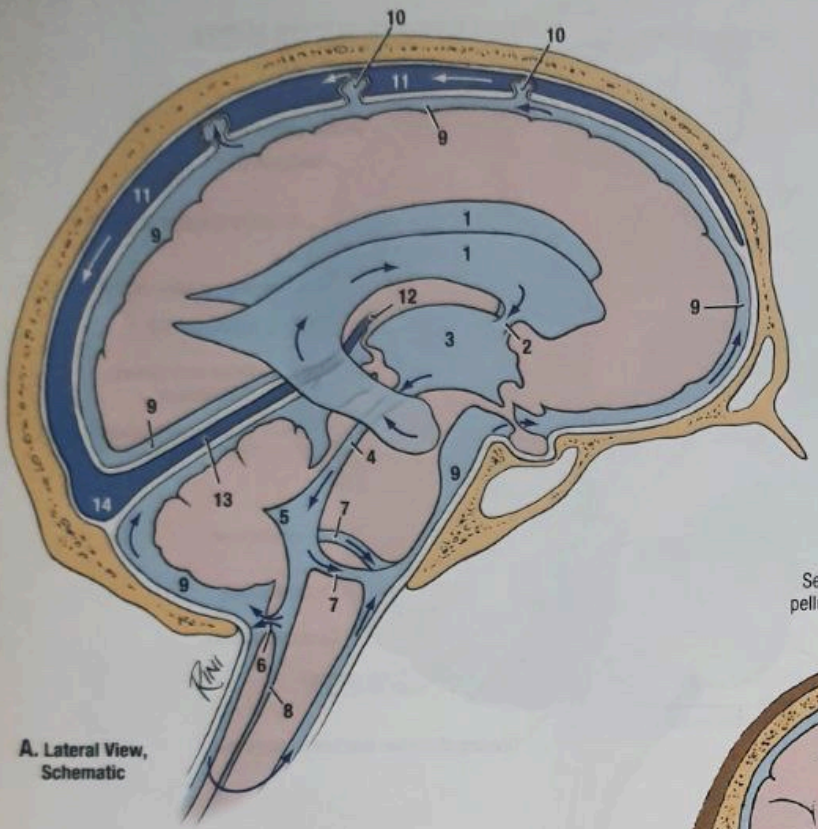
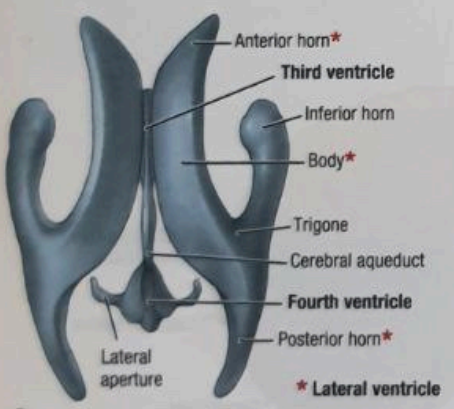


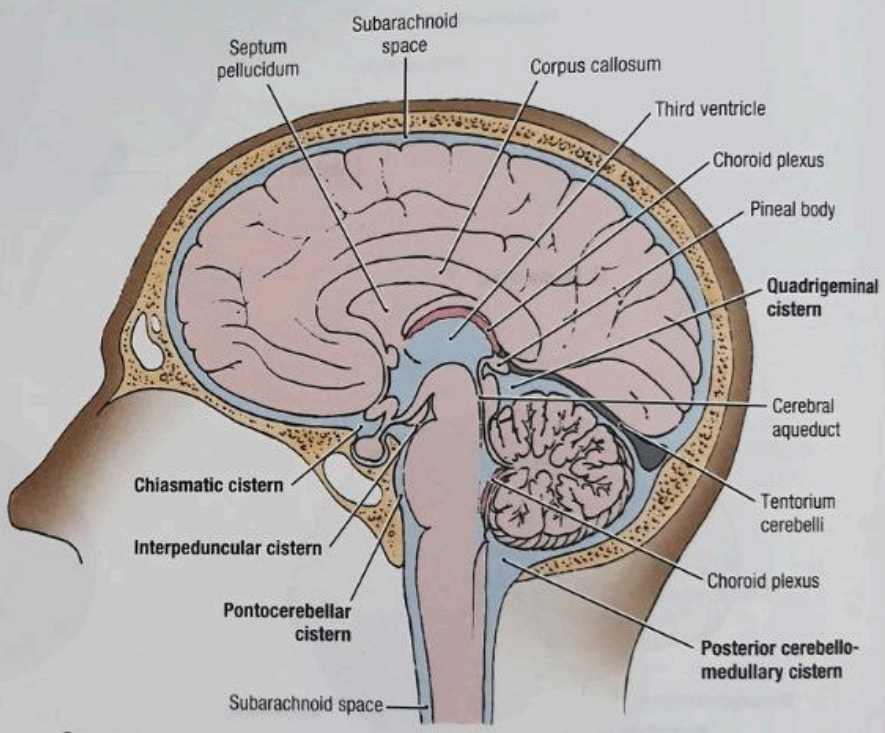
A. Lateral View, Schematic

KEY for A:

1 Right and left lateral ventricles
2 Interventricular foramen
3 Third ventricle
4 Cerebral aqueduct
5 Fourth ventricle
6 Median aperture
7 Lateral apertures
8 Central canal
9 Subarachnoid space
10 Arachnoid granulations
11 Superior sagittal sinus
12 Great cerebral vein
13 Straight sinus
14 Confluence of sinuses



B. Superior View

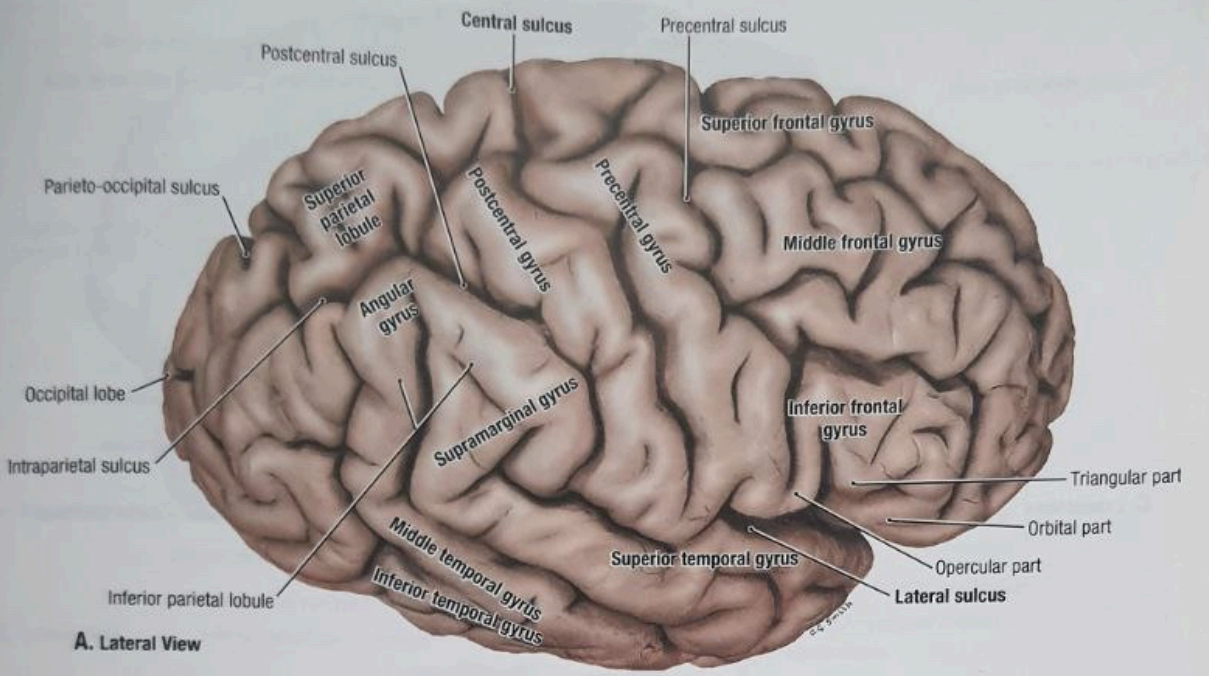


C. Medial View

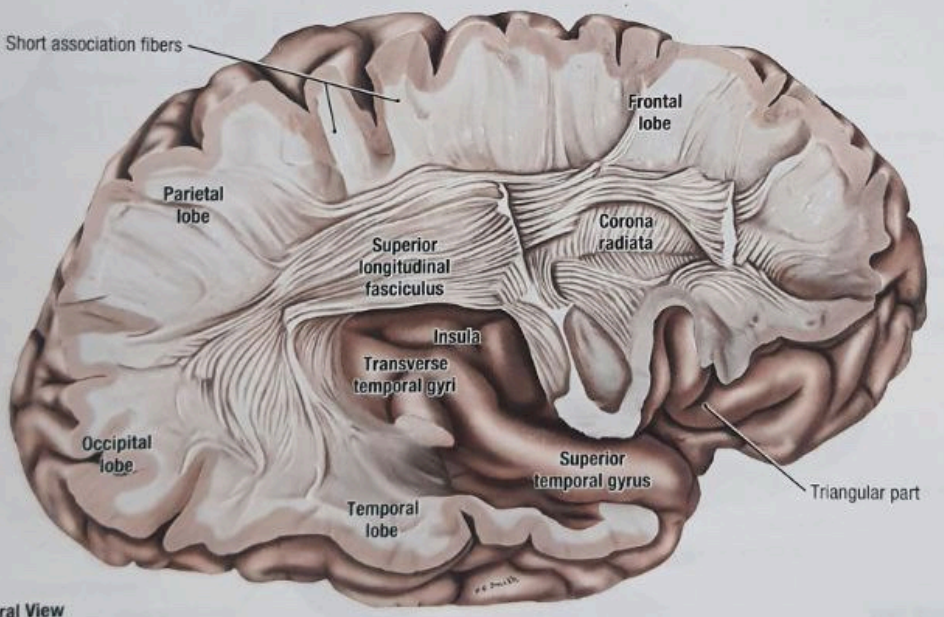
7.98 VENTRICULAR SYSTEM

A. Circulation of cerebrospinal fluid (CSF). **B.** Ventricles: lateral, third, and fourth.

- The ventricular system consists of two lateral ventricles located in the cerebral hemispheres, a third ventricle located between the right and left halves of the diencephalon, and a fourth ventricle located in the posterior parts of the pons and medulla.
- CSF secreted by choroid plexus in the ventricles drains via the interventricular foramen from the lateral to the third ventricle, via the cerebral aqueduct from the third to the fourth ventricle, and via median and lateral apertures into the subarachnoid space. CSF is absorbed by arachnoid granulations into the venous sinuses (especially the superior sagittal sinus).
- **Hydrocephalus.** Overproduction of CSF, obstruction of its flow, or interference with its absorption results in an excess of CSF in the ventricles and enlargement of the head, a condition known as hydrocephalus. Excess CSF dilates the ventricles; thins the brain; and, in infants, separates the bones of the calvaria because the sutures and fontanelles are still open.



A. Lateral View

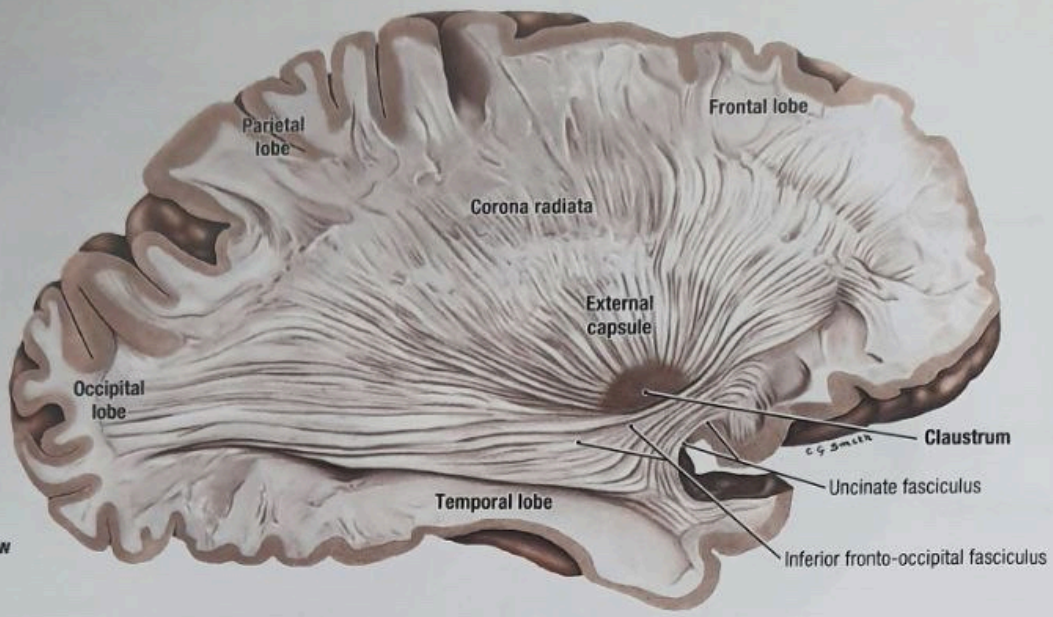


B. Lateral View

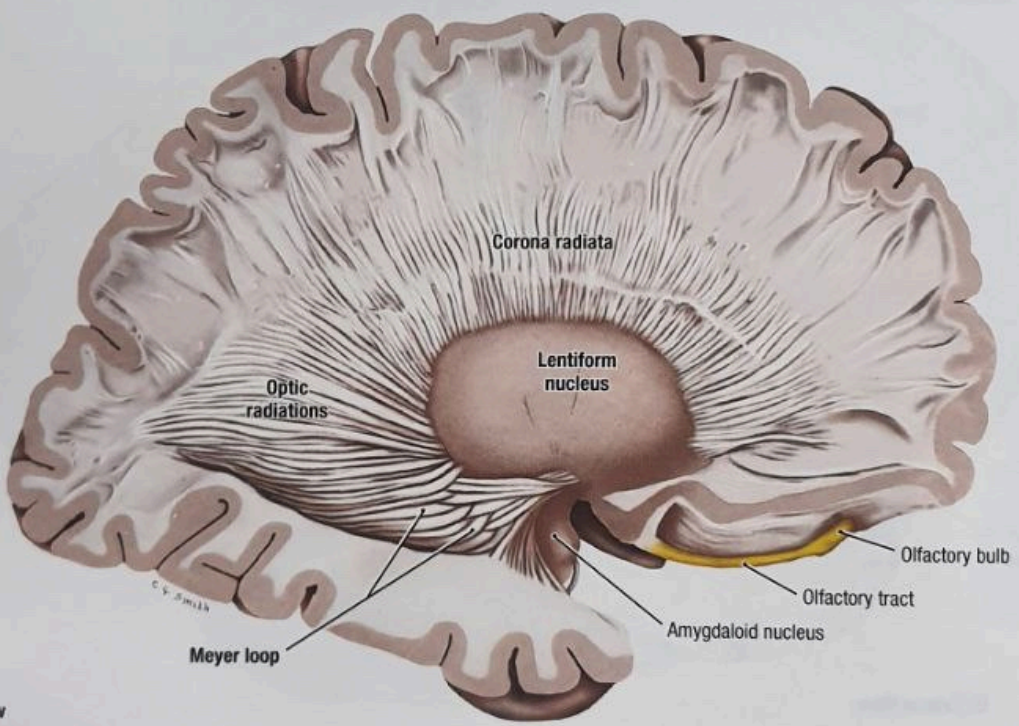
7.99 SERIAL DISSECTIONS OF LATERAL ASPECT OF CEREBRAL HEMISPHERE

The dissections begin from the lateral surface of the cerebral hemisphere **(A)** and proceed sequentially medially **(B.–F).**

A. Sulci and gyri of the lateral surface of one cerebral hemisphere. Each gyrus is a fold of cerebral cortex with a core of white matter. The furrows are called *sulci*. The pattern of sulci and gyri, formed shortly before birth, is recognizable in some adult brains, as shown in this specimen. Usually the expanding cortex acquires secondary foldings, which make identification of this basic pattern more difficult. **B.** Superior longitudinal fasciculus, transverse temporal gyri, and insula. The cortex and short association fiber bundles around the lateral fissure have been removed.



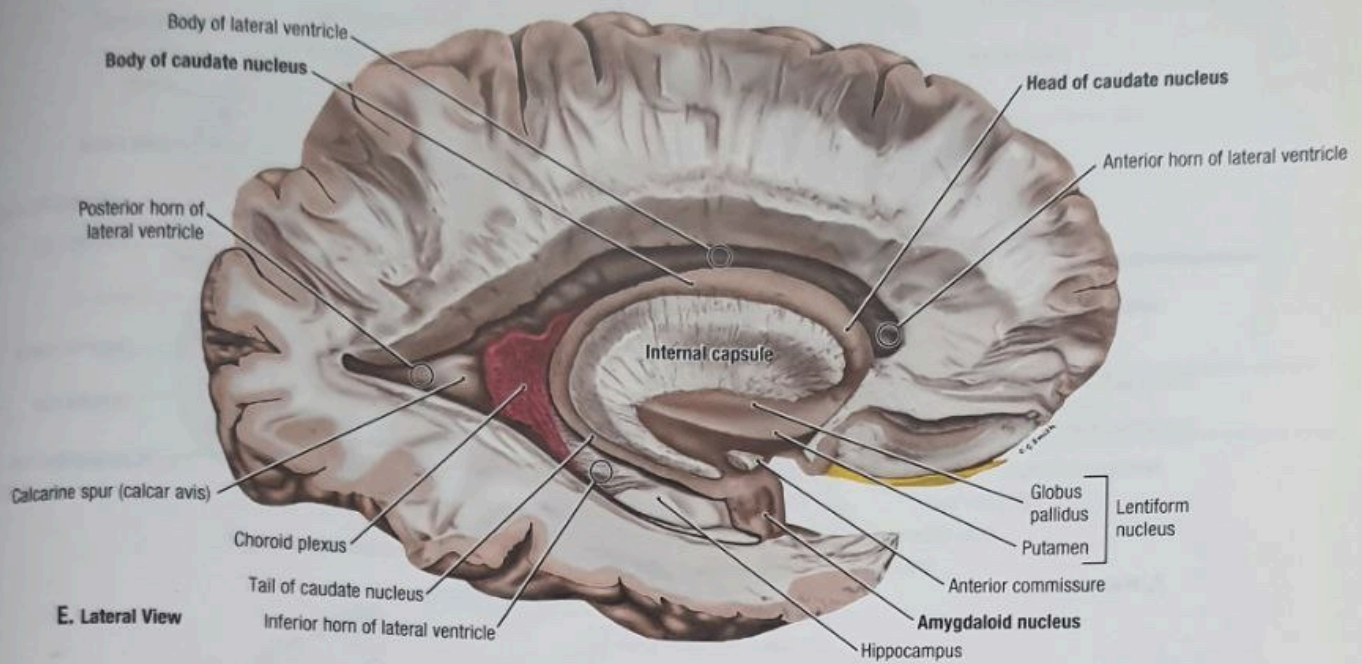
C. Lateral View



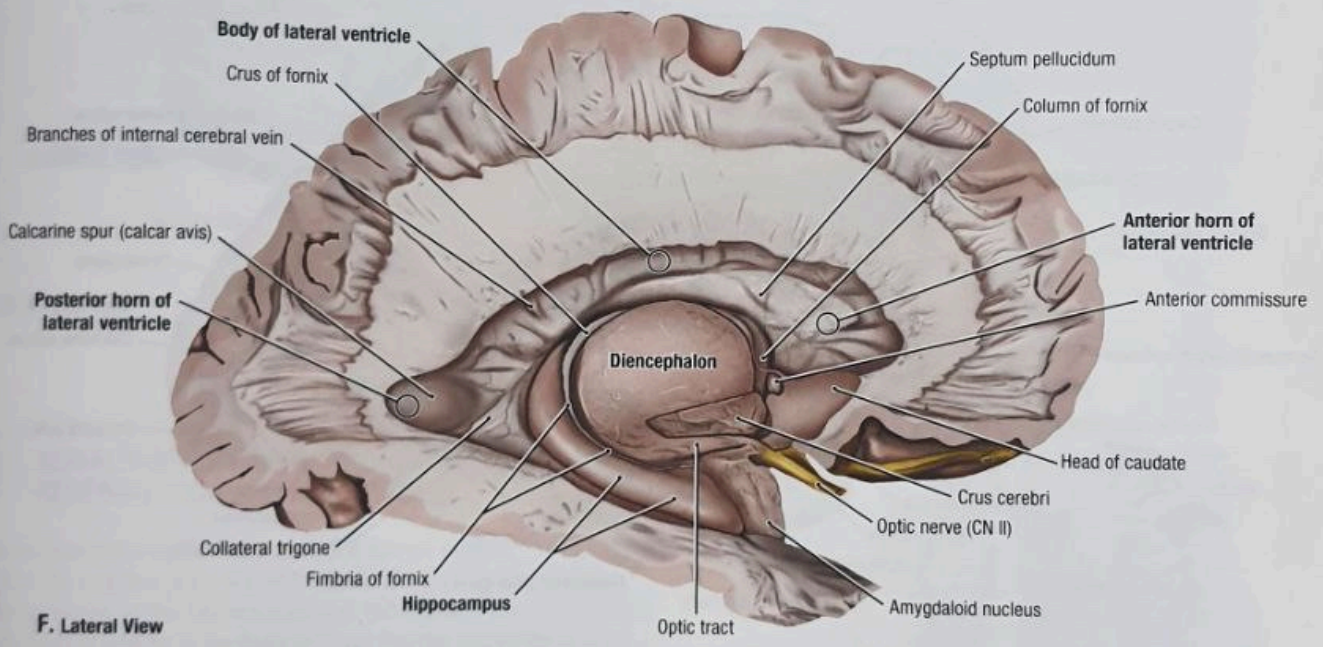
D. Lateral View

7.99 SERIAL DISSECTIONS OF LATERAL ASPECT OF CEREBRAL HEMISPHERE *(CONTINUED)*

C. Uncinate and inferior fronto-occipital fasciculi and external capsule. The external capsule consists of projection fibers that pass between the claustrum laterally and the lentiform nucleus medially. **D.** Lentiform nucleus and corona radiata. The inferior longitudinal and uncinate fasciculi, claustrum, and external capsule have been removed. The fibers of the optic radiations convey impulses from the right half of the retina of each eye; the fibers extending closest to the temporal pole (Meyer's loop) carry impulses from the lower portion of each retina.



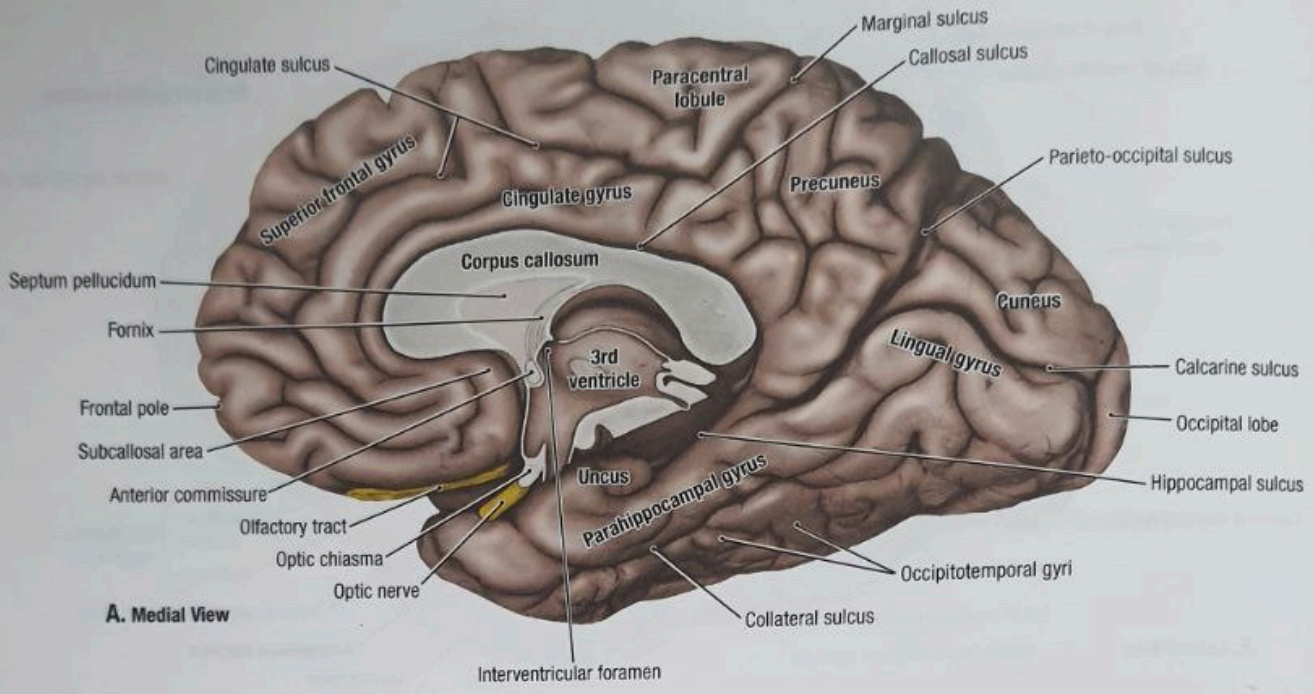
E. Lateral View

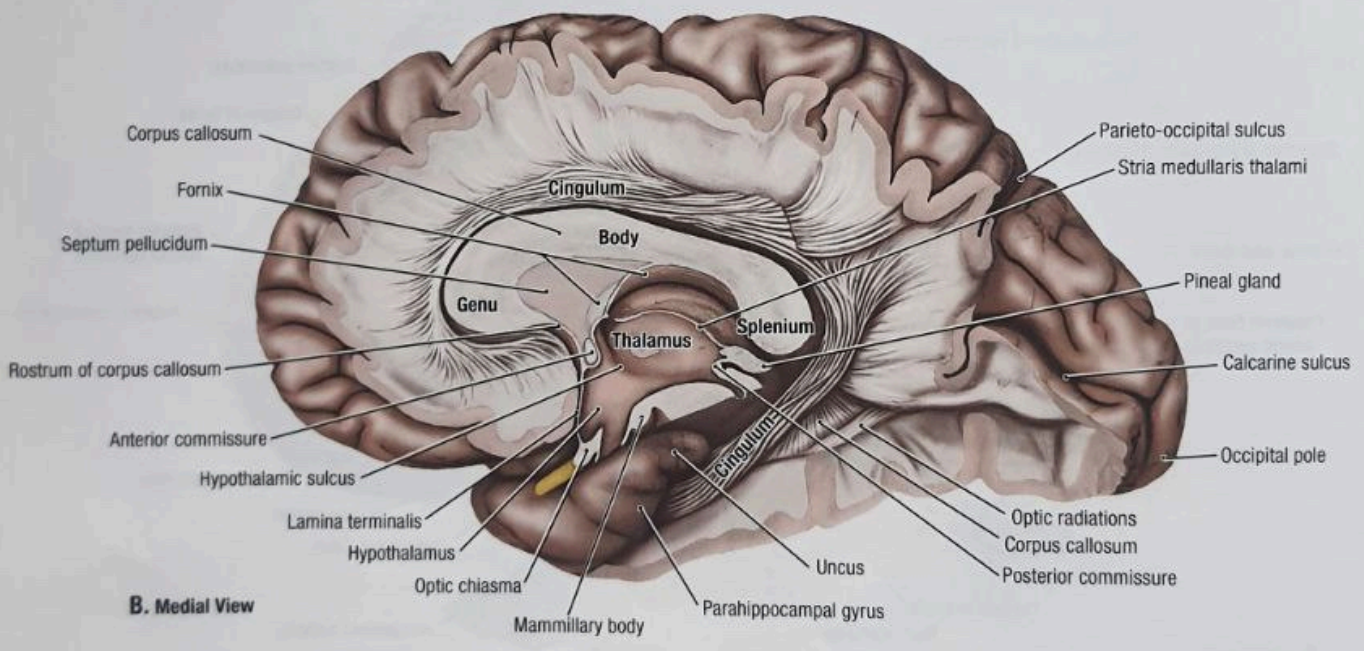


F. Lateral View

7.99 SERIAL DISSECTIONS OF LATERAL ASPECT OF CEREBRAL HEMISPHERE *(CONTINUED)*

E. Caudate and amygdaloid nuclei and internal capsule. The lateral wall of the lateral ventricle, the marginal part of the internal capsule, the anterior commissure, and the superior part of the lentiform nucleus have been removed. **F.** Lateral ventricle, hippocampus, and diencephalon. The inferior parts of the lentiform nucleus, internal capsule, and caudate nucleus have been removed.

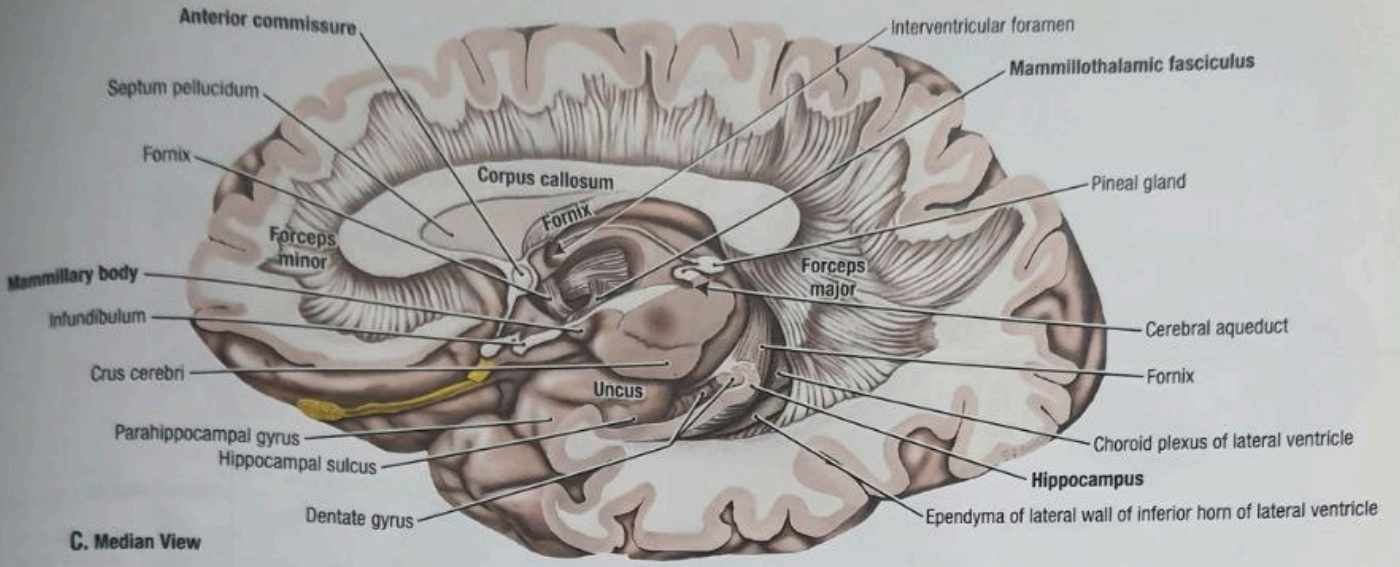




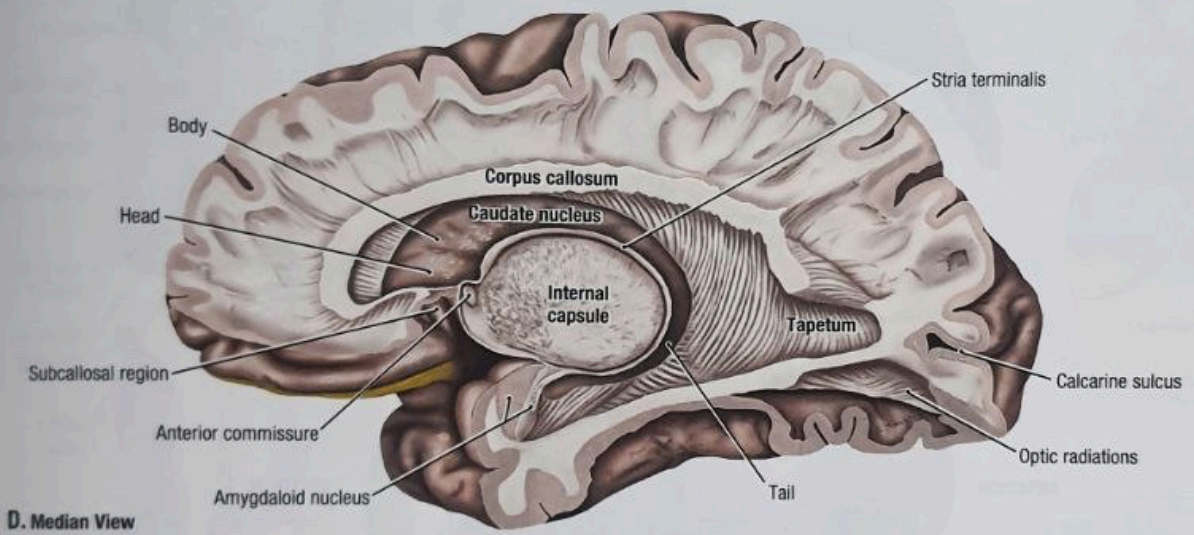
7.100 SERIAL DISSECTIONS OF MEDIAL ASPECT OF CEREBRAL HEMISPHERE

The dissections begin from the medial surface of the cerebral hemisphere **(A)** and proceed sequentially laterally **(B.–D)**.

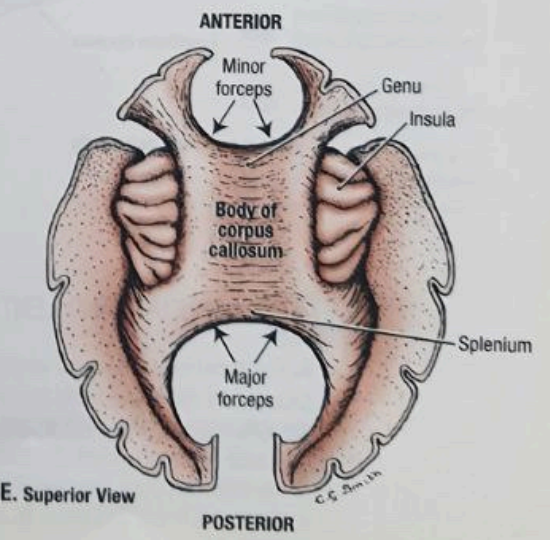
A. Sulci and gyri of medial surface of cerebral hemisphere. The corpus callosum consists of the rostrum, genu, body, and splenium; the cingulate and parahippocampal gyri from the limbic lobe. **B.** Cingulum. The cortex and short association fibers were removed from the medial aspect of the hemisphere. The cingulum is a long association fiber bundle that lies in the core of the cingulate and parahippocampal gyri.



C. Median View



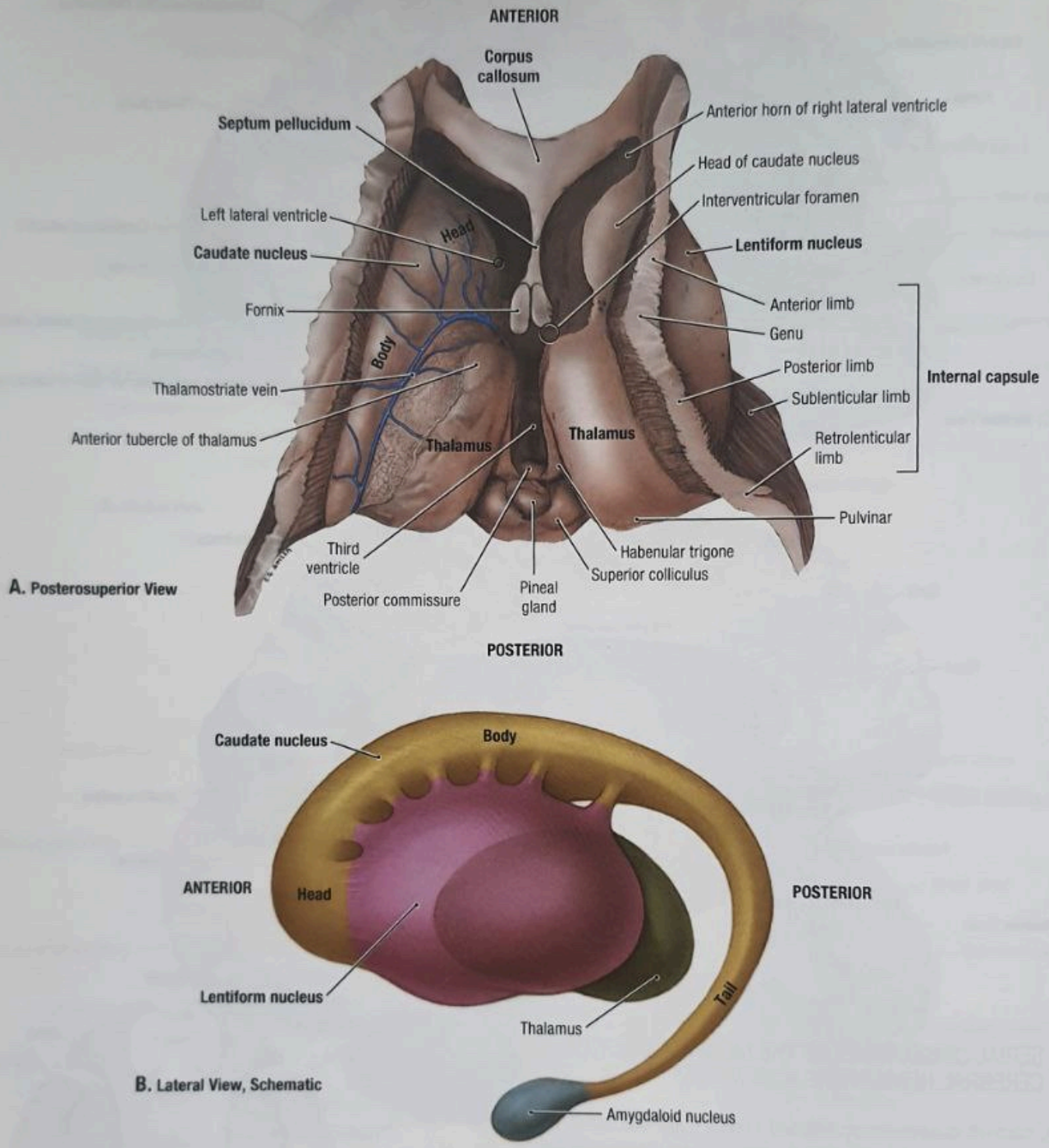
D. Median View



E. Superior View

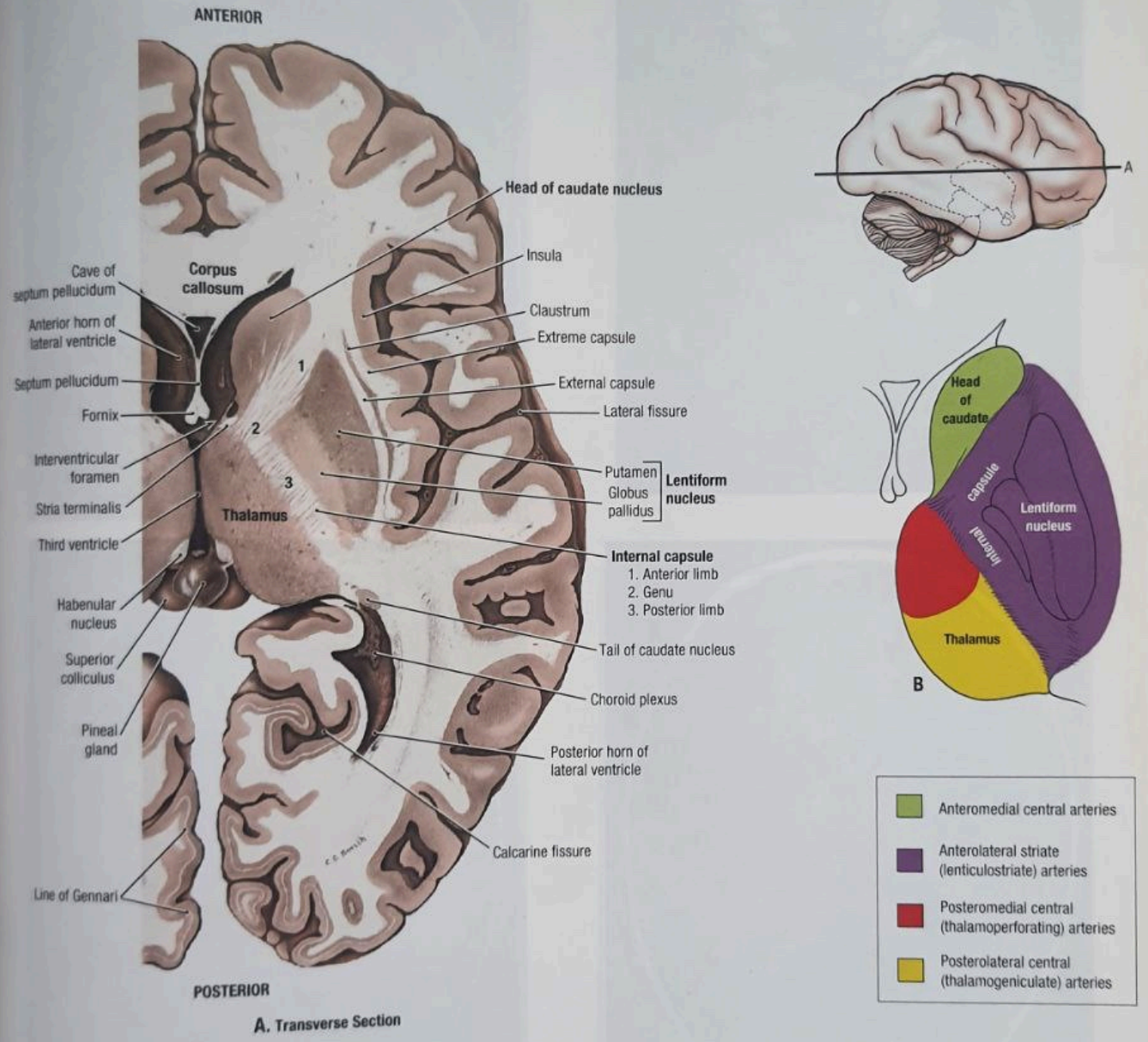
7.100 SERIAL DISSECTIONS OF THE MEDIAL ASPECT OF CEREBRAL HEMISPHERE *(CONTINUED)*

C. Fornix, mammillothalamic fasciculus, and forceps major and minor. The cingulum and a portion of the wall of the third ventricle have been removed. The fornix begins at the hippocampus and terminates in the mammillary body by passing anterior to the interventricular foramen and posterior to the anterior commissure. The mammillothalamic fasciculus emerges from the mammillary body and terminates in the anterior nucleus of the thalamus. **D.** Caudate nucleus and internal capsule. The diencephalon was removed, along with the ependyma of the lateral ventricle, except where it covers the caudate and amygdaloid nuclei. **E.** Corpus callosum. The body of the corpus callosum connects the two cerebral hemispheres; the minor (frontal) forceps (at the genu of corpus callosum) connects the frontal lobes, and the major (occipital) forceps (at splenium) connects the occipital lobes.



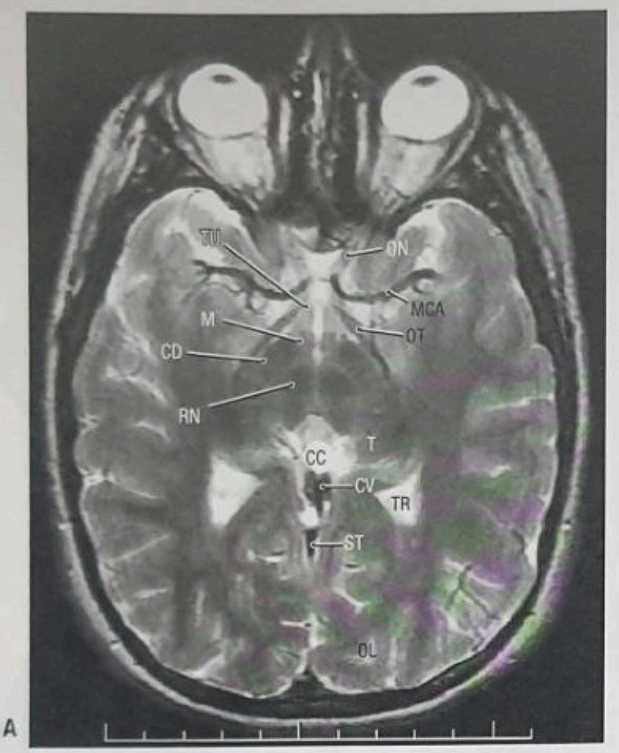
7.101 CAUDATE AND LENTIFORM NUCLEI

A. Relationship to the lateral ventricles and internal capsule. The dorsal surface of the diencephalon has been exposed by dissecting away the two cerebral hemispheres, except the anterior part of the corpus callosum, the inferior part of the septum pellucidum, the internal capsule, and the caudate and lentiform nuclei. On the right side of the specimen, the thalamus, caudate, and lentiform nuclei have been cut horizontally at the level of the interventricular foramen. The parts of the internal capsule include the anterior, posterior, retrolenticular sublenticular limbs, and genu. **B.** Schematic illustration of nuclei.

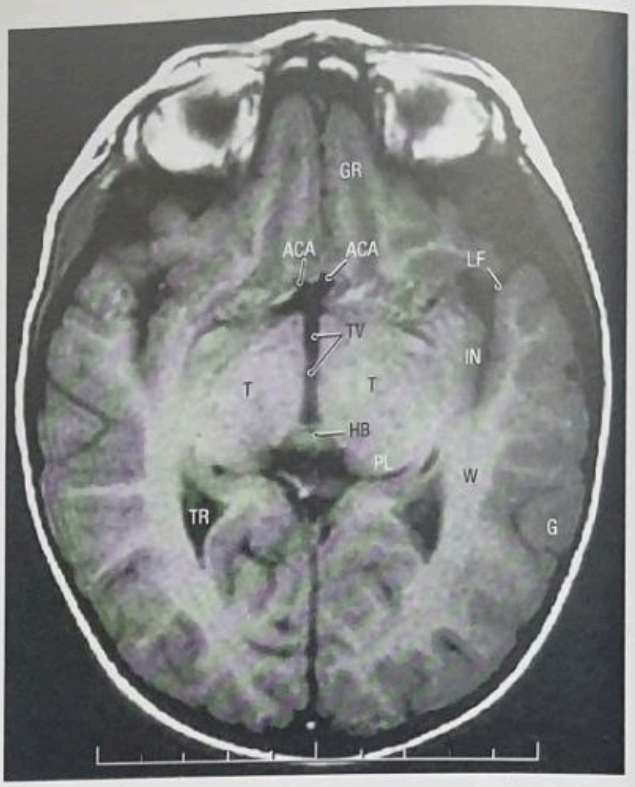


7.102 AXIAL SECTIONS THROUGH THALAMUS, CAUDATE NUCLEUS, AND LENTIFORM NUCLEUS

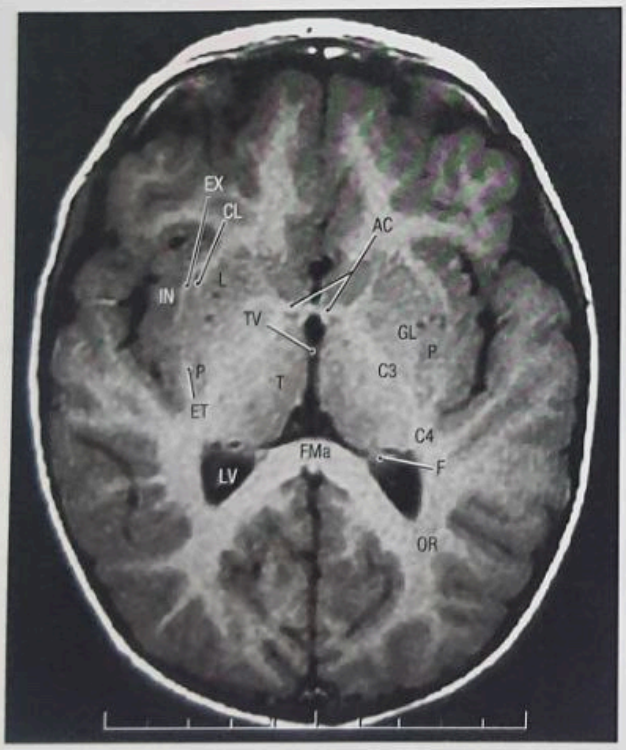
A. Relationships of the internal capsule. **B.** Blood supply of region.



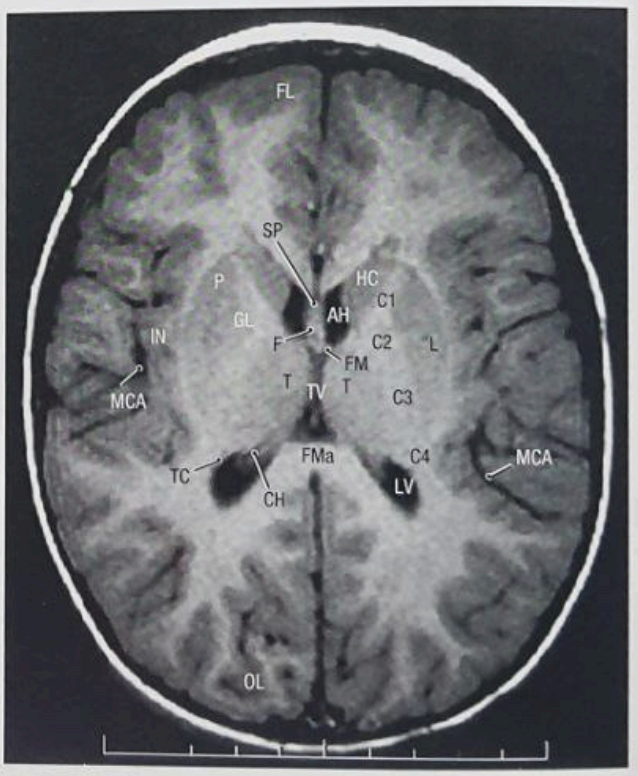
A



B



C

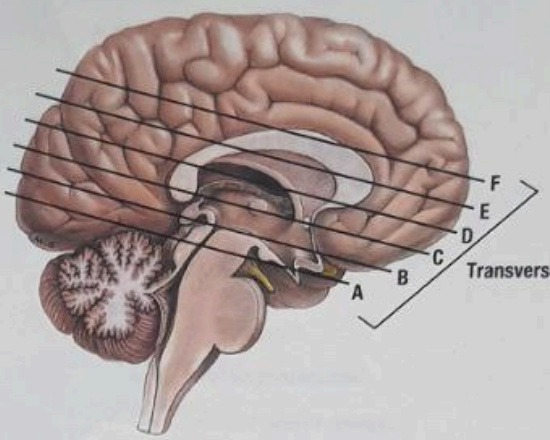


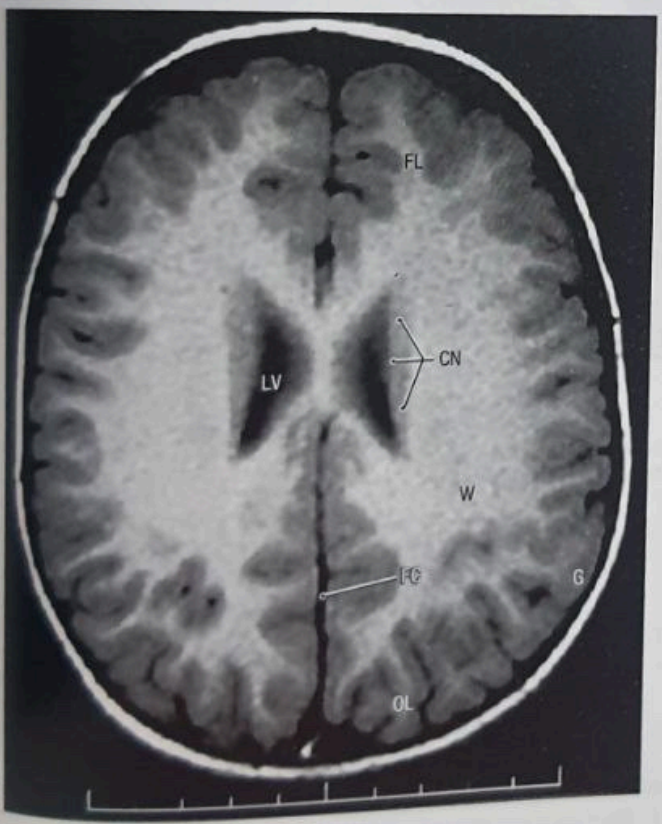
D

7.103 AXIAL (TRANSVERSE) MRIs THROUGH CEREBRAL HEMISPHERES

See orientation drawing for sites of scans **A.–F. A** is T2 weighted, and **B.–F.** are T1 weighted.

E





F

AC	Anterior commissure	GL	Globus pallidus
ACA	Anterior cerebral artery	GR	Gyrus rectus
AH	Anterior horn of lateral ventricle	HB	Habenular commissure
		HC	Head of caudate nucleus
C1	Anterior limb of internal capsule	IN	Insular cortex
		L	Lentiform nucleus
C2	Genu of internal capsule	LF	Lateral fissure
C3	Posterior limb of internal capsule	LV	Lateral ventricle
		M	Mammillary body
C4	Retrolenticular limb of internal capsule	MCA	Middle cerebral artery
		OL	Occipital lobe
CC	Collicular cistern	ON	Optic nerve
CD	Cerebral peduncle	OR	Optic radiations
CH	Choroid plexus	OT	Optic tract
CL	Claustrum	P	Putamen
CN	Caudate nucleus	PL	Pulvinar
CV	Great cerebral vein	RN	Red nucleus
ET	External capsule	SP	Septum pellucidum
EX	Extreme capsule	ST	Straight sinus
F	Fornix	T	Thalamus
FC	Falx cerebri	TC	Tail of caudate nucleus
FL	Frontal lobe	TR	Trigone of lateral ventricle
FM	Interventricular foramen	TU	Tuber cinereum
FMa	Forceps major	TV	Third ventricle
FMi	Forceps minor	W	White matter
G	Gray matter		

AXIAL (TRANSVERSE) MRIs THROUGH CEREBRAL HEMISPHERES *(CONTINUED)*