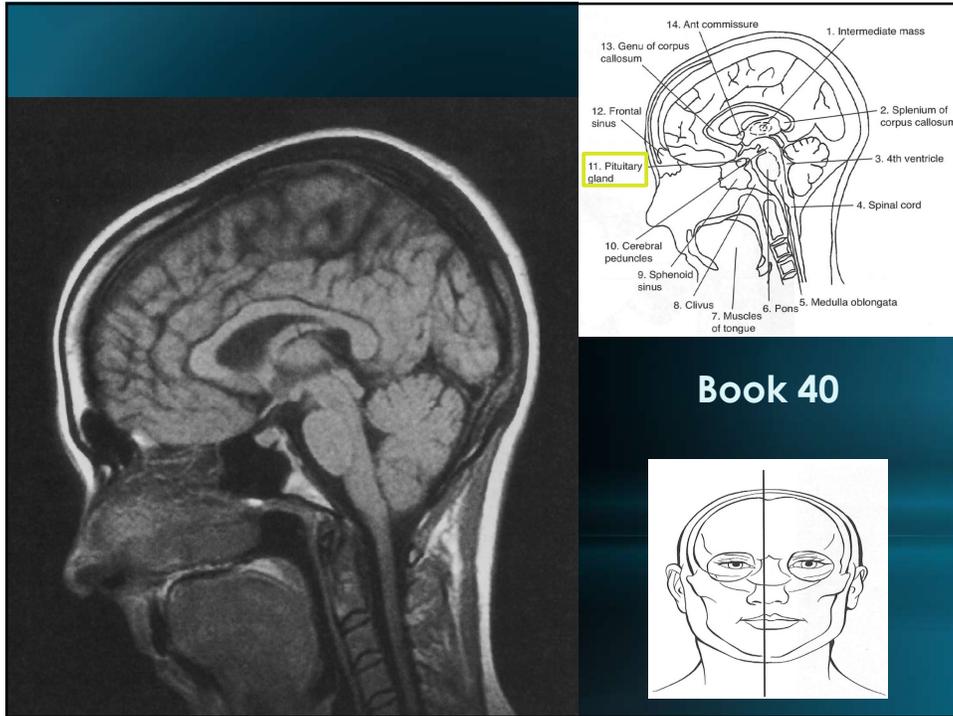
* Pituitary (Hypophysis) and Infundibulum

* **Location:** Sella turcica; Connected to *hypothalamus* by *infundibulum* (slender stalk)

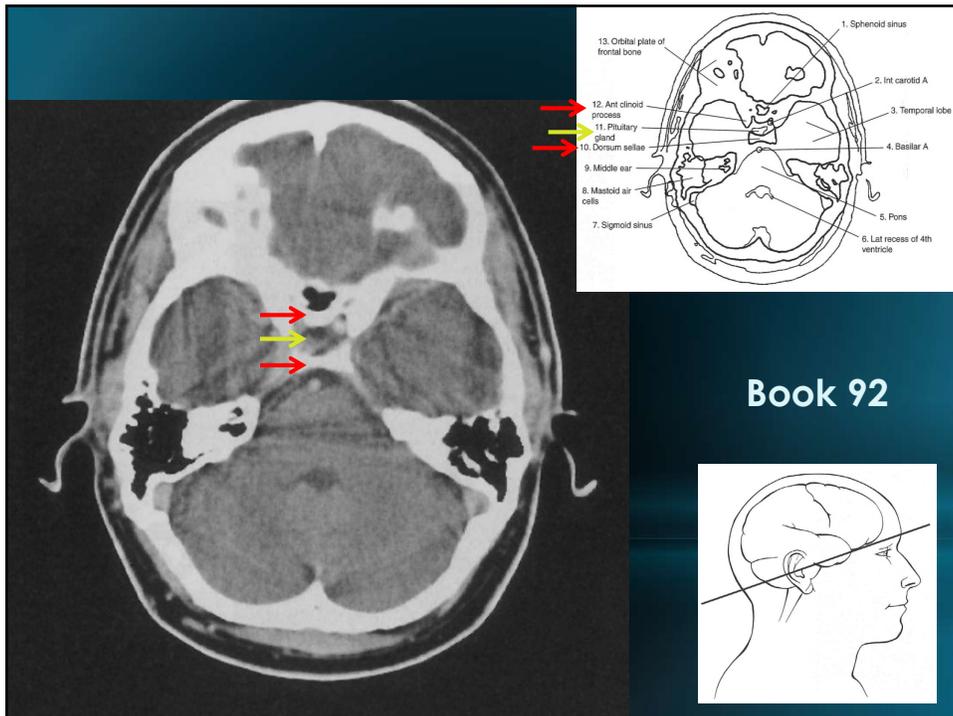
* **Function:** Endocrine gland (“Master gland”) Regulates many of body’s activities

Infundibulum
* Connects the Pituitary to the Hypothalamus

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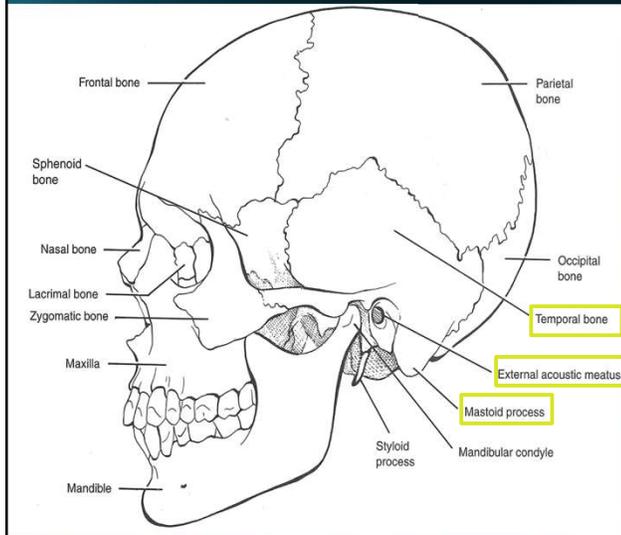


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*Temporal Bones



*Location:

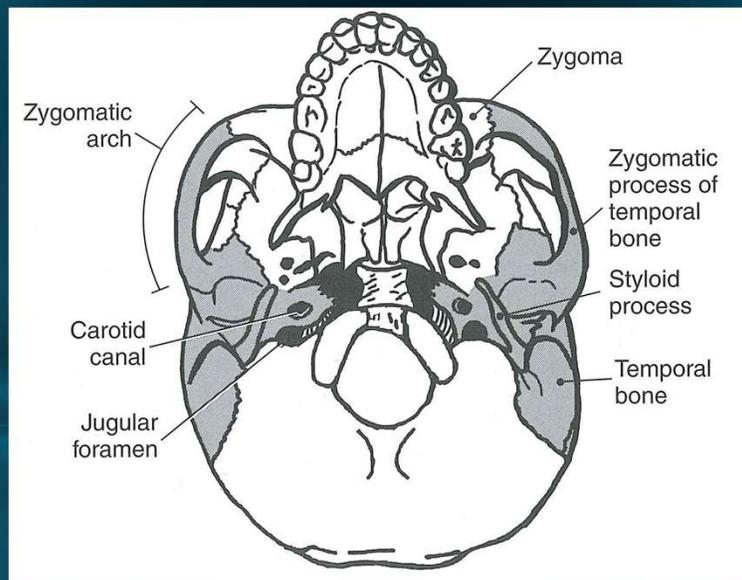
(Two bones) forming inferior lateral walls of cranium and much of cranial floor

*Petrous portion: contains the middle ear

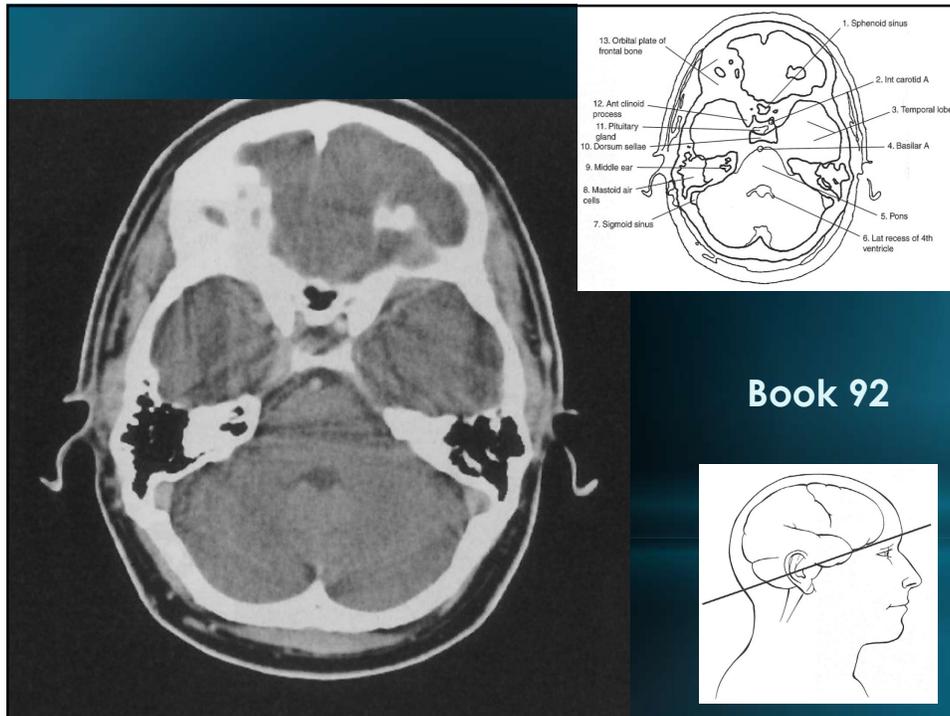
*EAM (External Auditory Meatus): Found on lateral side of skull

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*Temporal Bones



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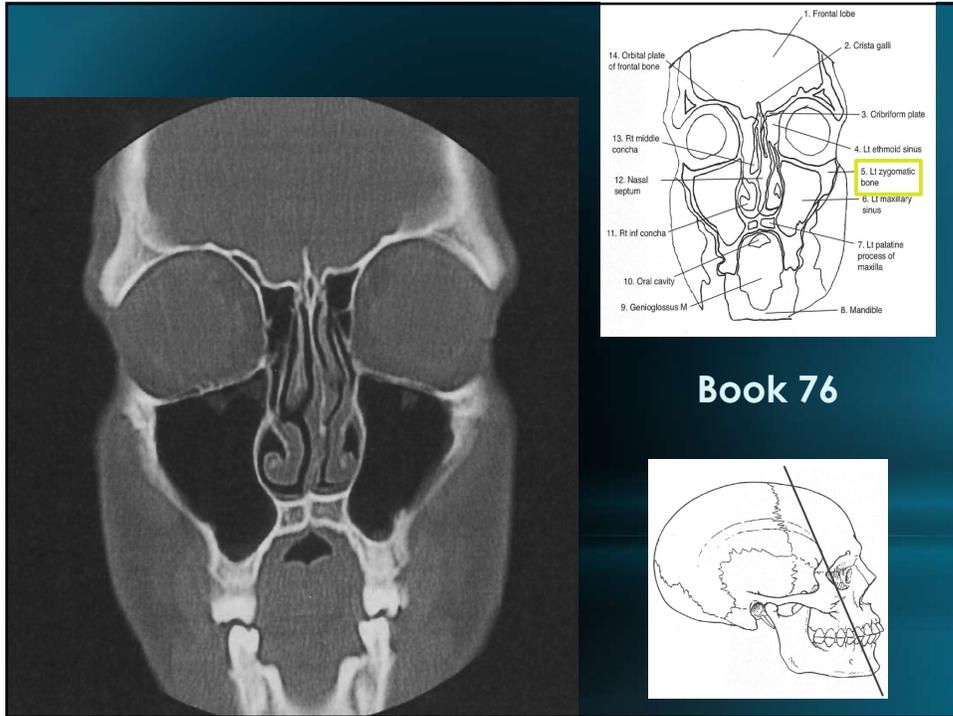
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* Zygomatic Bones—Cheek Bones

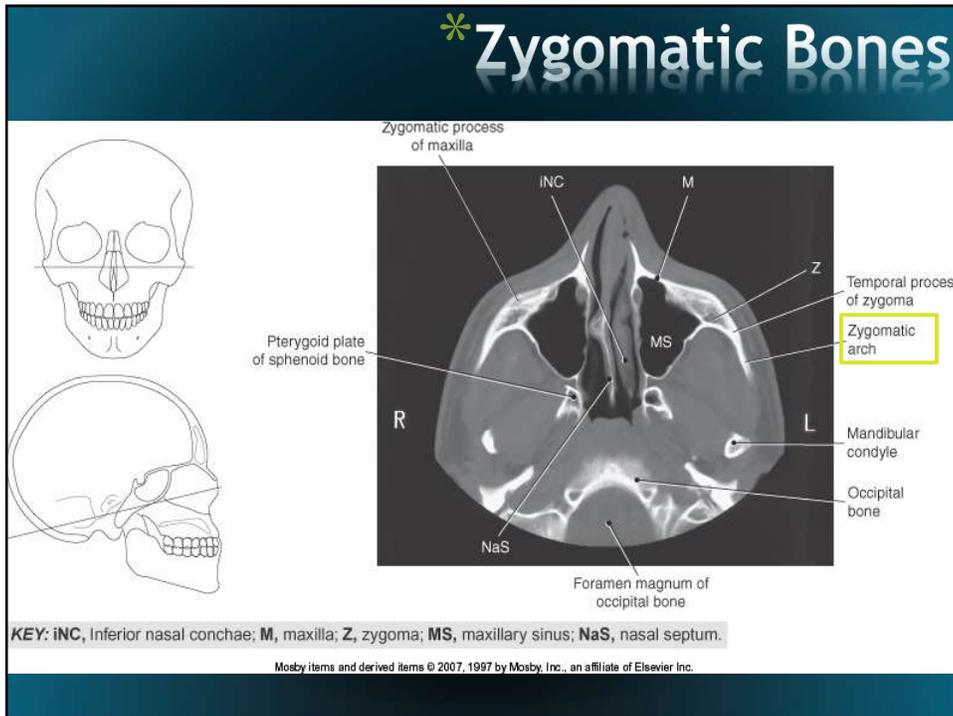
- * Location: Form inferior and lateral walls of orbit
- * Articulates with temporal bone to form zygomatic arch

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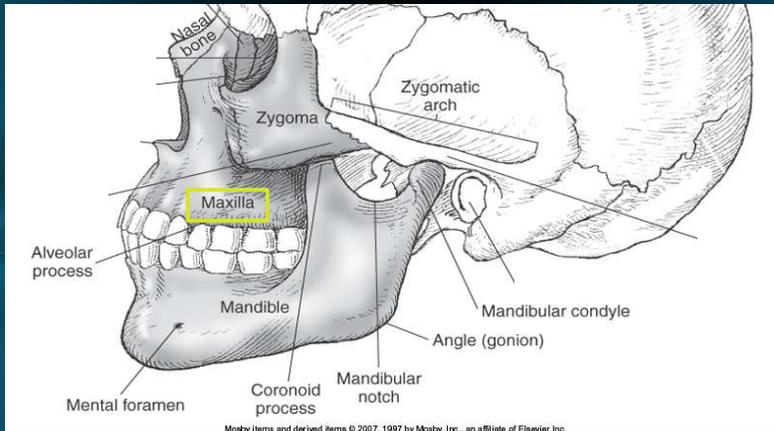
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* Maxilla

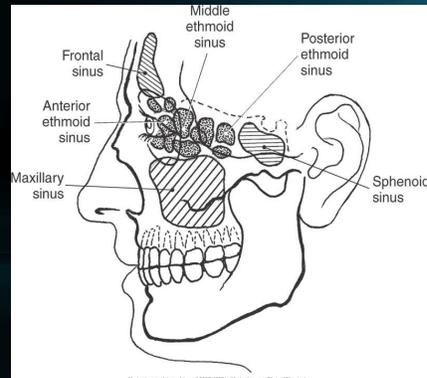
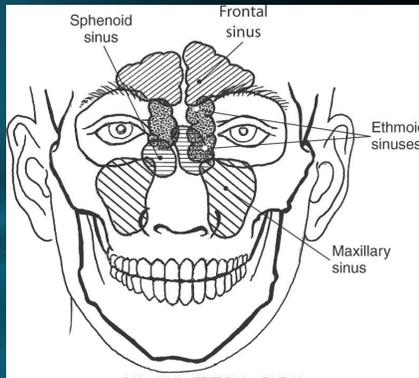
* Location: Form upper part of mouth and anterior three-quarters of hard palate



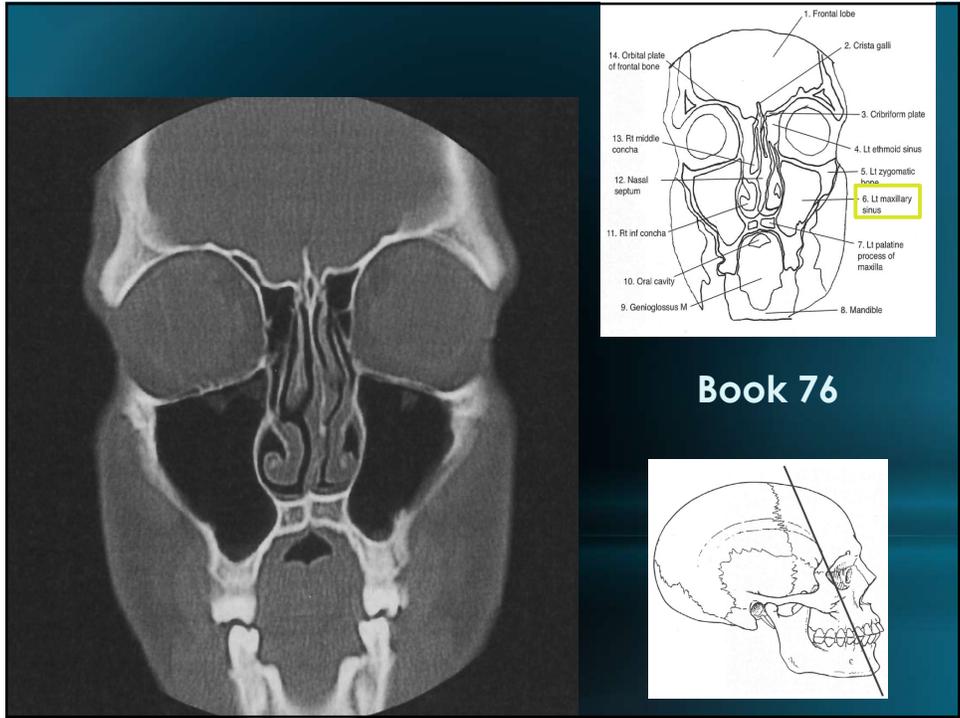
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* Maxillary Sinus

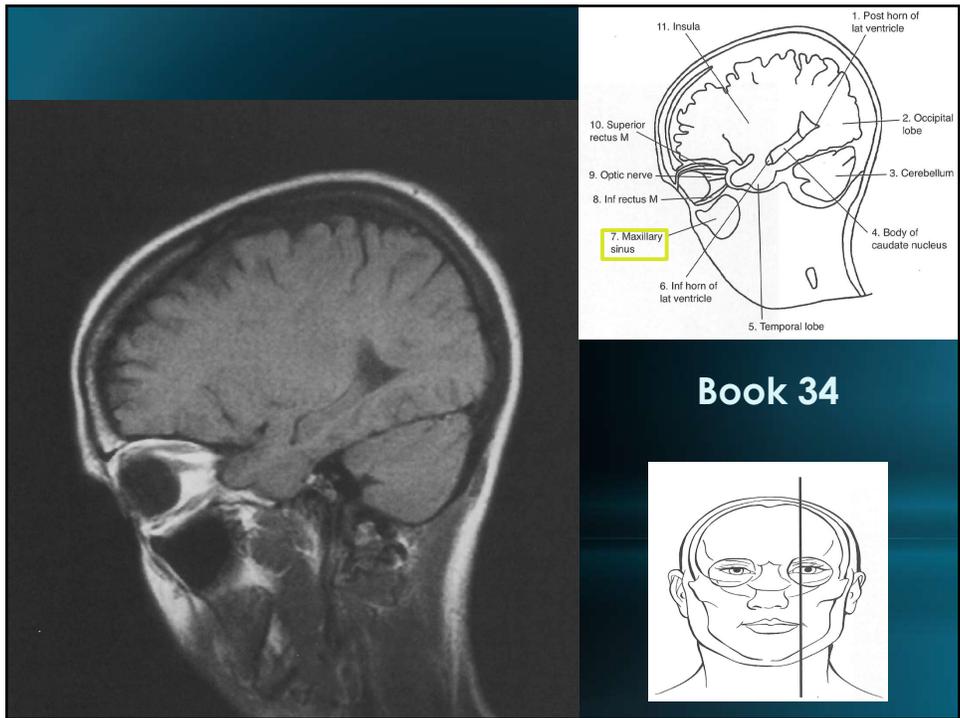
* Location: Pocket of air on each side of superior to maxilla
 * Empties into nasal cavity



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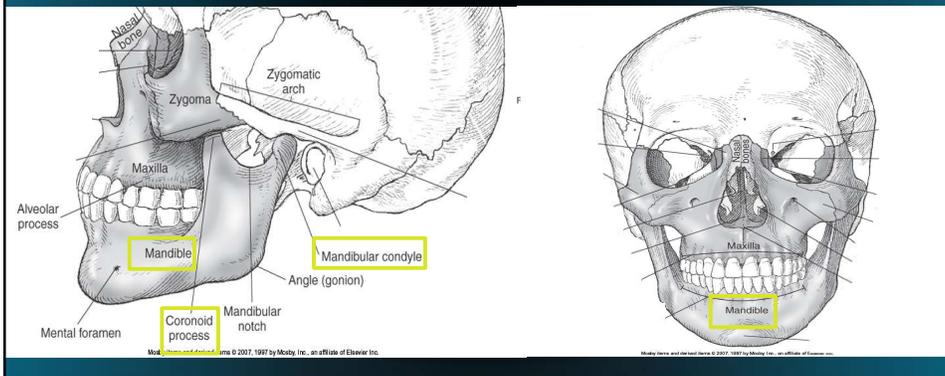
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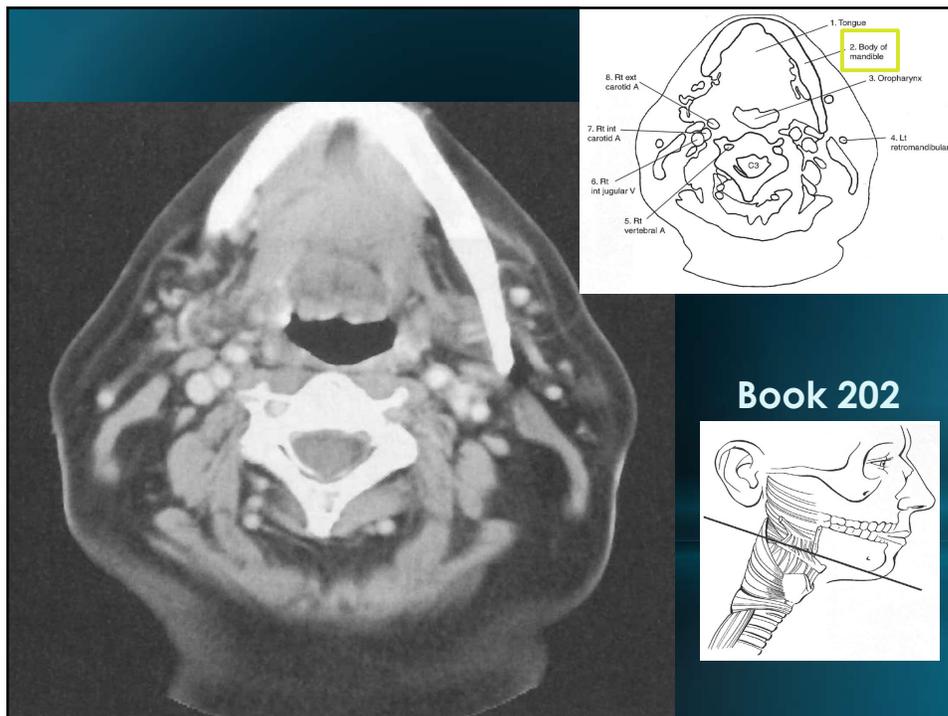
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*Mandible

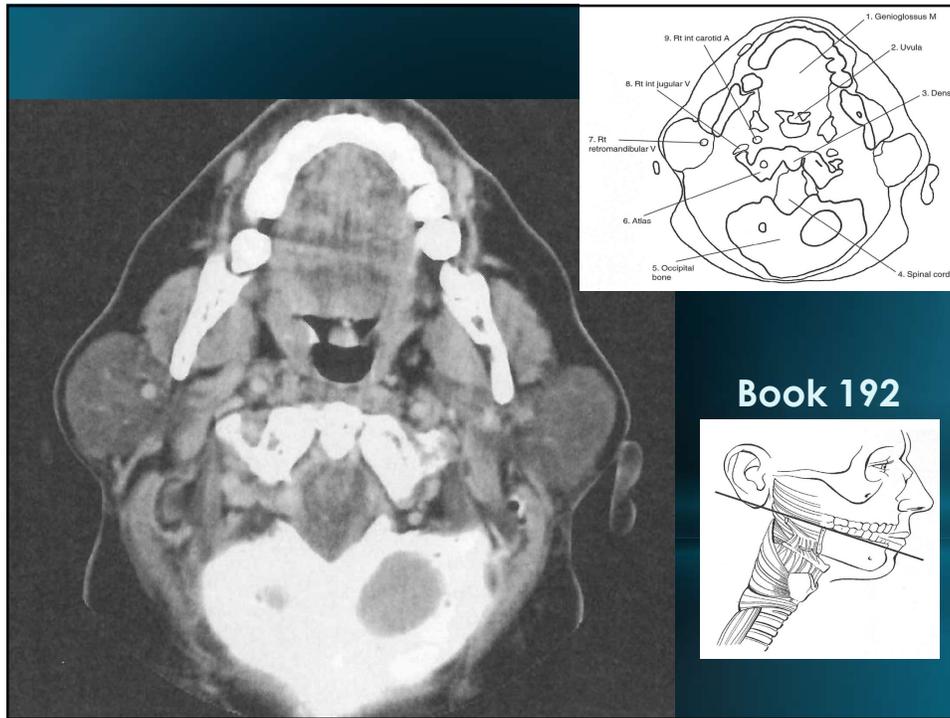
- * Location: Lower jaw
- * Function: Only movable bone in skull
 - * Largest/Strongest Facial bone - "Jawbone"
 - * 2 Parts: Body AND Ramus



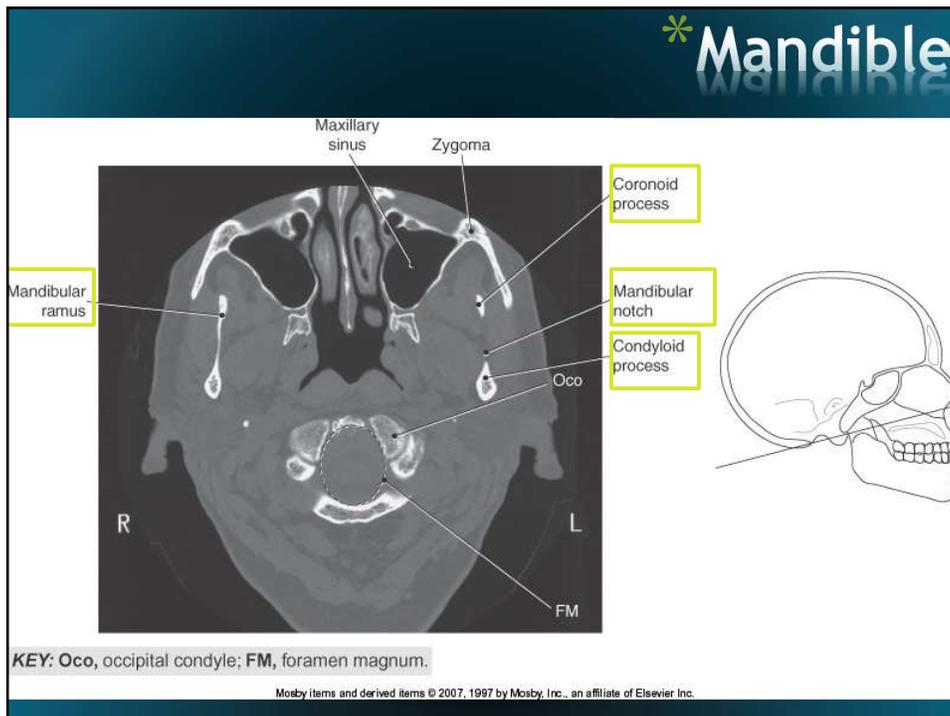
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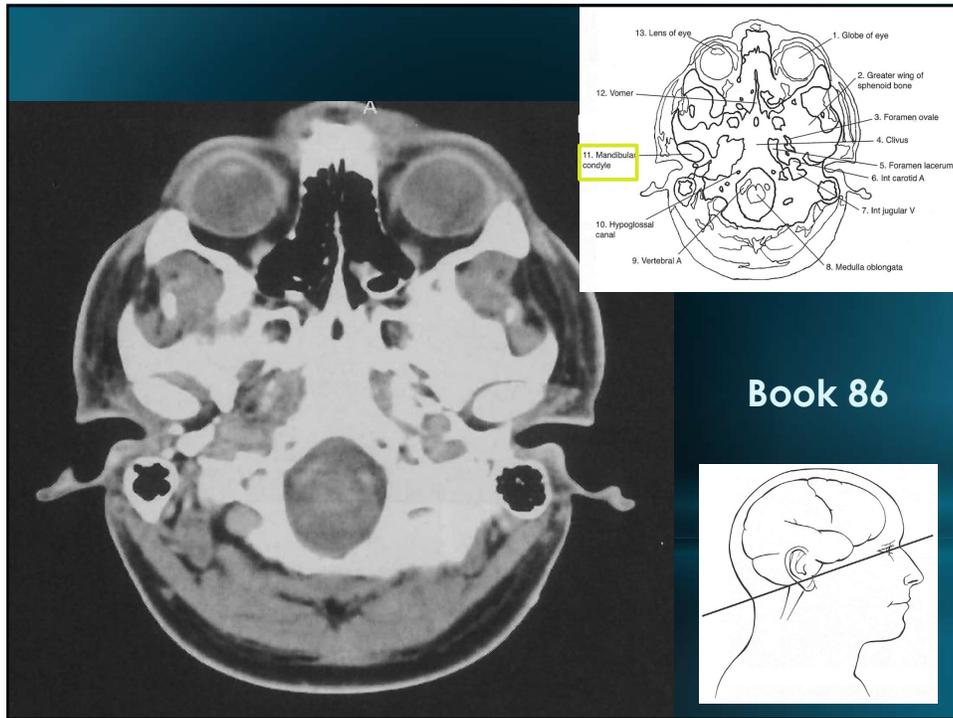
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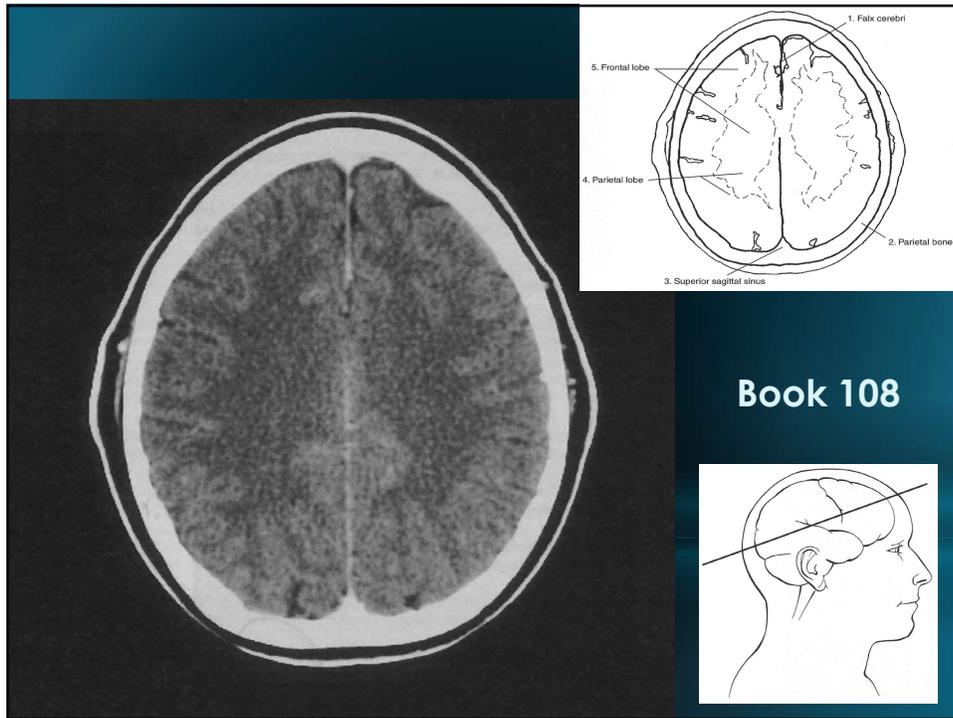
63

* Fissures

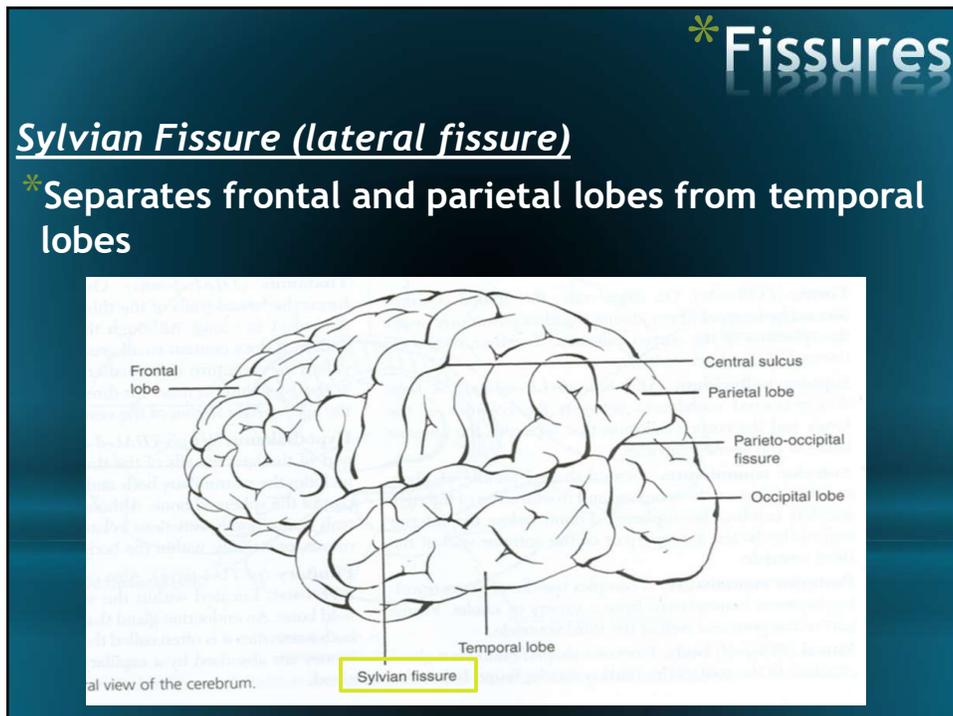
Longitudinal Fissure

- * Divides brain into right and left cerebral hemispheres

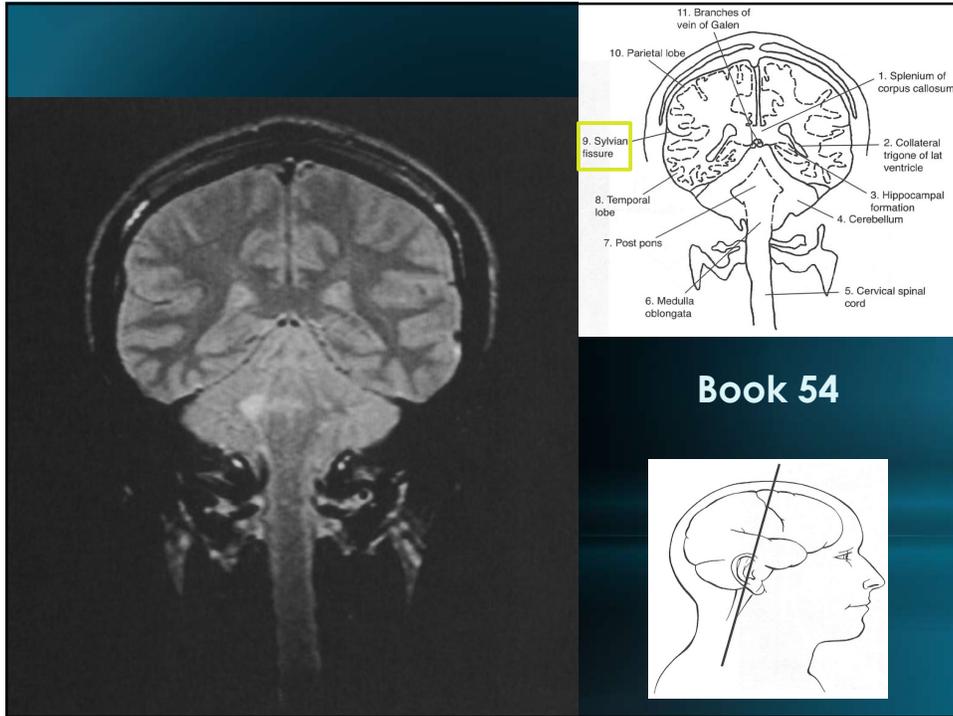
64



65

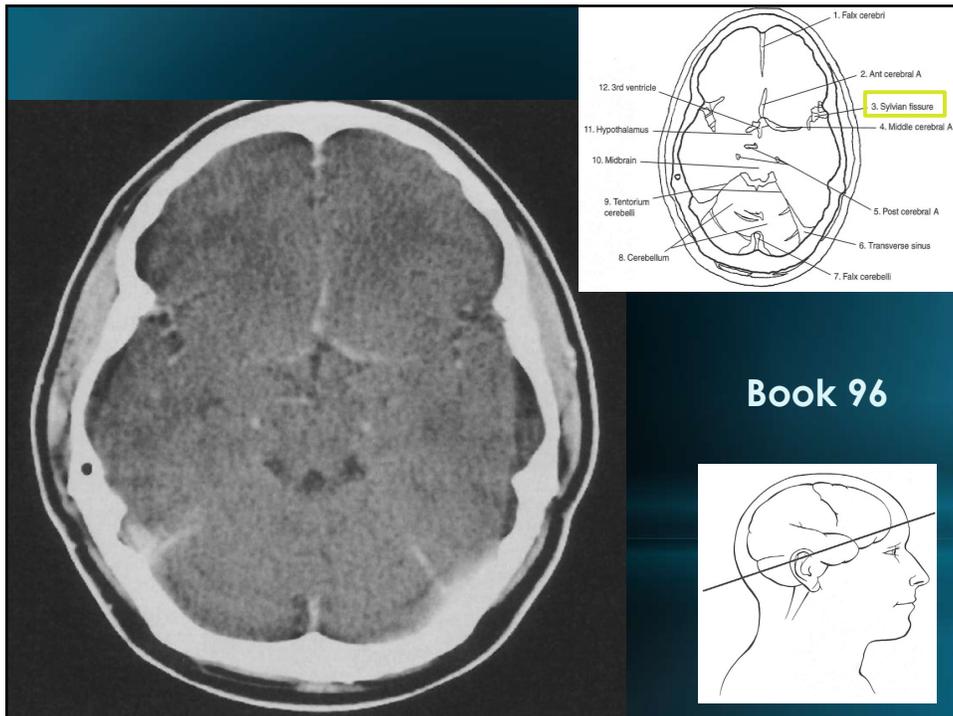


66



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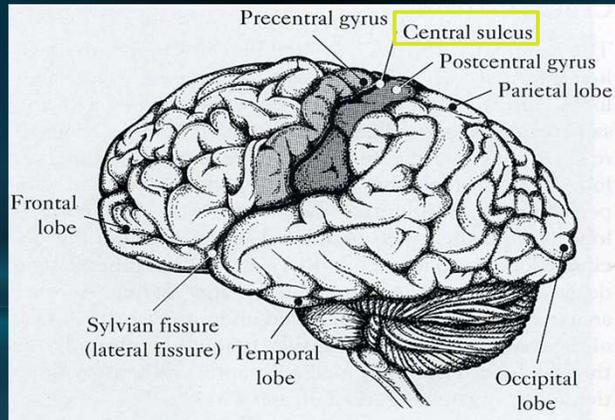
Book 96

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* Fissures

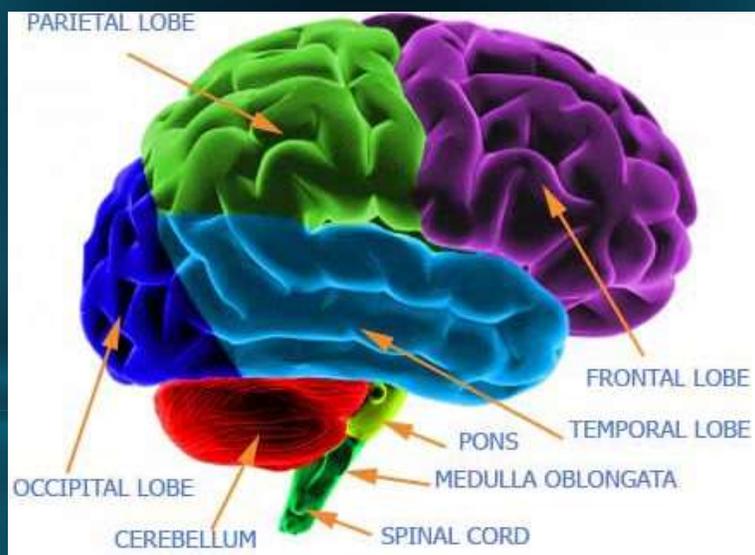
Central Sulcus

* Location: Centrally on top of cerebrum; Divides frontal and parietal lobes



69

* Cerebral Lobes



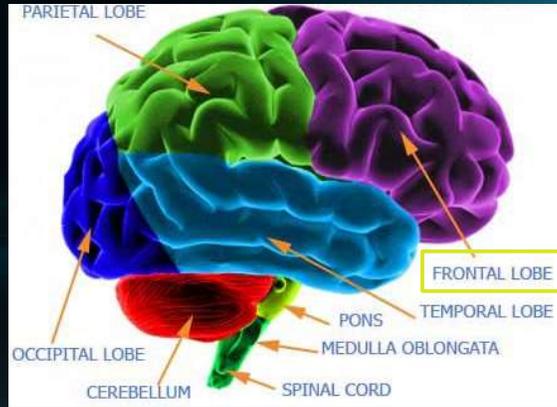
70

* Cerebral Lobes

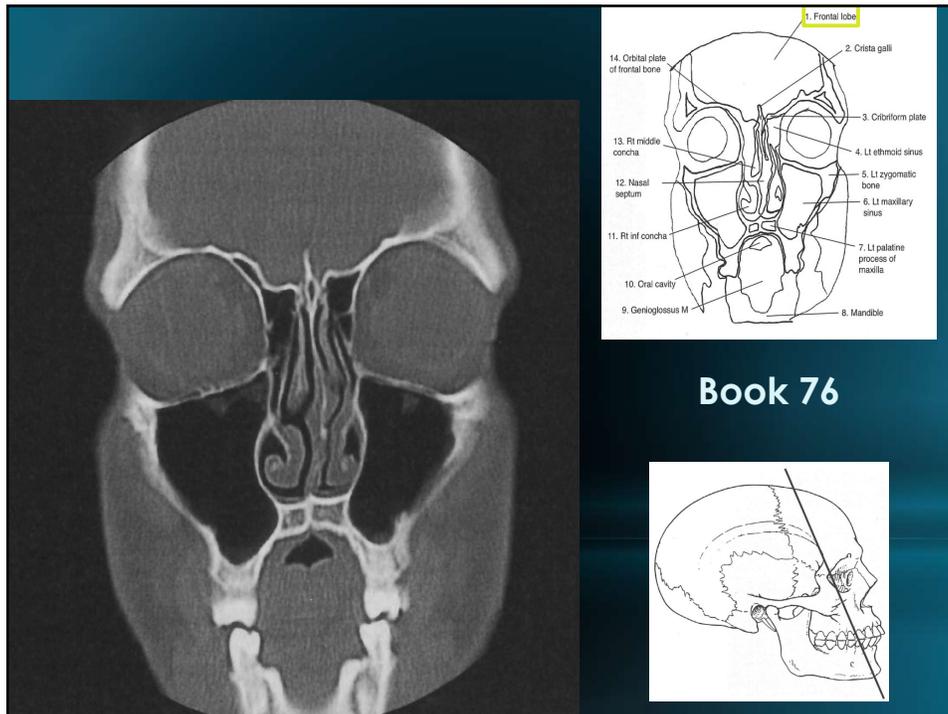
Frontal

* Location: Anterior to central sulcus and above Sylvian fissure

* Function: Controls motor and muscle control areas; Personality



71



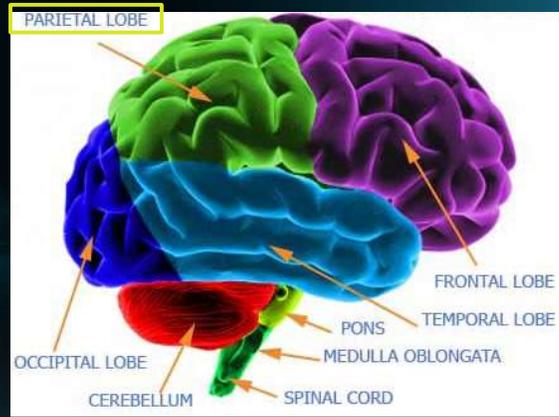
72

* Cerebral Lobes

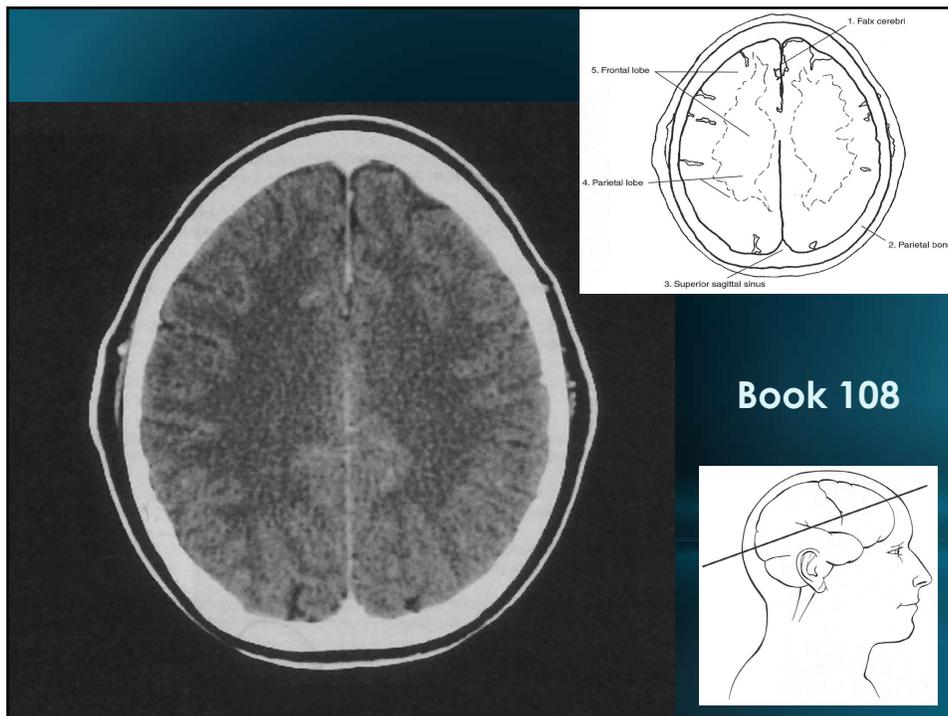
Parietal lobe

* Location: Above Sylvian fissure; posterior to central sulcus

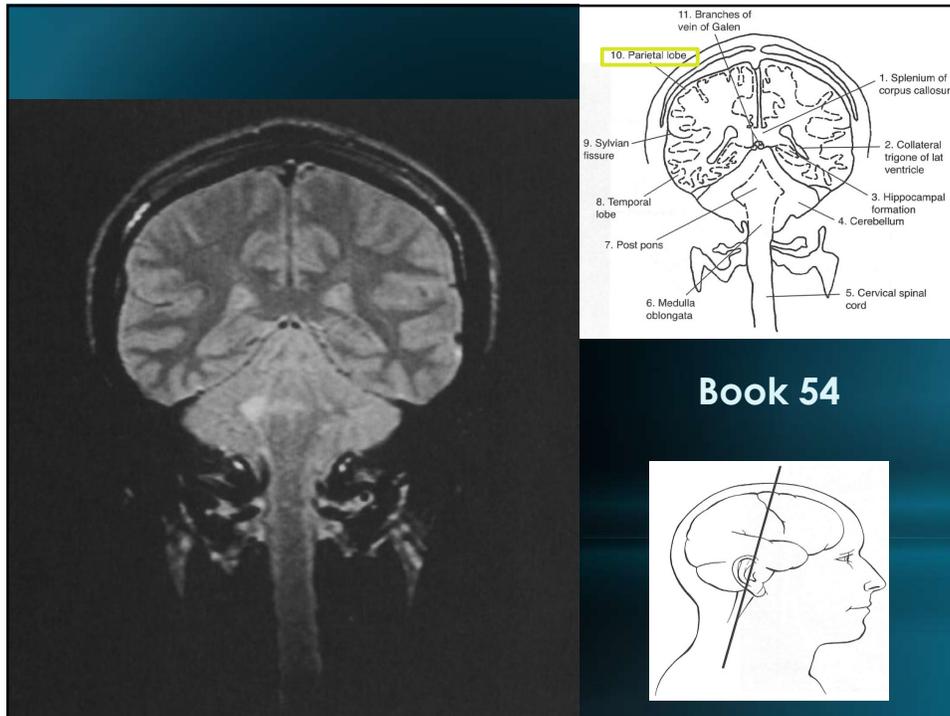
* Function: Concerned with peripheral sensations



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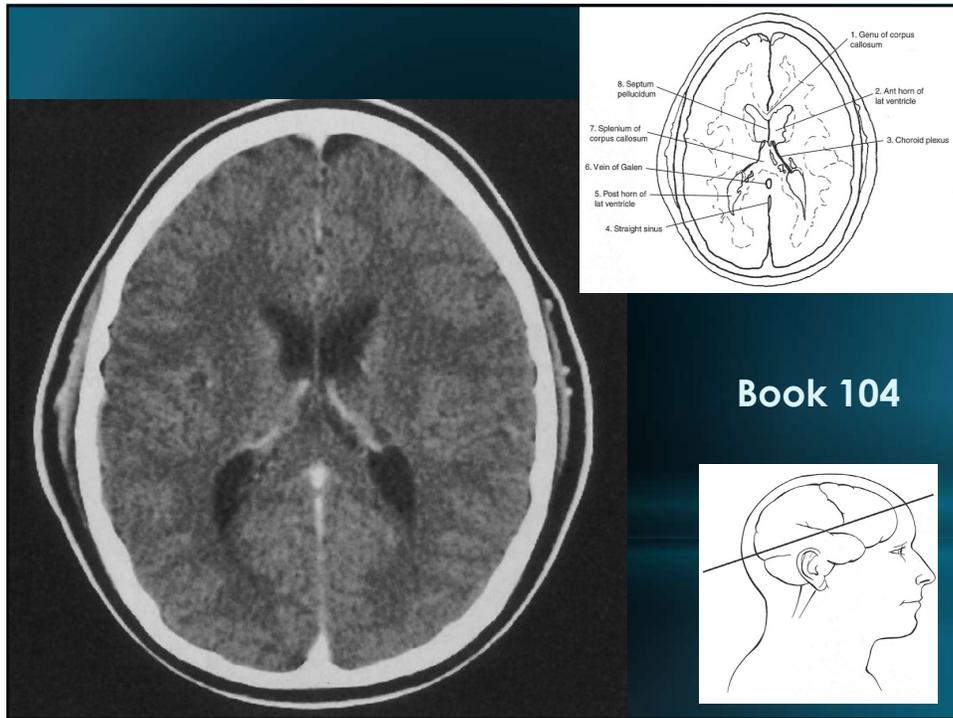
75

* Cerebral Lobes

Occipital lobe

- * Location: Posterior cerebral hemisphere; Behind parieto-occipital fissure
- * Function: Controls primary visual area

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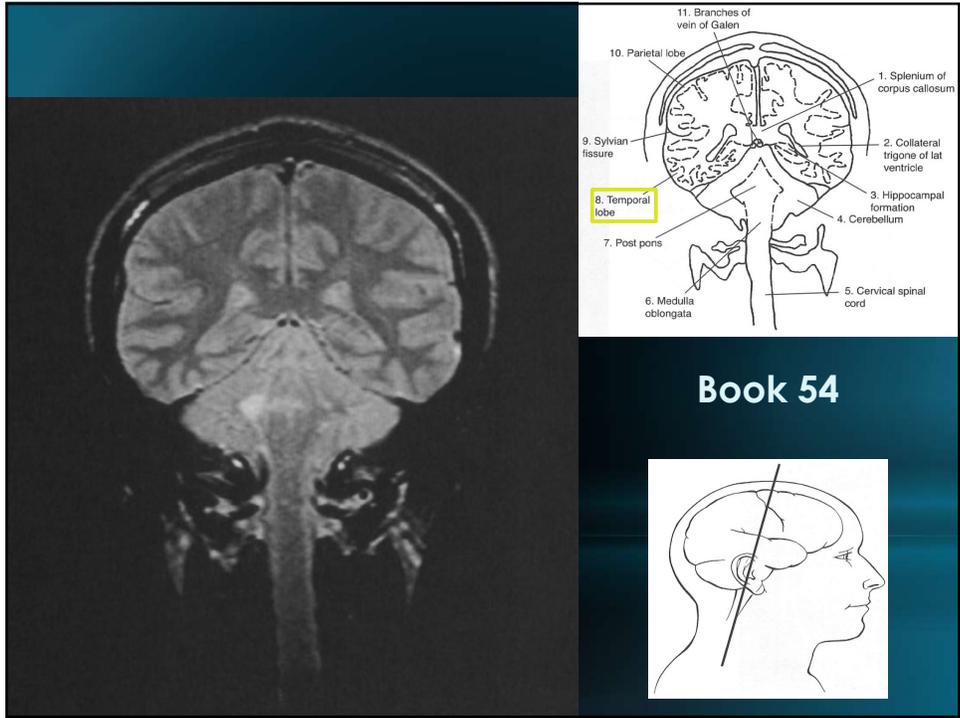
77

* Cerebral Lobes

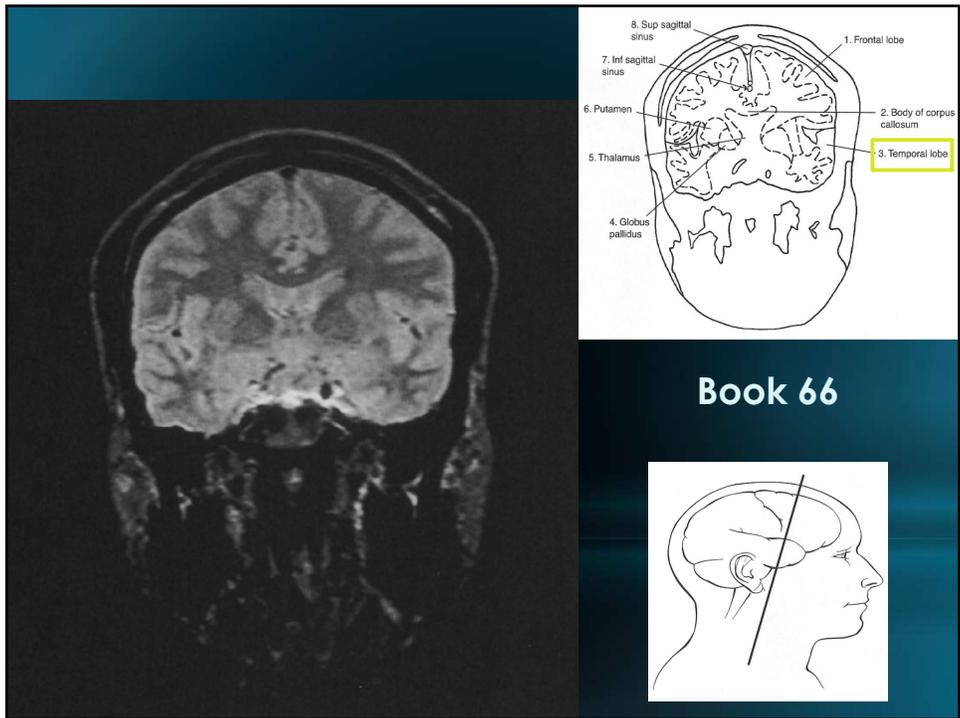
Temporal lobe

- * Location: Inferior to Sylvian fissure
- * Function: Primary auditory area

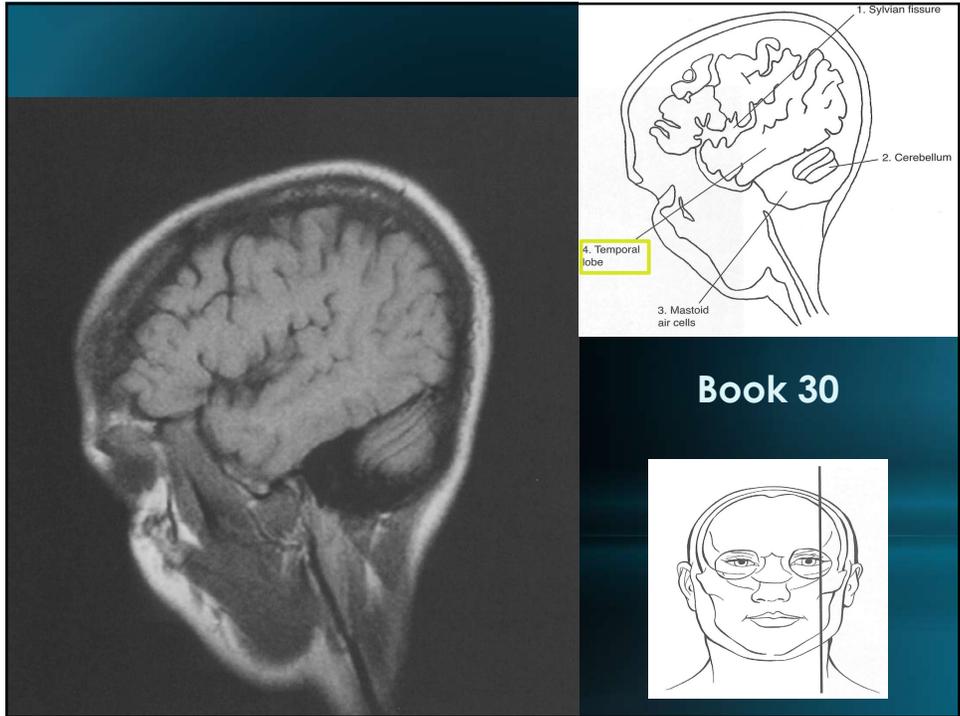
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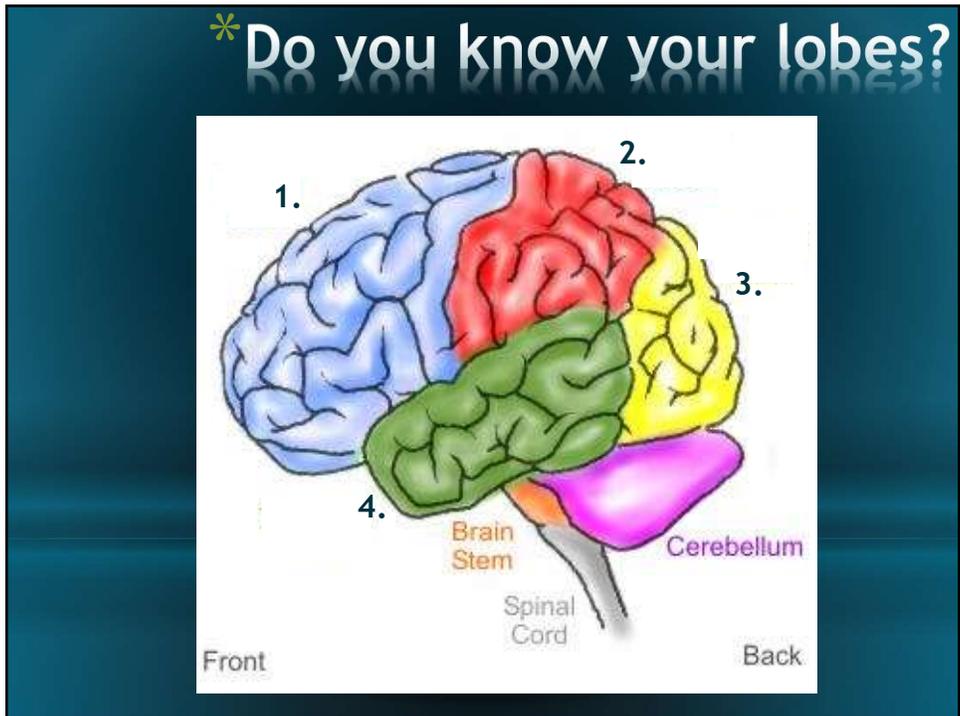
79



80



81

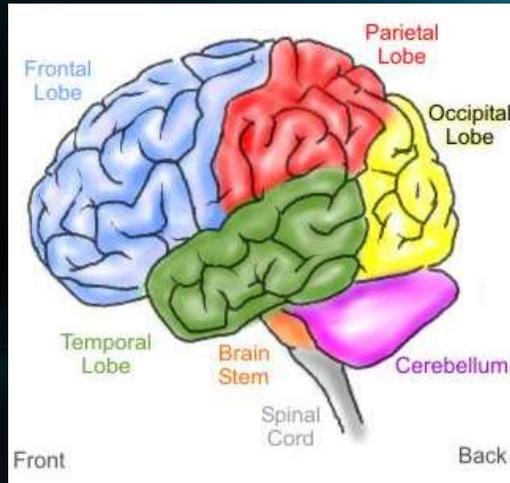


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* Brain

Three Main Parts

- * Brain Stem
 - * Pons
 - * Medulla oblongata
- * Cerebrum
- * Cerebellum

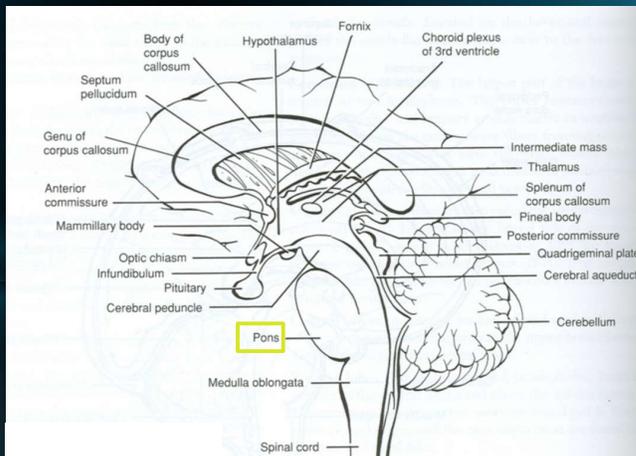


83

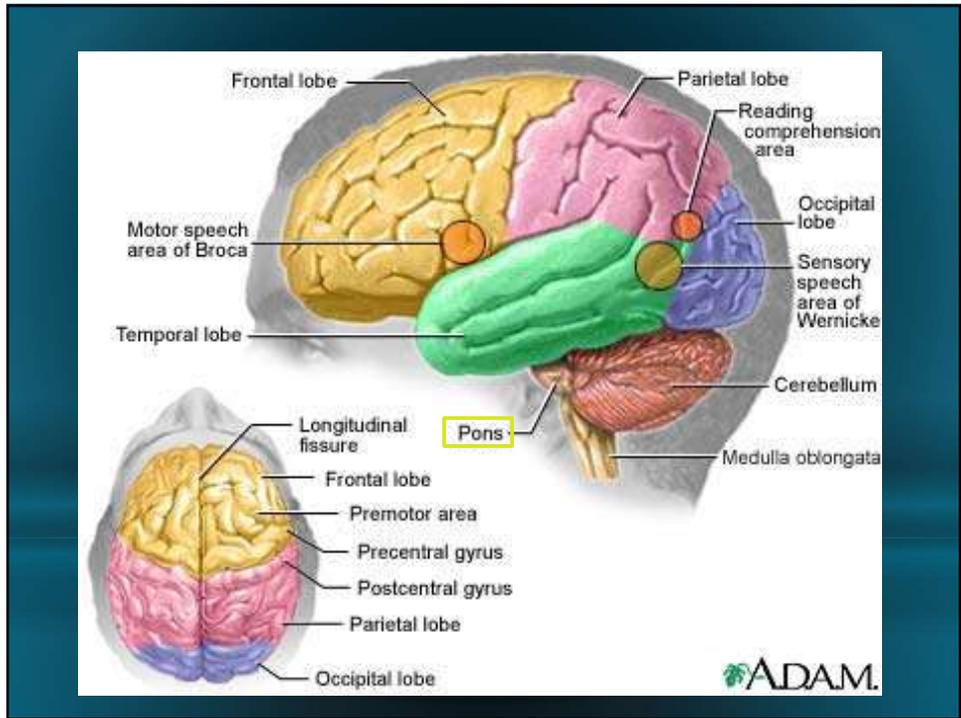
* Brain Stem: Pons

Means “bridge”

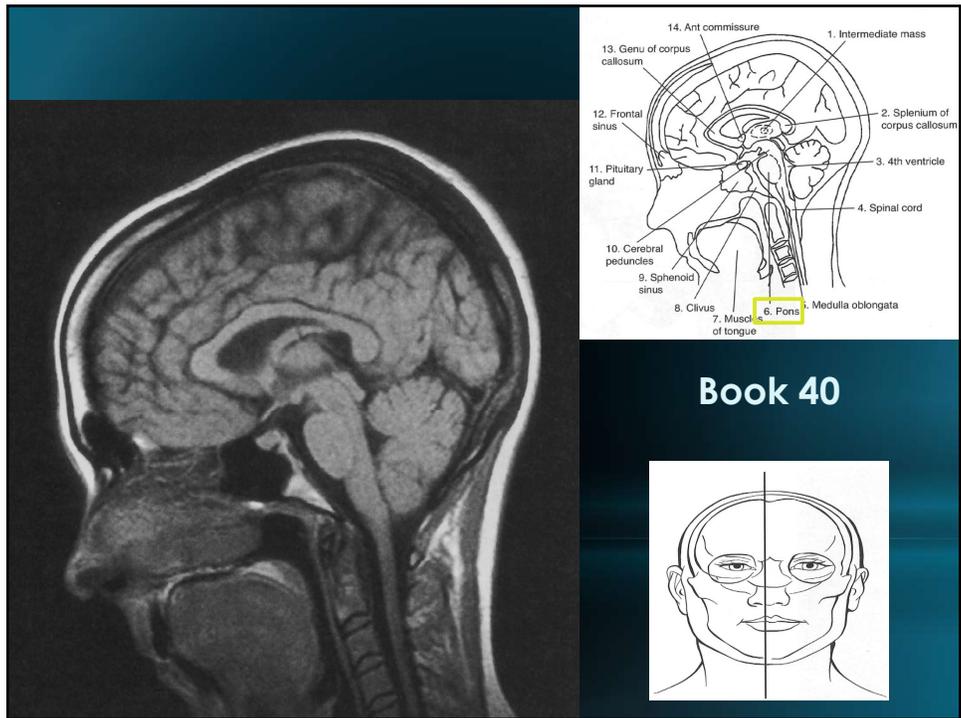
- * Location: Anterior to cerebellum; Posterior to clivus
- * Function: Connects cerebrum, cerebellum and spinal cord



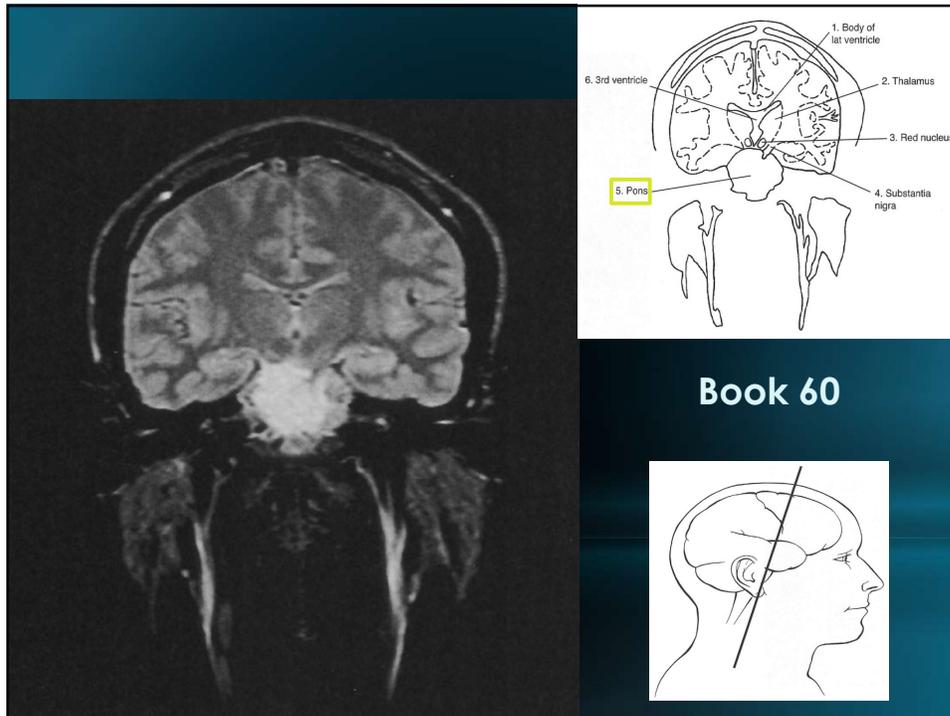
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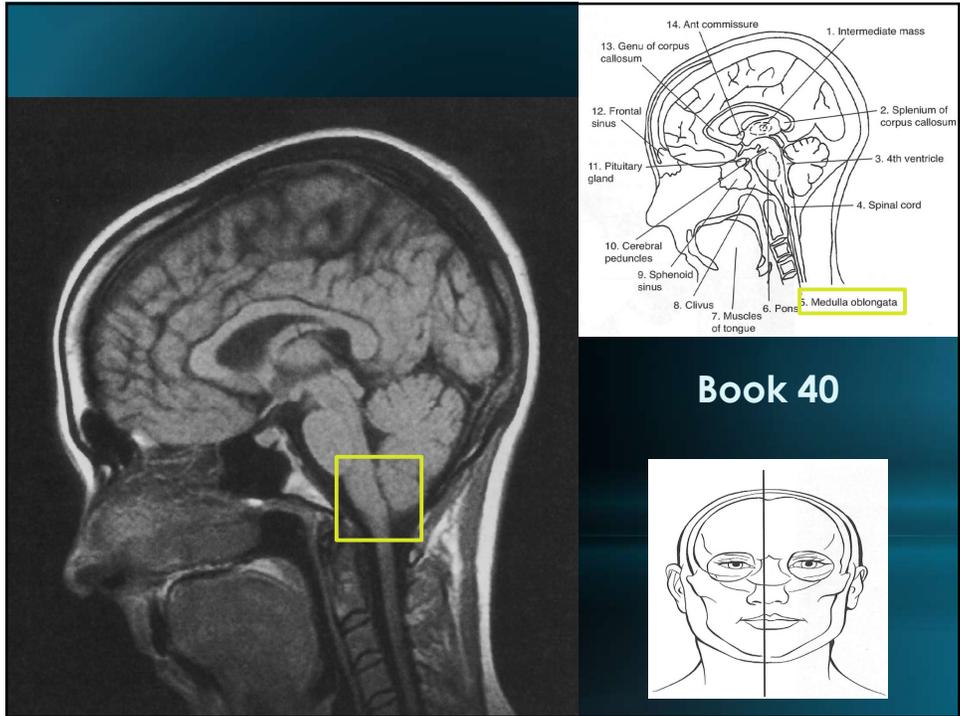


87

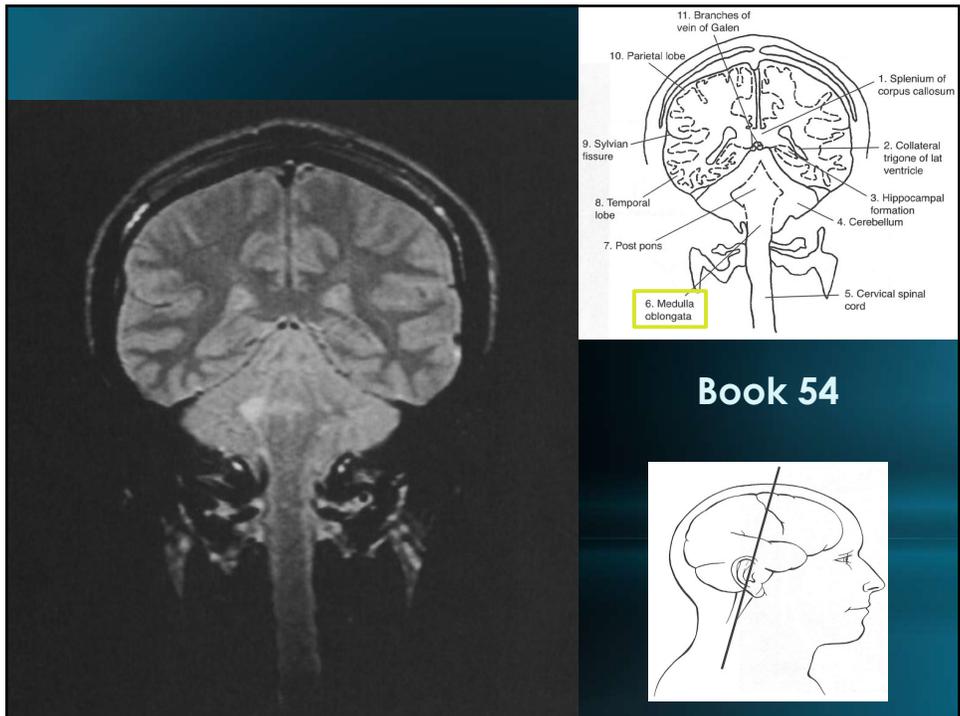
* Brain Stem: Medulla Oblongata

- * Location: Lower brain stem; Runs directly below pons to foramen magnum
- * Connects brain to spinal cord
- * Function: Controls Heart rate, Respirations, Blood pressure, Motor function on opposite side of body

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*Cerebellum - "Little brain"

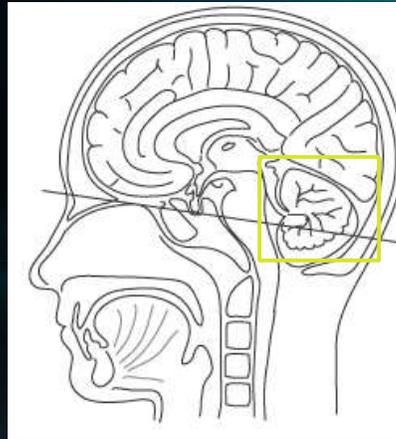
*Location: Behind face and brainstem in posterior cranial fossa

*Function: Coordinates movement, maintains posture and balance

*Two cerebellar hemispheres (cauliflower)

**Vermis* - Midline connection

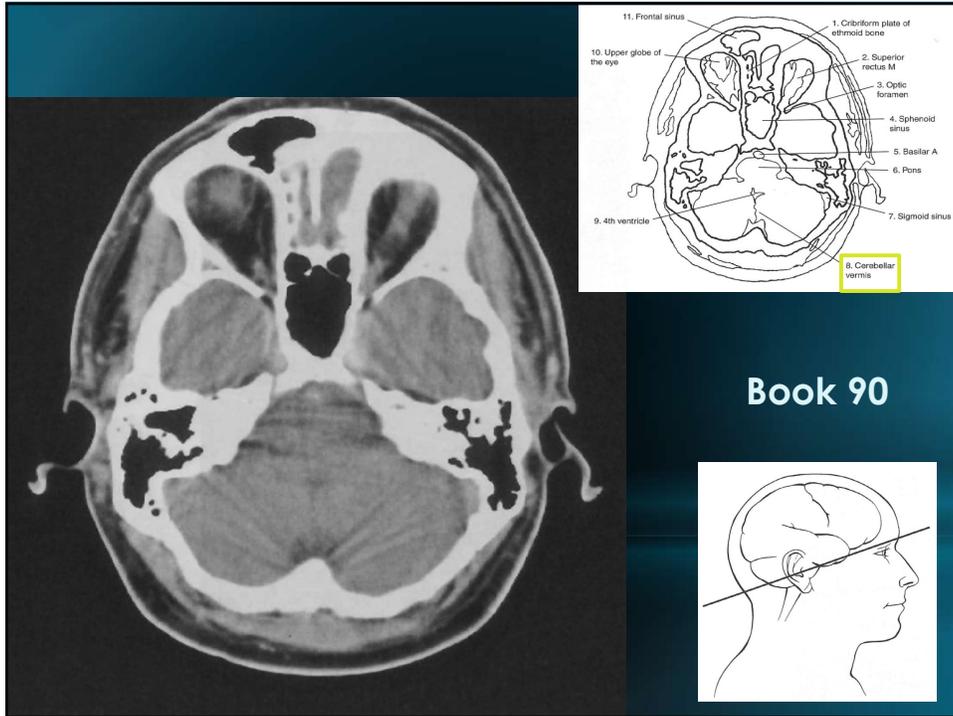
**Cerebellar tonsils*--2 rounded prominences on inferior surface next to foramen magnum



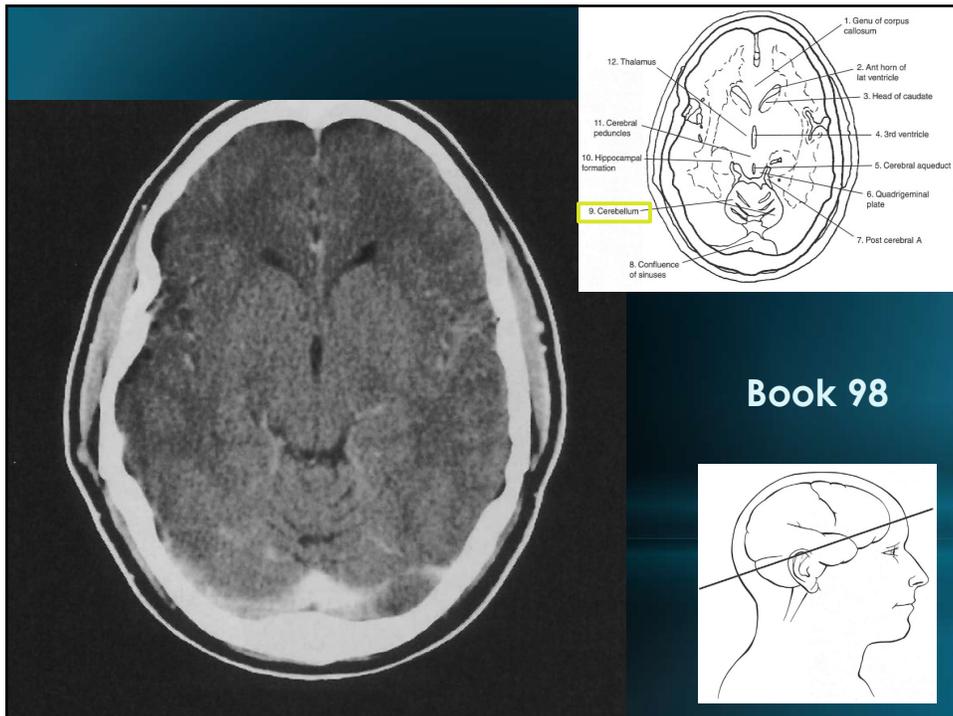
91

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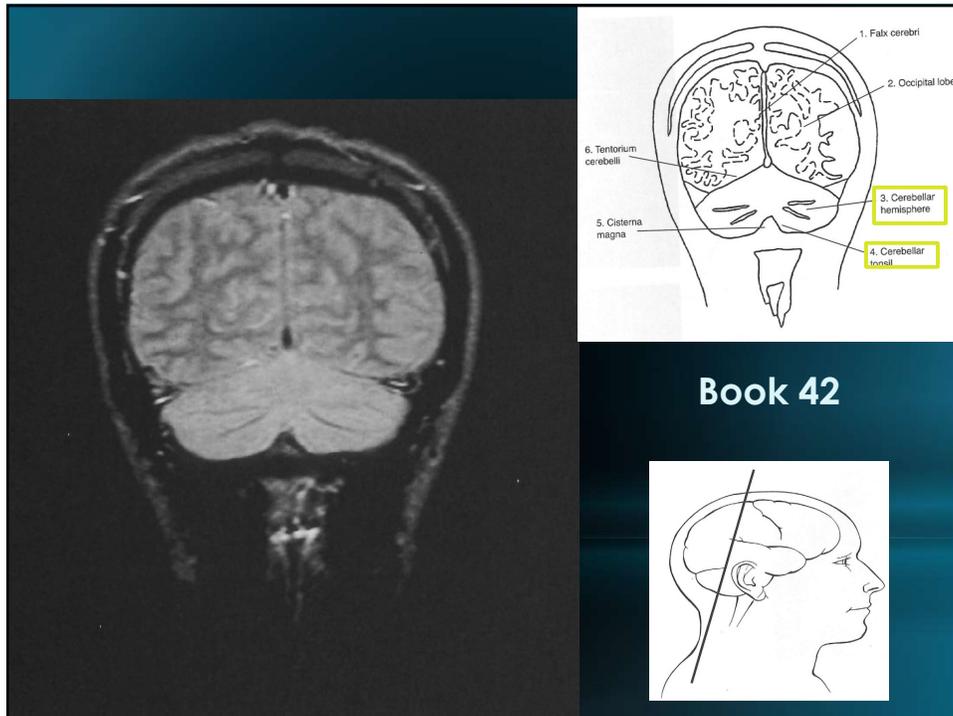
92



93



94

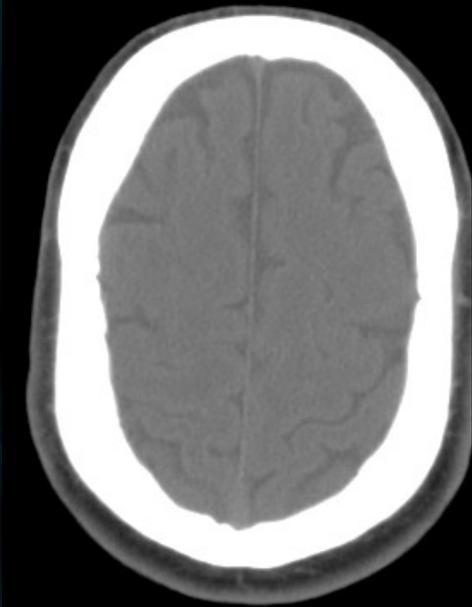


95

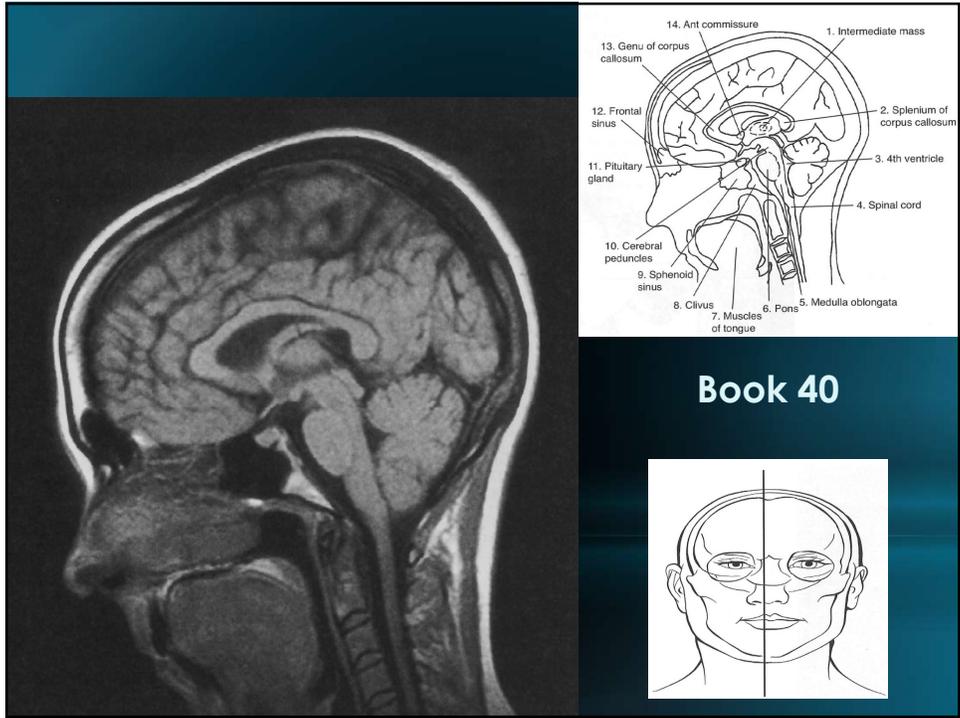
* Cerebrum

Largest Part of Brain

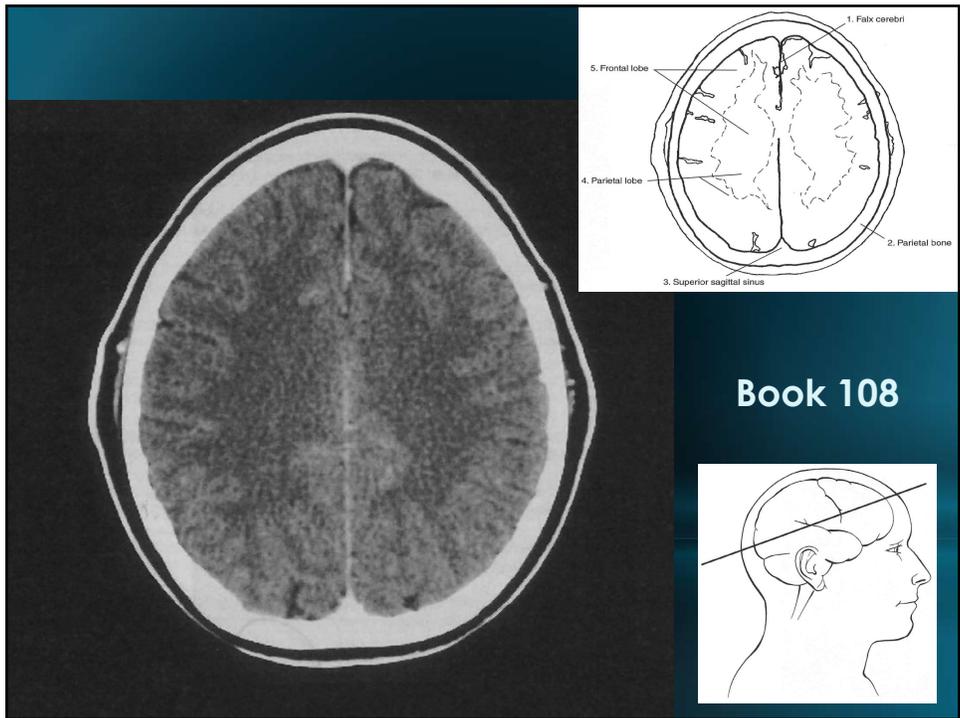
- * **Location:** Right and left cerebral hemispheres
- * **Function:** Associated with thought, judgment, memory, reasoning, intelligence, personality



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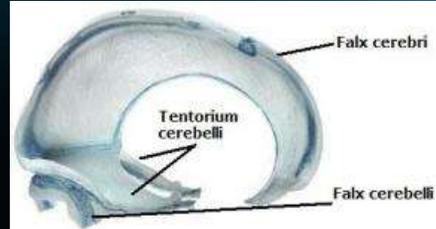


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* Dural Folds

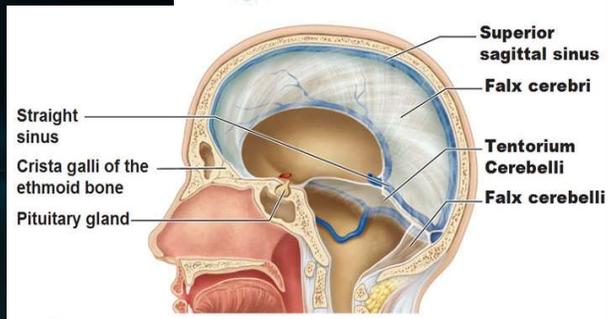
Falx Cerebri

* Location: Separates the cerebral hemispheres (*sits within longitudinal fissure)



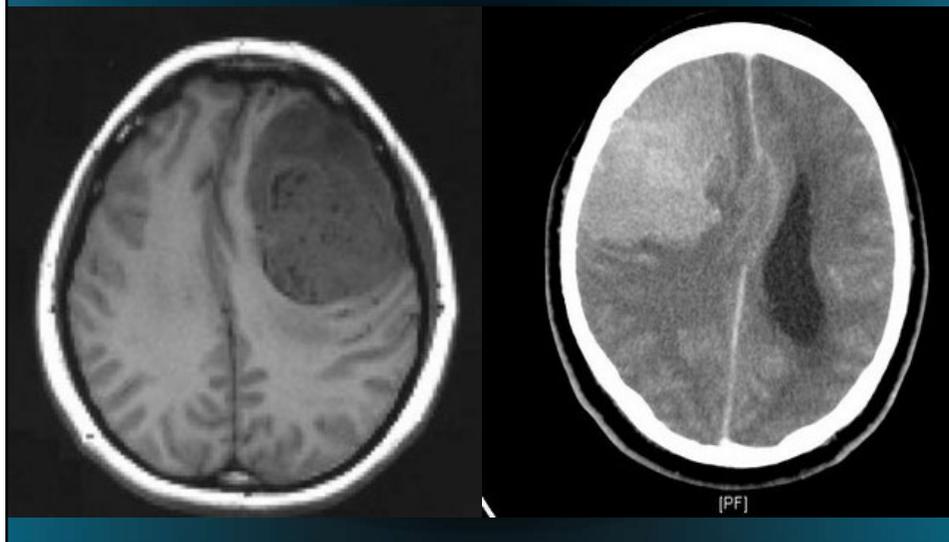
Falx Cerebelli

* Location: Separates the 2 cerebellar hemispheres in the posterior cranial cavity



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* Midline Shift - Falx Cerebri



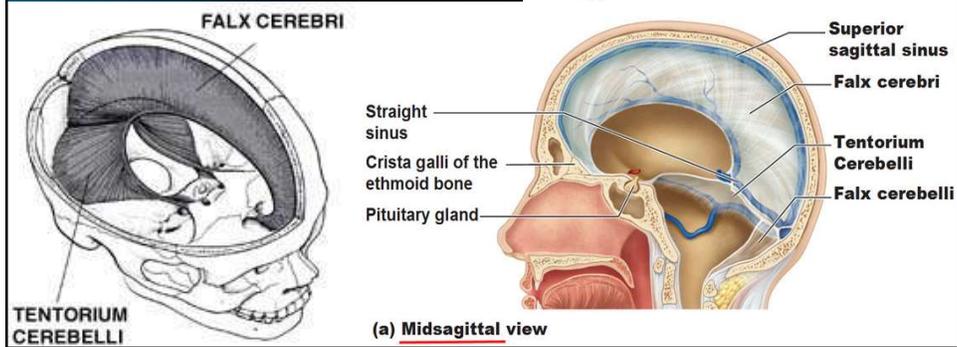
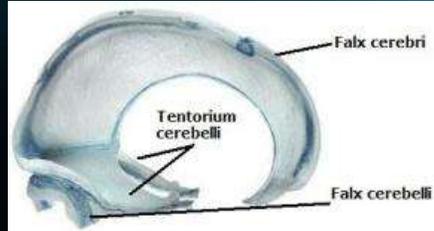
100

* Dural Folds

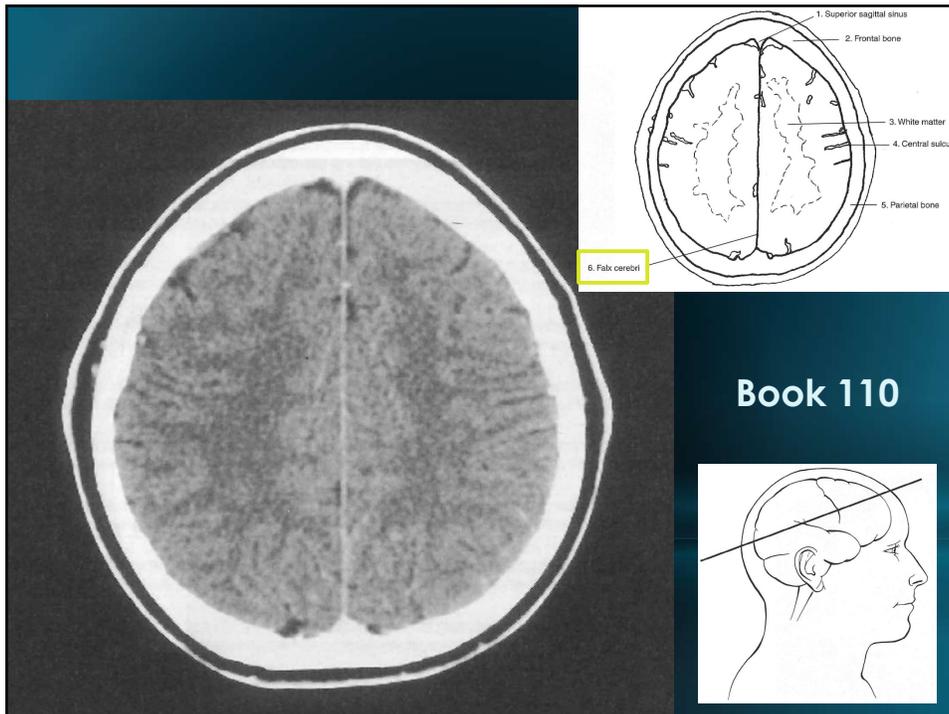
Tentorium Cerebelli

* Location: Separates cerebrum and cerebellum

* Rises like a tent

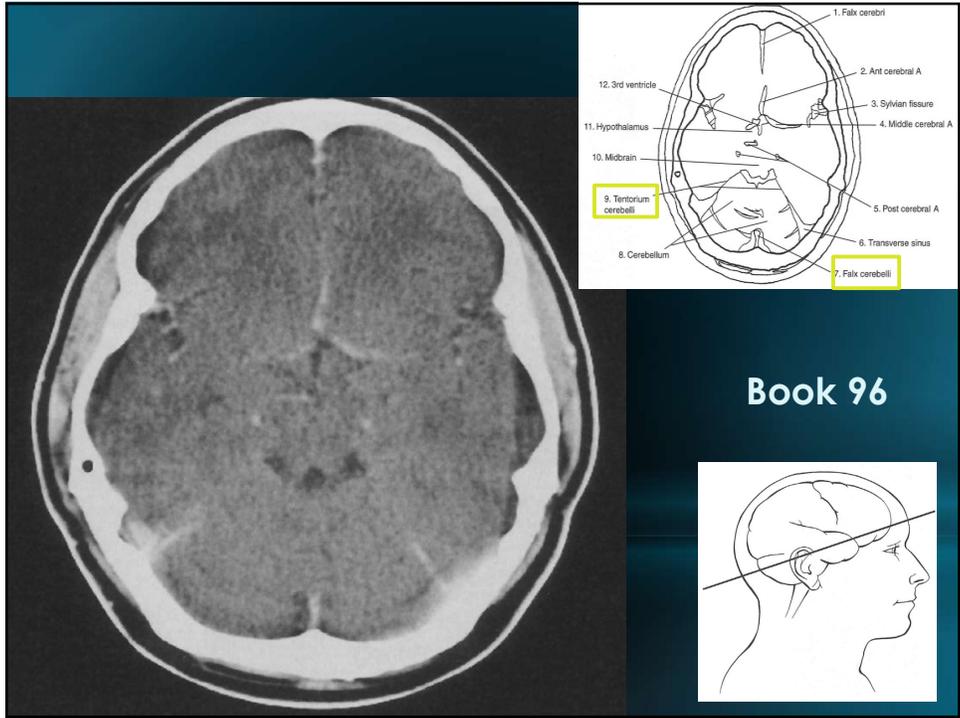


101

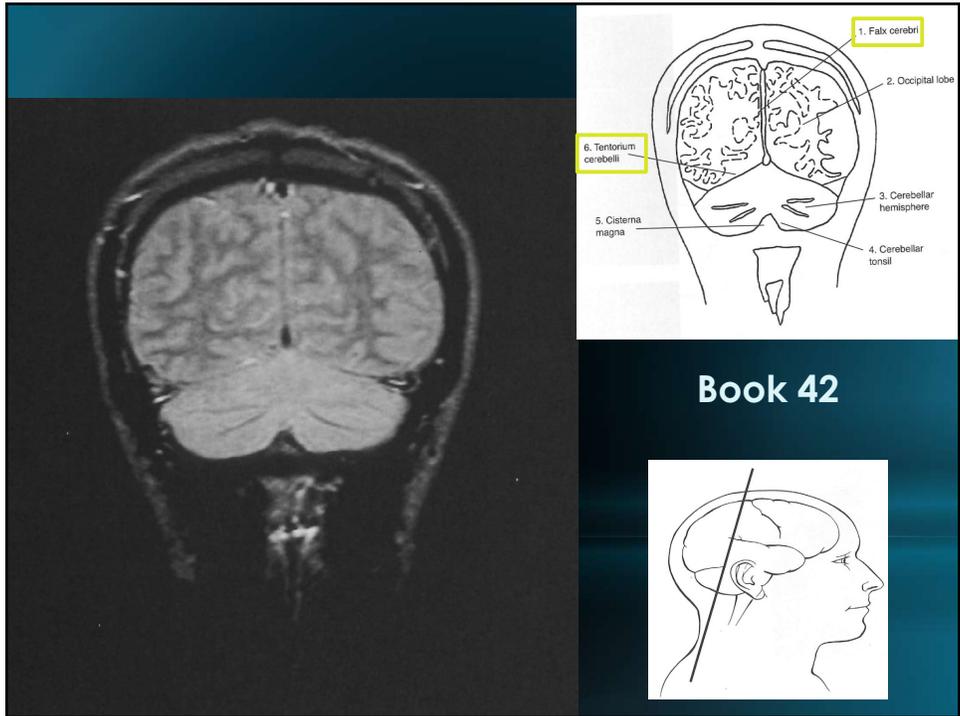


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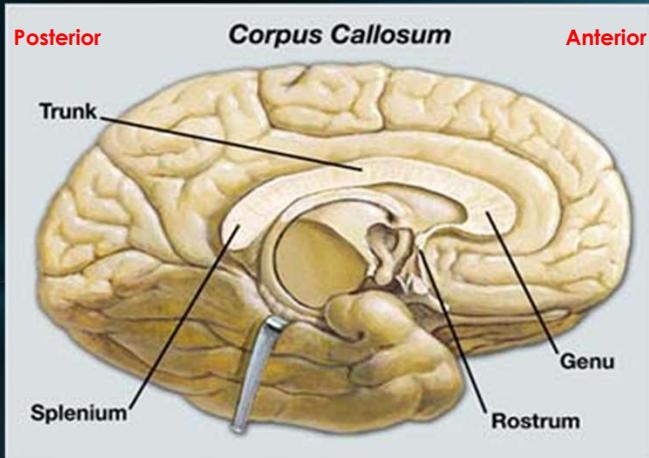
104

* Corpus Callosum

* Location: Connect left and right cerebral hemispheres

* Large, dense bundles of white matter

* 3 parts



105

* Corpus Callosum

**Genu

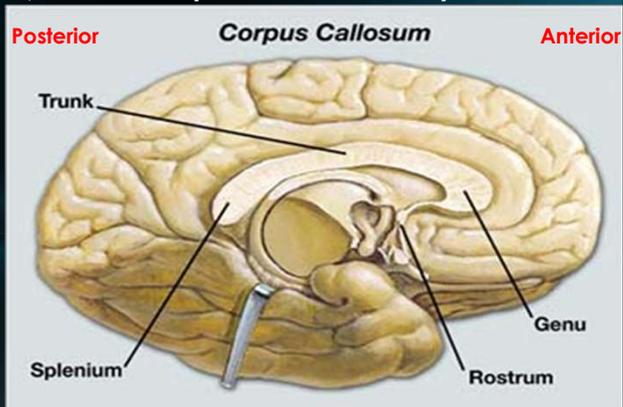
Location: Anterior part; Connects frontal lobes

**Body

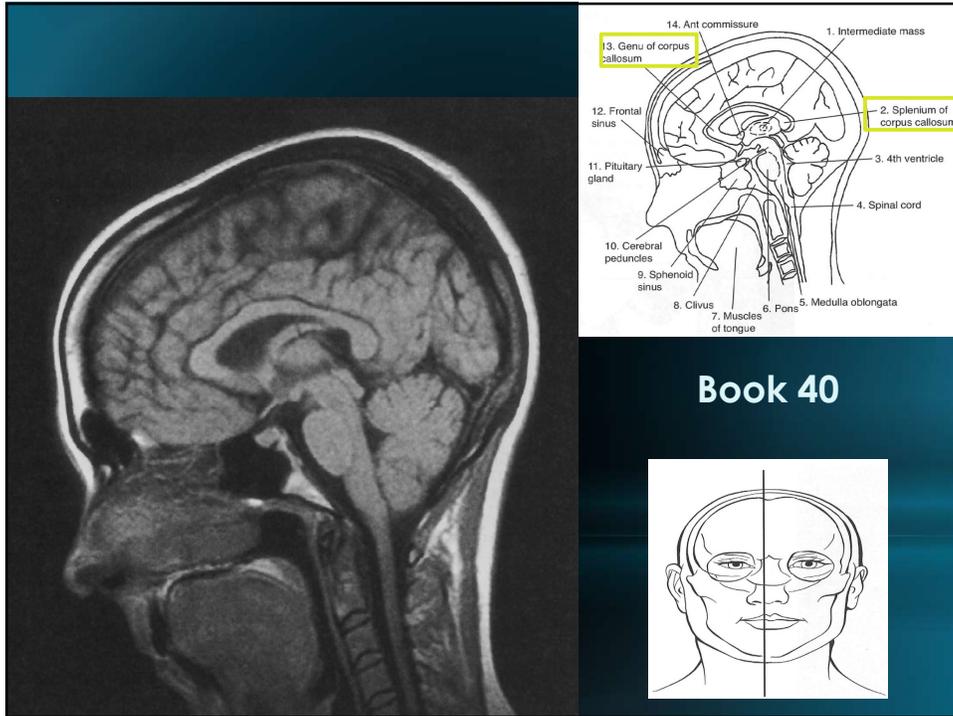
* Location: Middle part; Connects parietal and temporal lobes

**Splenium

* Location: Posterior part; Connects parietal and occipital lobes



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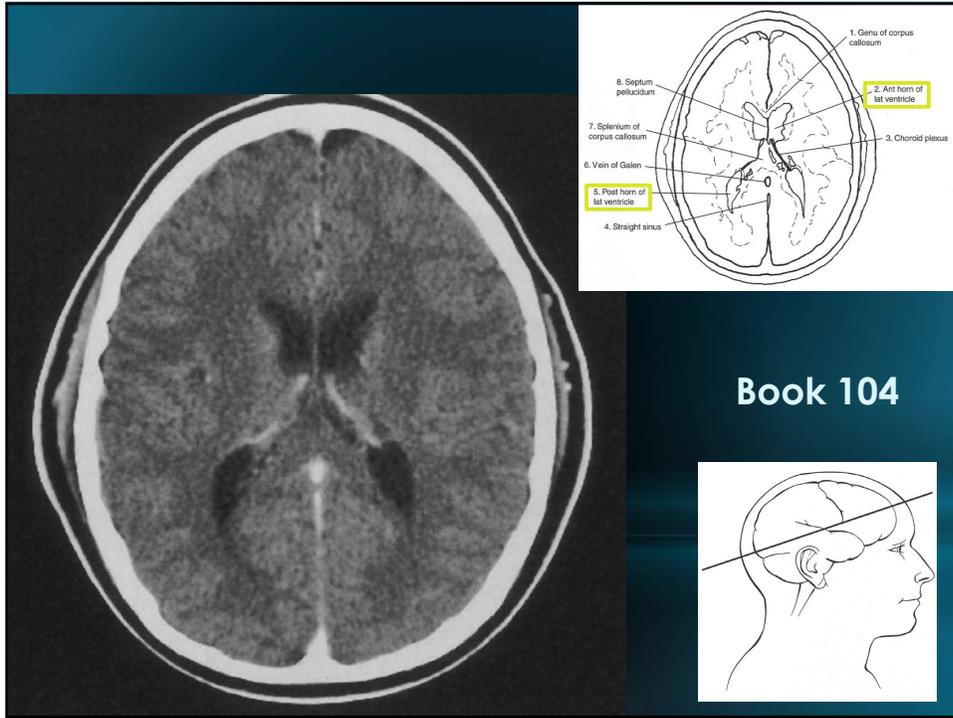
107

* Ventricles

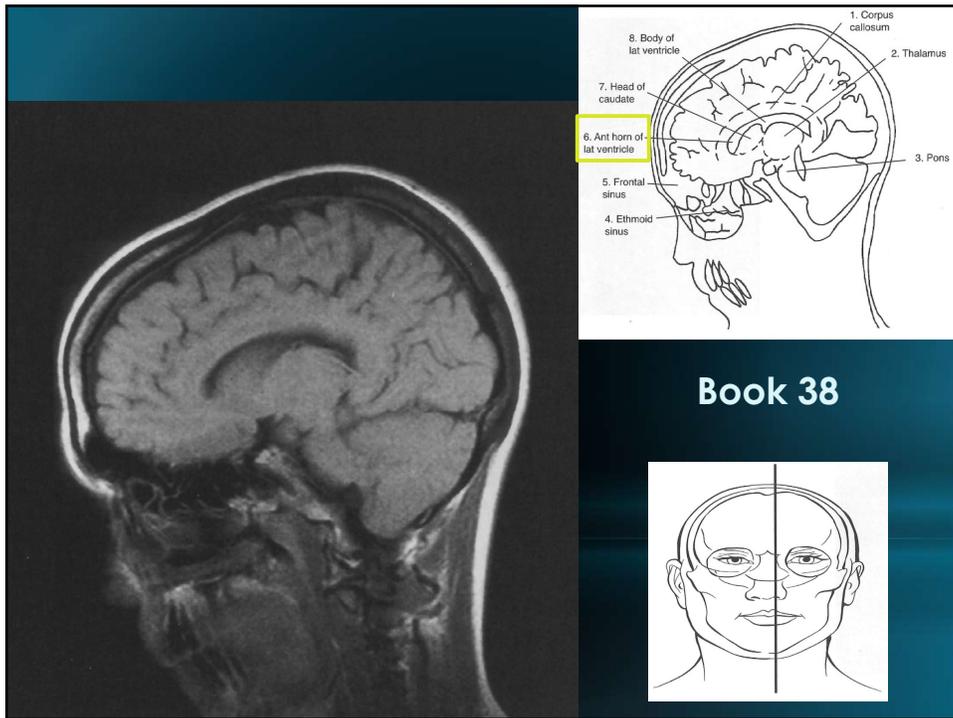
Ventricles--Pathway for CSF

- * Location: Within the cerebrum (left and right and centrally)
 - * Central portion is the body (parietal lobe)
- * Purpose: Location of CSF production, transportation and removal

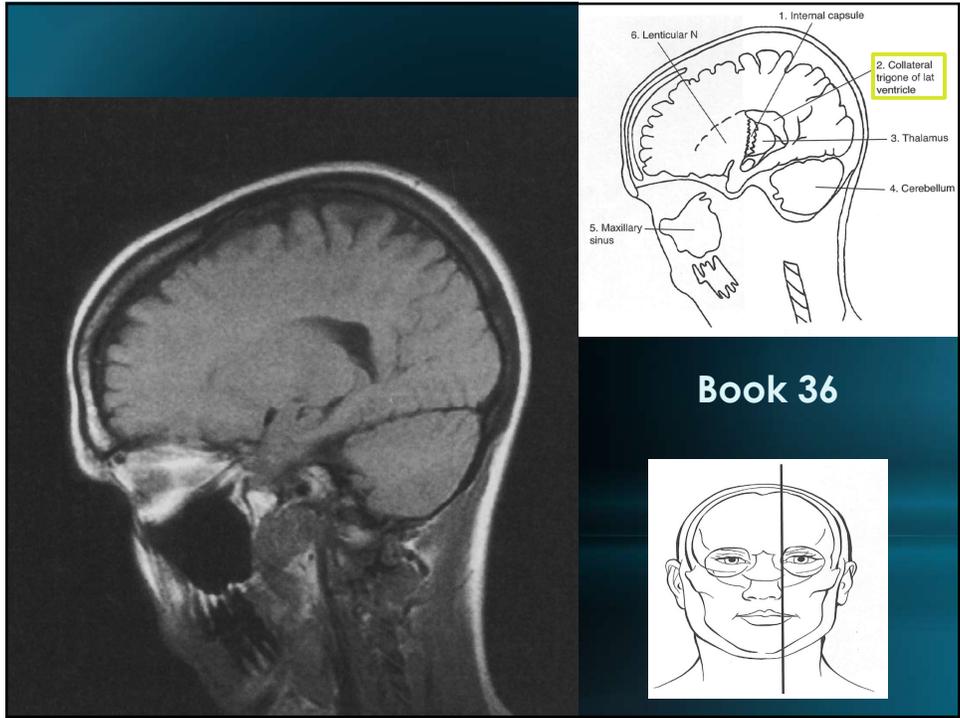
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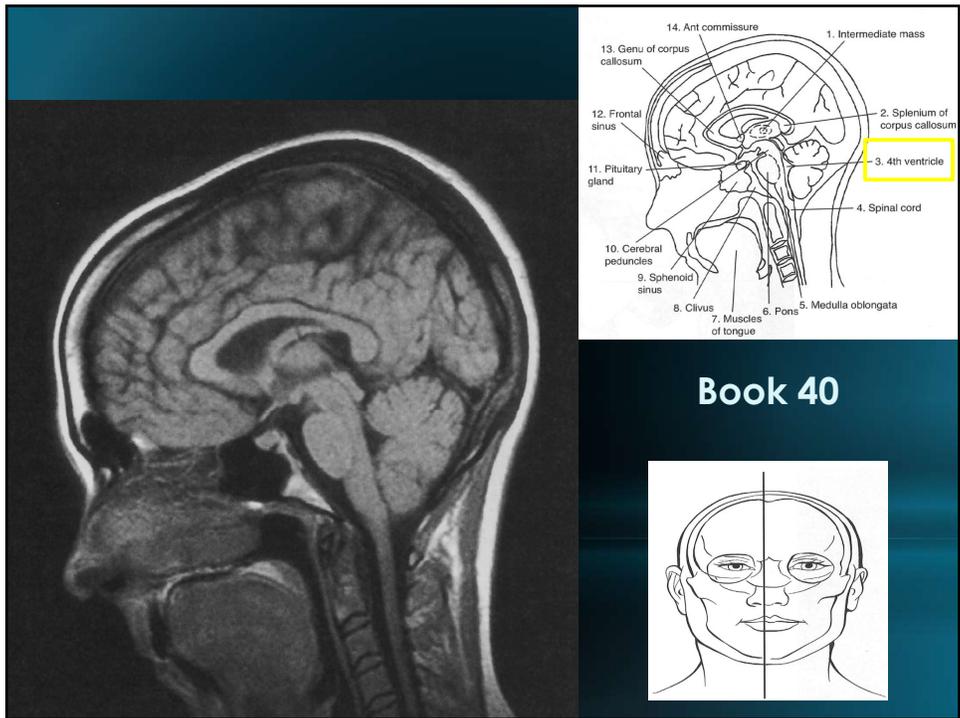
109



110

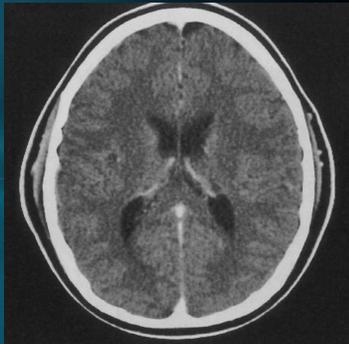
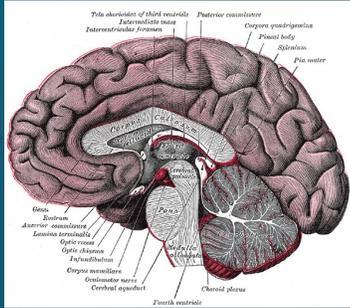


111



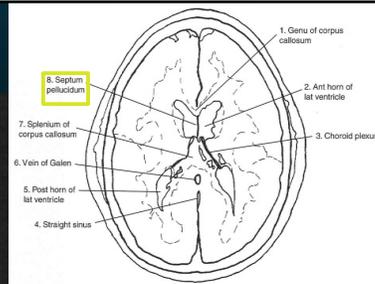
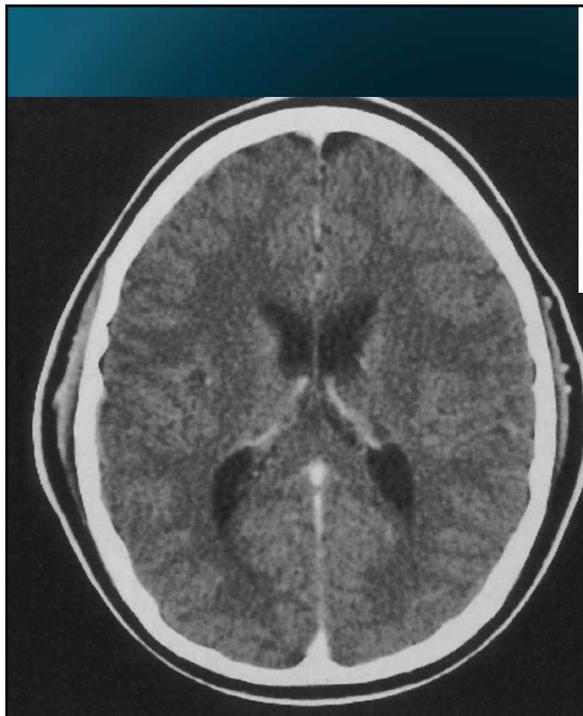
112

*Septum Pellucidum

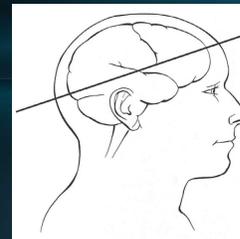


- **Location:** Separates the anterior horns of the lateral ventricles; between fornix and corpus callosum
- Thin, double-layered membrane
- Landmark used to check for midline shift (as well as falx cerebri)

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*Septum Pellucidum

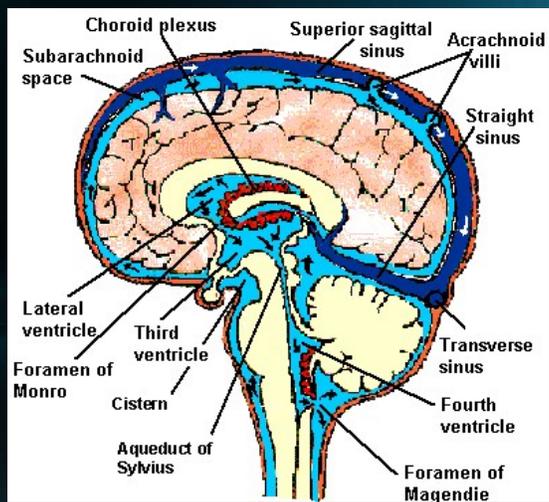
- Landmark used to check for midline shift



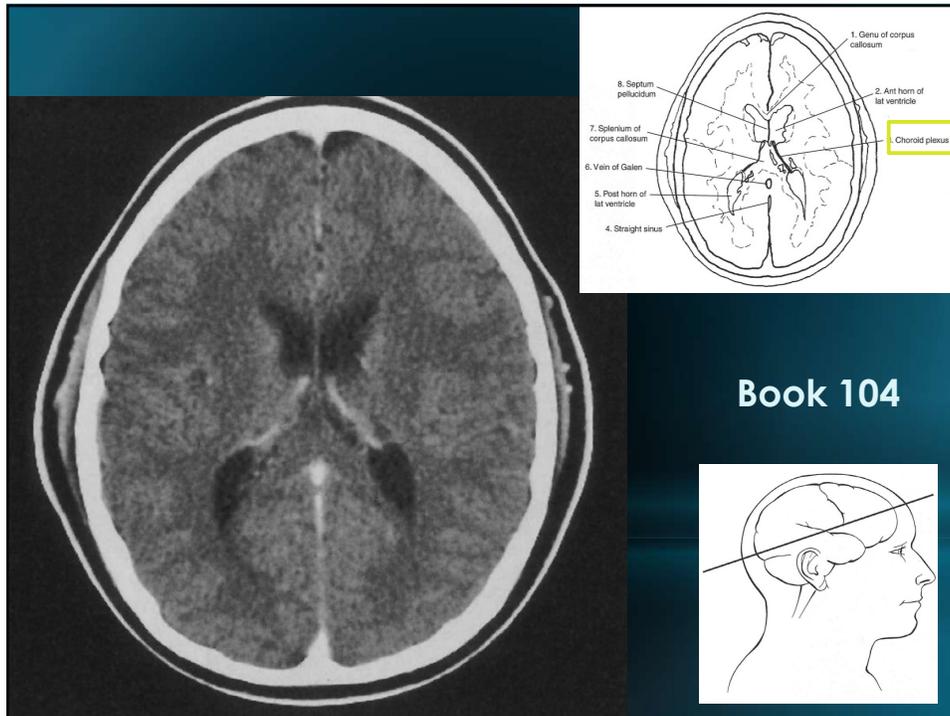
115

*Choroid Plexus

- * Location: Networks of veins in wall of each ventricle
- * Function: Produces CSF which surrounds and protects the brain and spinal cord
- * Excess CSF is reabsorbed in the dural sinuses by the arachnoid villi



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* Arterial Supply

Brain receives blood from two main sources (branches and their vessels)

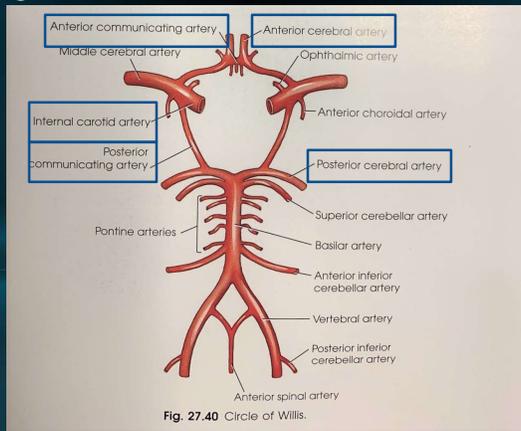
- * Internal carotid arteries
- * Vertebral arteries - 2 vertebrals form 1 basilar artery

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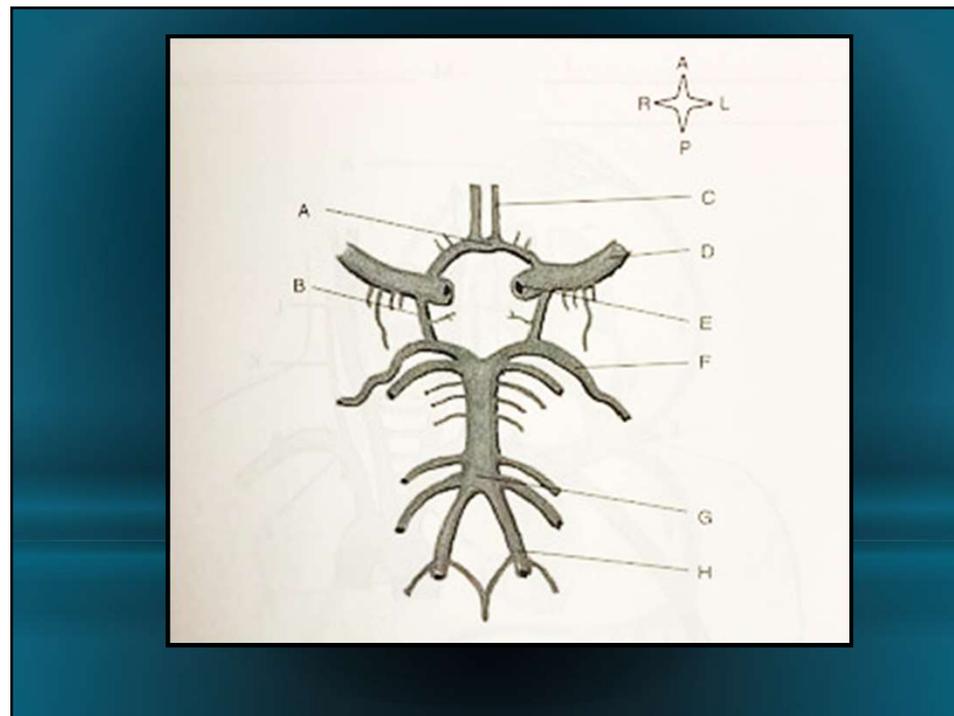
* C.O.W. -- Circle of Willis

Function: Aid in blood flow from one cerebral hemisphere to another in the event of a blockage

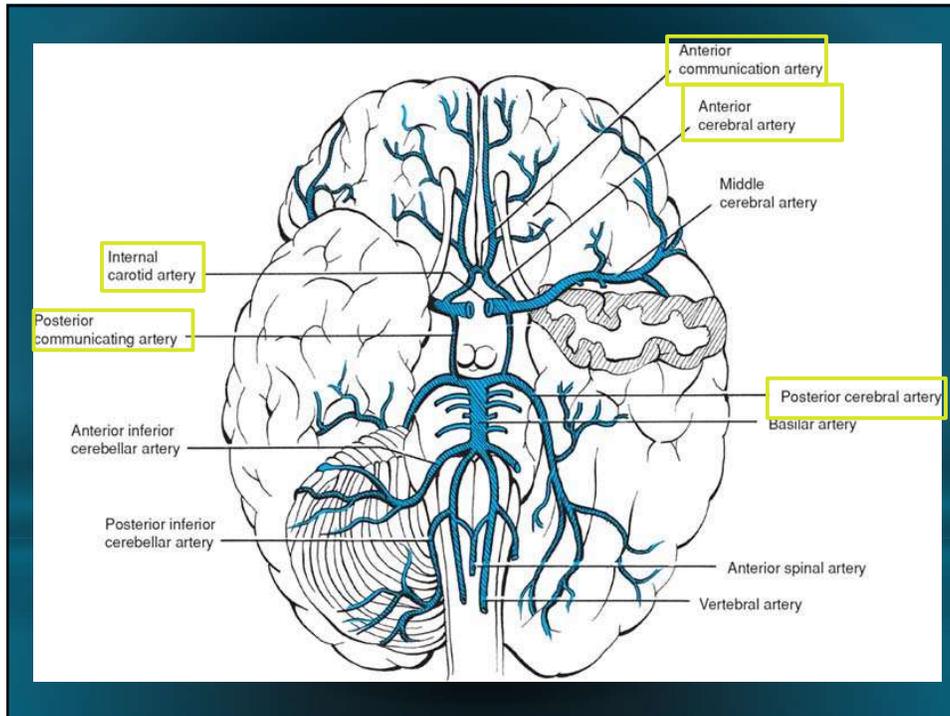
Formed by: Internal carotid, Ant/Post Cerebral and Ant/Post Communicating



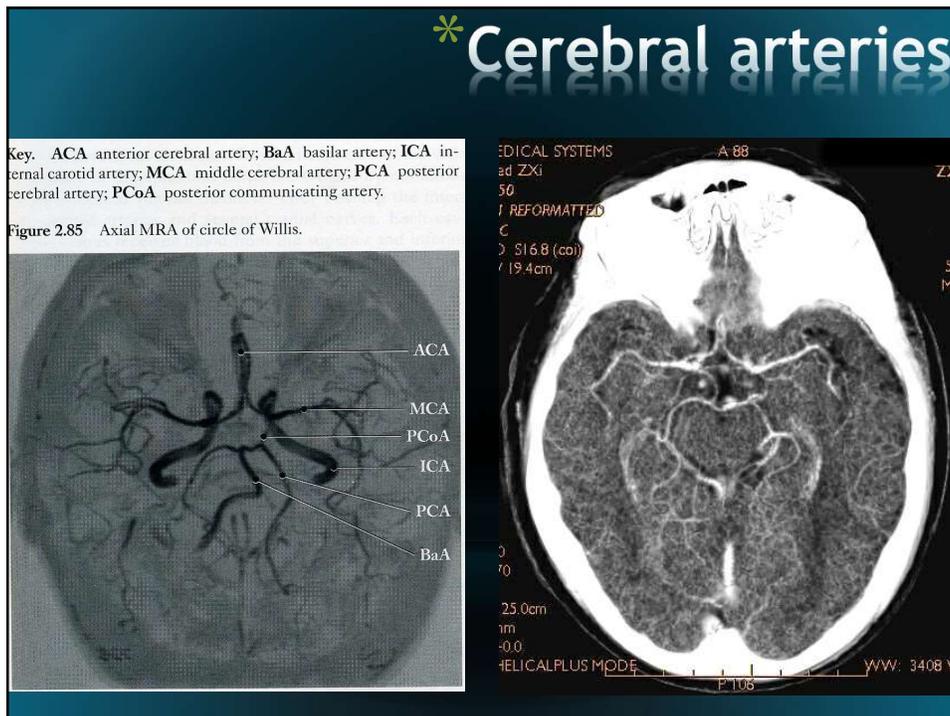
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*Items for next class ---

Please have the following---

- * Completed Review Worksheet
- * Completed Workbook Assignment
- * Textbook—if you prefer
- * Additional Notebook/Paper
 - * If you would like to take notes during the review

