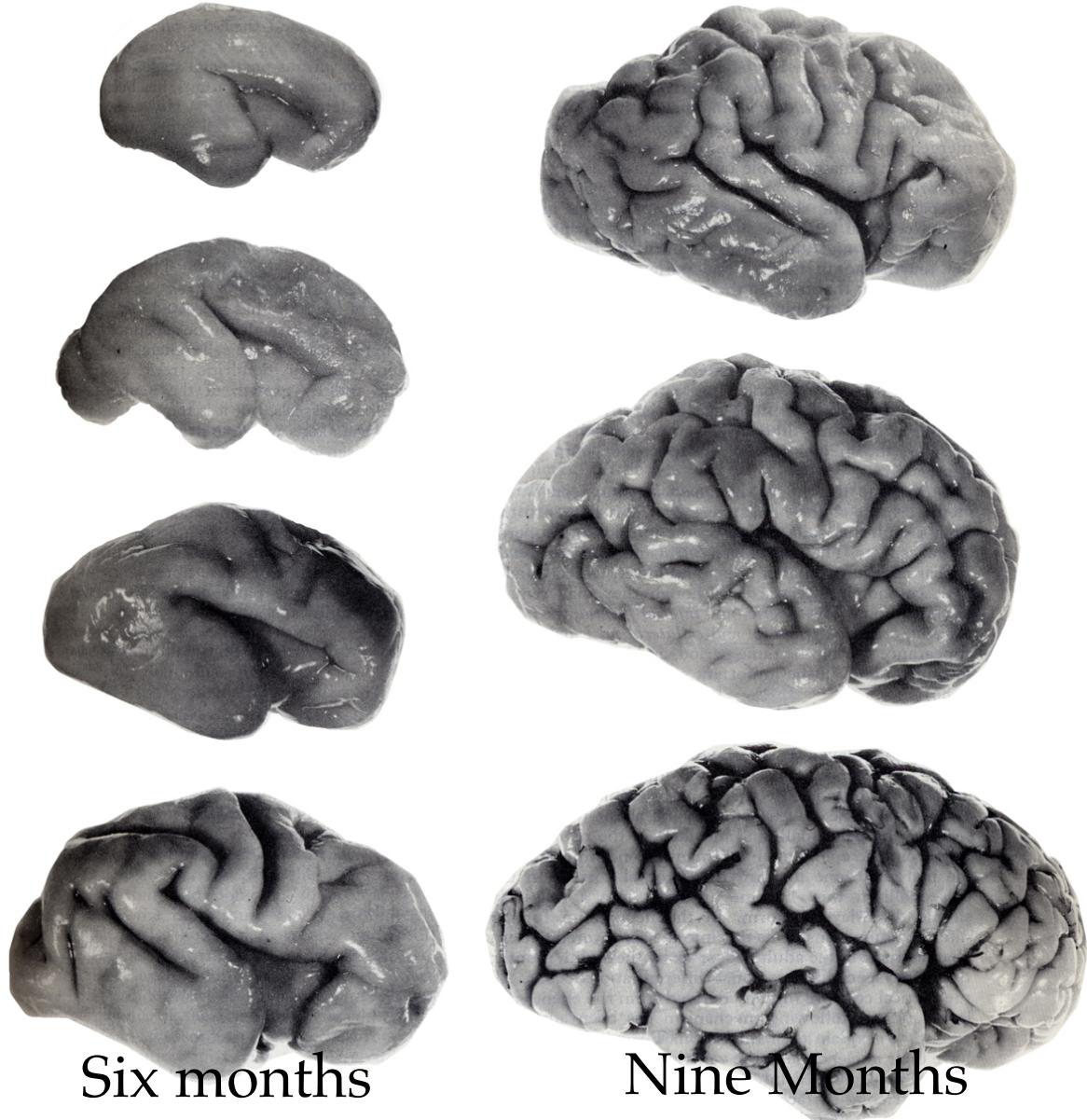




Chemical Imprinting Images for Embryonic Rising and the Development of the Ventricles



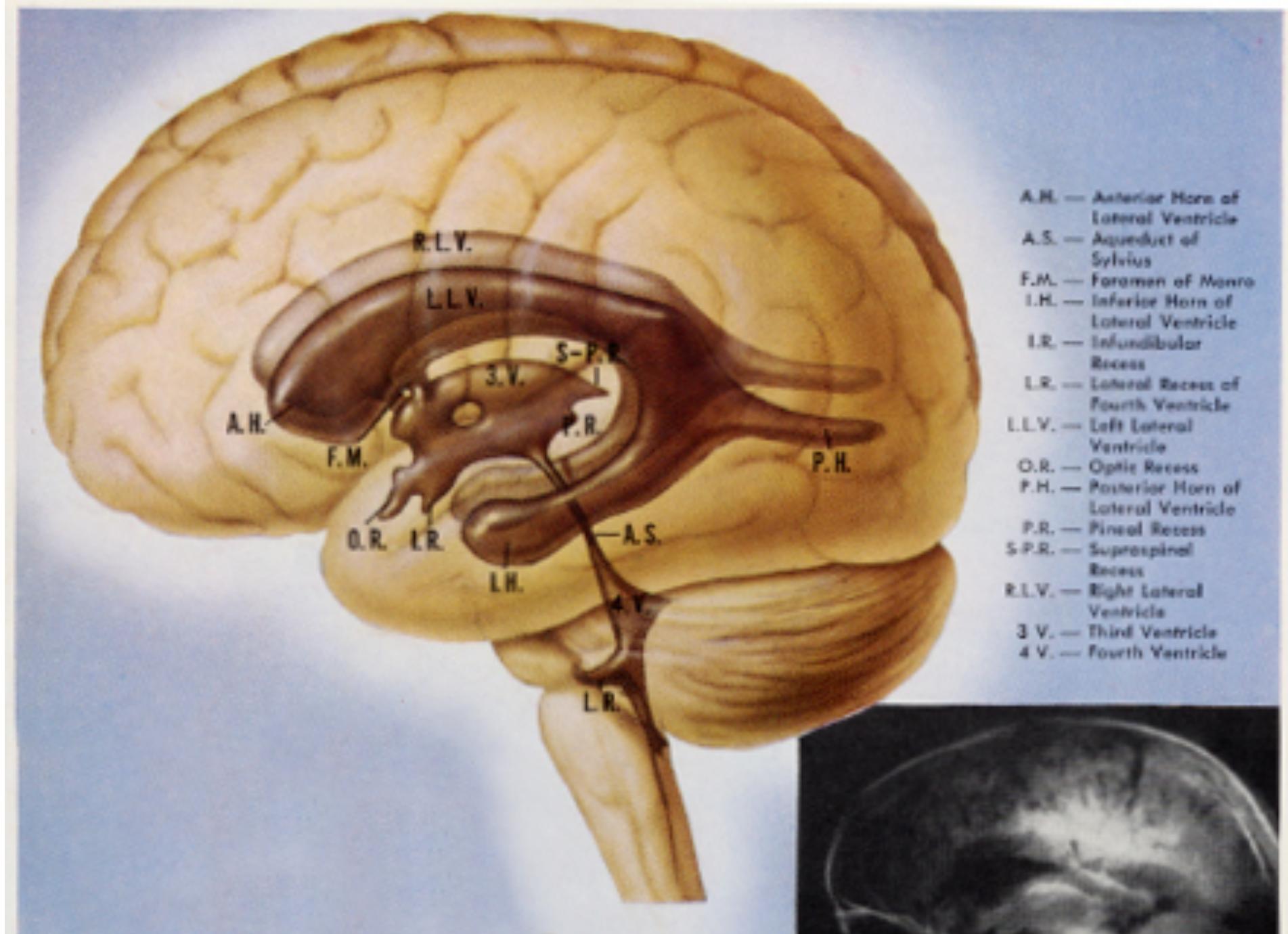
Differences in Brains



2.89A-G A series showing the superolateral surfaces of human fetal cerebral hemispheres at the ages indicated, demonstrating the changes in size, profile and the emerging pattern of cerebral sulci with increasing maturation. Note the changing prominence and relative positions of the frontal, occipital and particularly the temporal pole of the hemisphere. At the earliest stage (A) the lateral cerebral fossa is already obvious—its floor covers the developing corpus striatum in the depths of the hemisphere and progressively matures into the cortex of the insula. The fossa is bounded by overgrowing cortical regions, the frontal, temporal and

parietal opercula, which gradually converge to bury the insula; their approximation forms the lateral cerebral sulcus. By the sixth month the central, pre- and post-central, superior temporal, intraparietal and parieto-occipital sulci are all clearly visible. In the subsequent stages shown all the remaining principal and subsidiary sulci rapidly appear and by 40 weeks all the features which characterize the adult hemisphere in terms of surface topography are already present in miniature.

The photographs were kindly supplied by Dr. Sabina Strick of the Maudsley Hospital, London.



A.H. — Anterior Horn of
Lateral Ventricle
A.S. — Aqueduct of
Sylvius
F.M. — Foramen of Monro
I.H. — Inferior Horn of
Lateral Ventricle
I.R. — Infundibular
Recess
L.R. — Lateral Recess of
Fourth Ventricle
L.L.V. — Left Lateral
Ventricle
O.R. — Optic Recess
P.H. — Posterior Horn of
Lateral Ventricle
P.R. — Pineal Recess
S.P.R. — Suprasellar
Recess
R.L.V. — Right Lateral
Ventricle
3.V. — Third Ventricle
4.V. — Fourth Ventricle

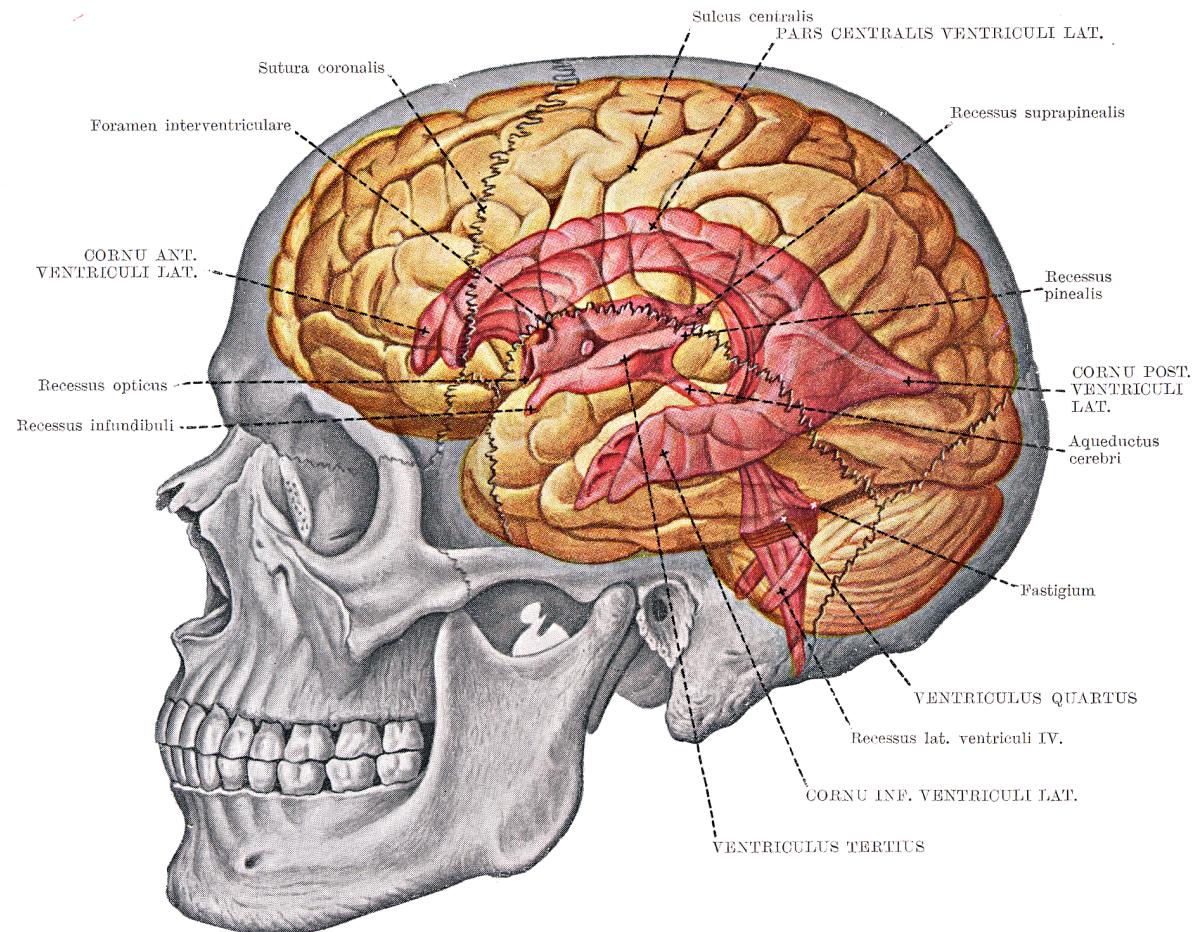
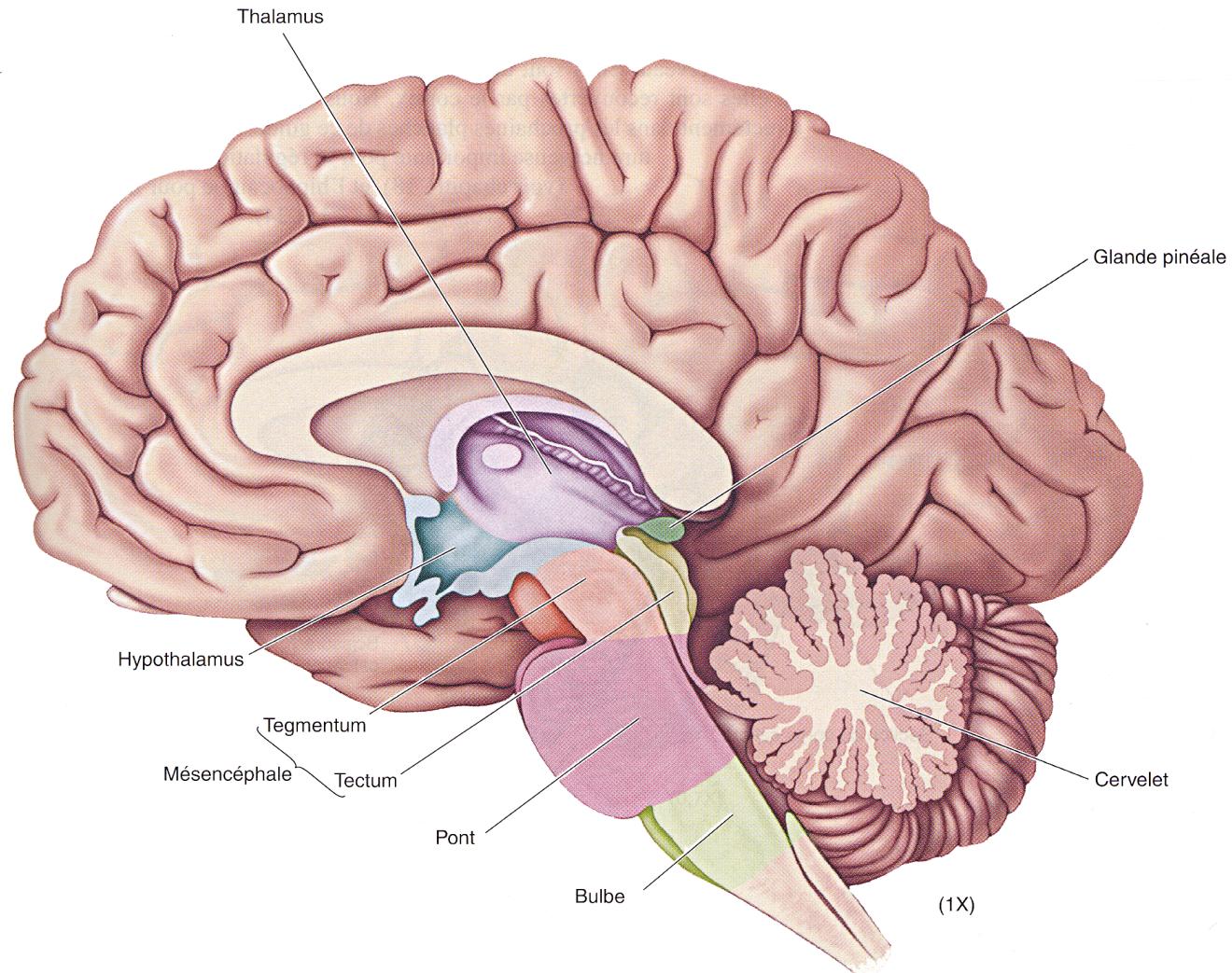
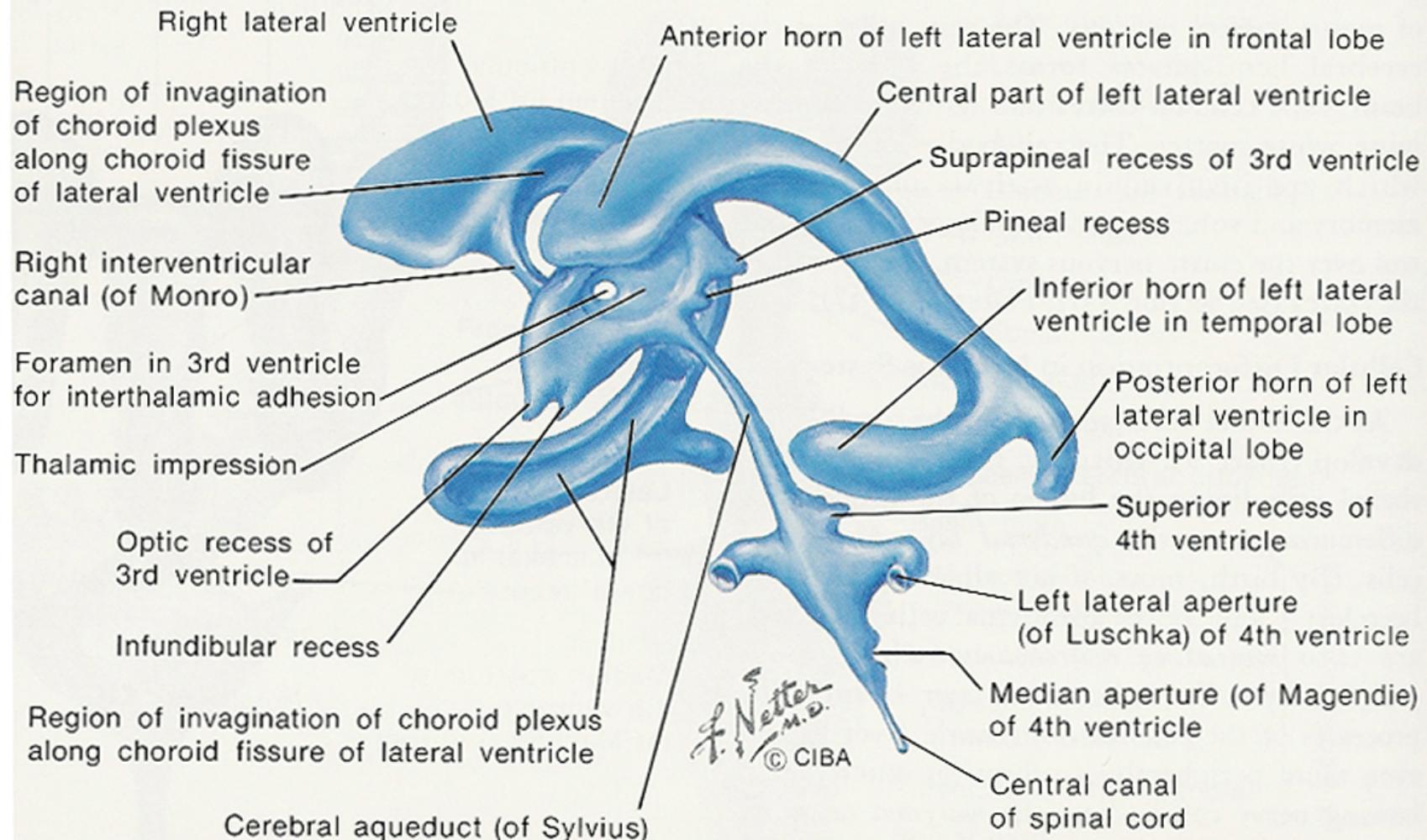


Fig. 68. TOPOGRAPHIA CRANIOCEREBRALIS II.
(ventriculi cerebri, aspectus lateralis)

Aspect interne du tronc cérébral

(a) **Structures du tronc cérébral.** En séparant le cerveau par le milieu, il est possible d'observer les structures médianes telles qu'elles apparaissent sur ce schéma à taille réelle. Cette vue montre les structures qui apparaissent au niveau de la coupe médico-sagittale du tronc cérébral, qui est ainsi séparé en deux parties par le plan de coupe. On observe les structures du diencéphale telles que le *thalamus* et l'*hypothalamus*, celles du *mésencéphale* comme le *tectum* et le *tegmentum mésencéphalique*, ainsi que le *pont* et le *bulbe*. Notez que certains anatomistes définissent le tronc cérébral comme formé seulement du mésencéphale, du pont et du bulbe.

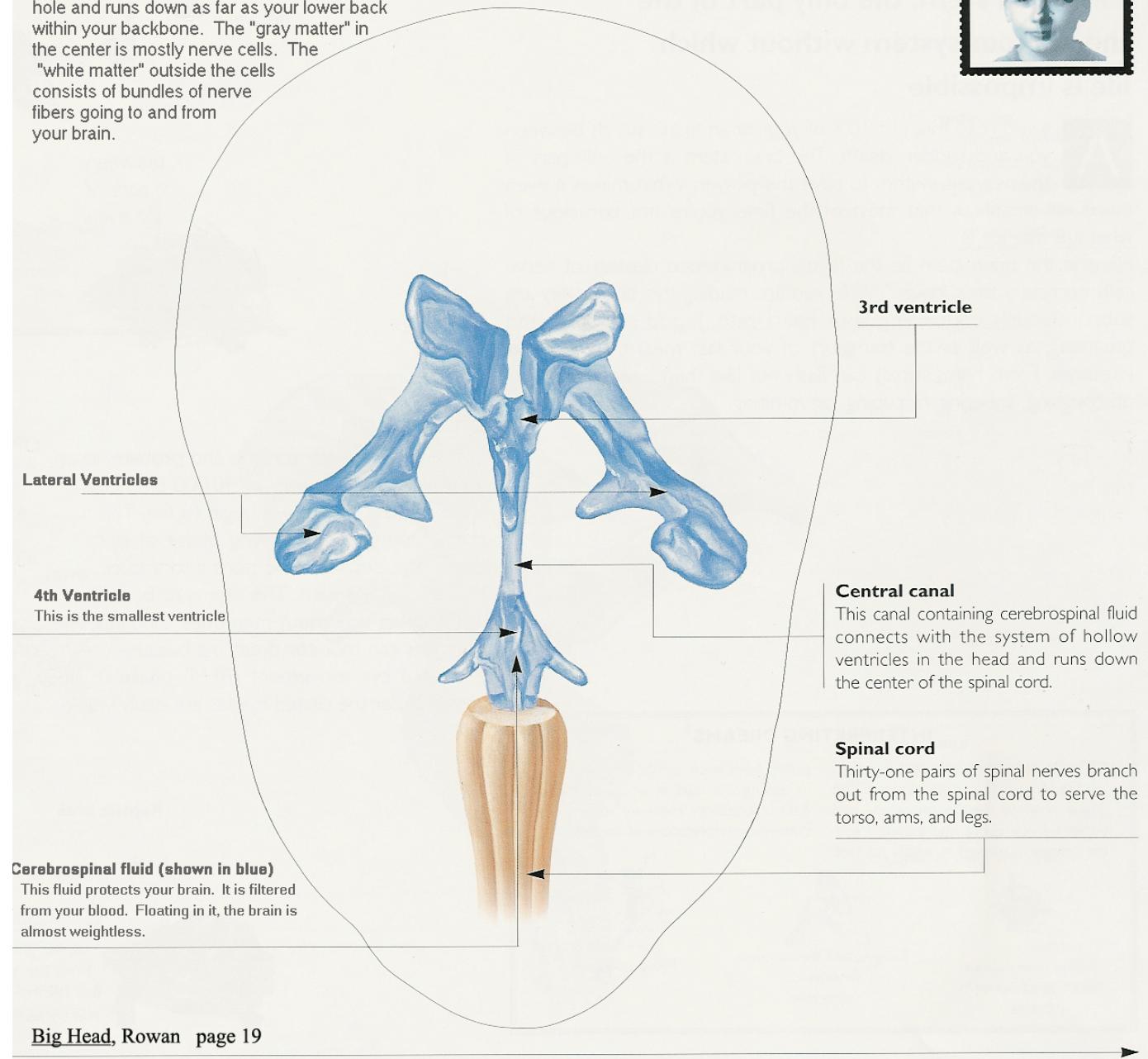




Ependymal Lining of Cavities of Brain at 9 Months (Birth)

The Spinal Cord, Ventricles, and Cerebrospinal Fluid

The spinal cord leaves your skull through a large hole and runs down as far as your lower back within your backbone. The "gray matter" in the center is mostly nerve cells. The "white matter" outside the cells consists of bundles of nerve fibers going to and from your brain.



Cerebrospinal fluid (shown in blue)
This fluid protects your brain. It is filtered from your blood. Floating in it, the brain is almost weightless.

3rd ventricle

Central canal

This canal containing cerebrospinal fluid connects with the system of hollow ventricles in the head and runs down the center of the spinal cord.

Spinal cord

Thirty-one pairs of spinal nerves branch out from the spinal cord to serve the torso, arms, and legs.

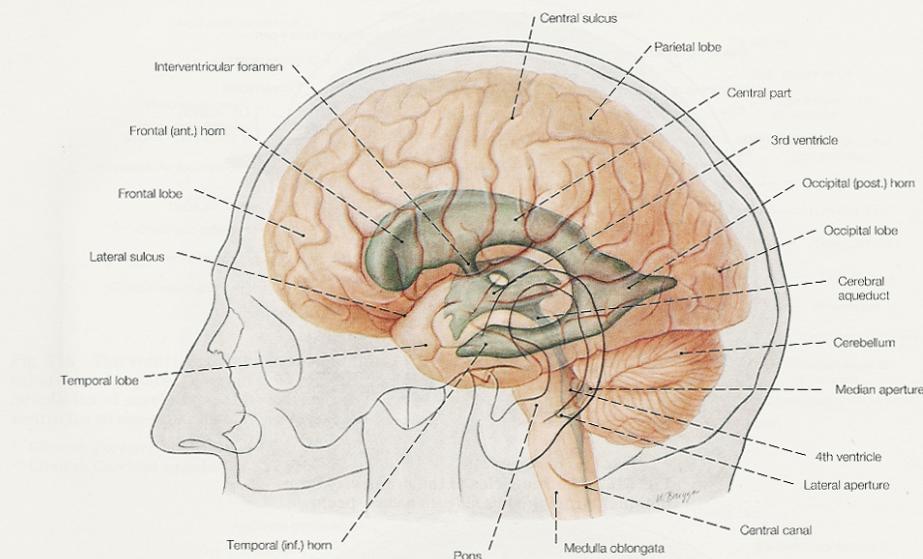


Fig. 520 The ventricles of the brain projected onto the surface of the brain, lateral aspect.

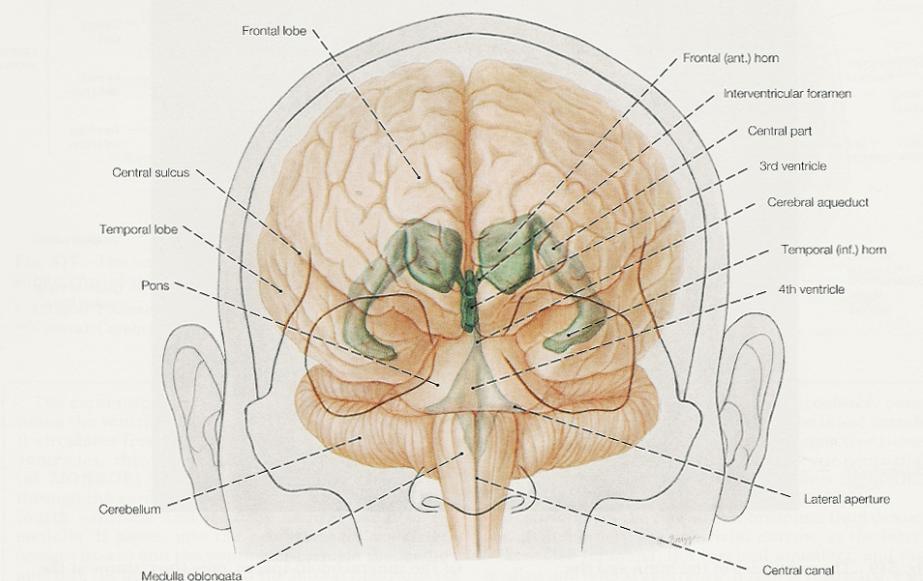


Fig. 521 The ventricles of the brain projected onto the surface of the brain, anterior aspect.

Circulation of Cerebrospinal Fluid

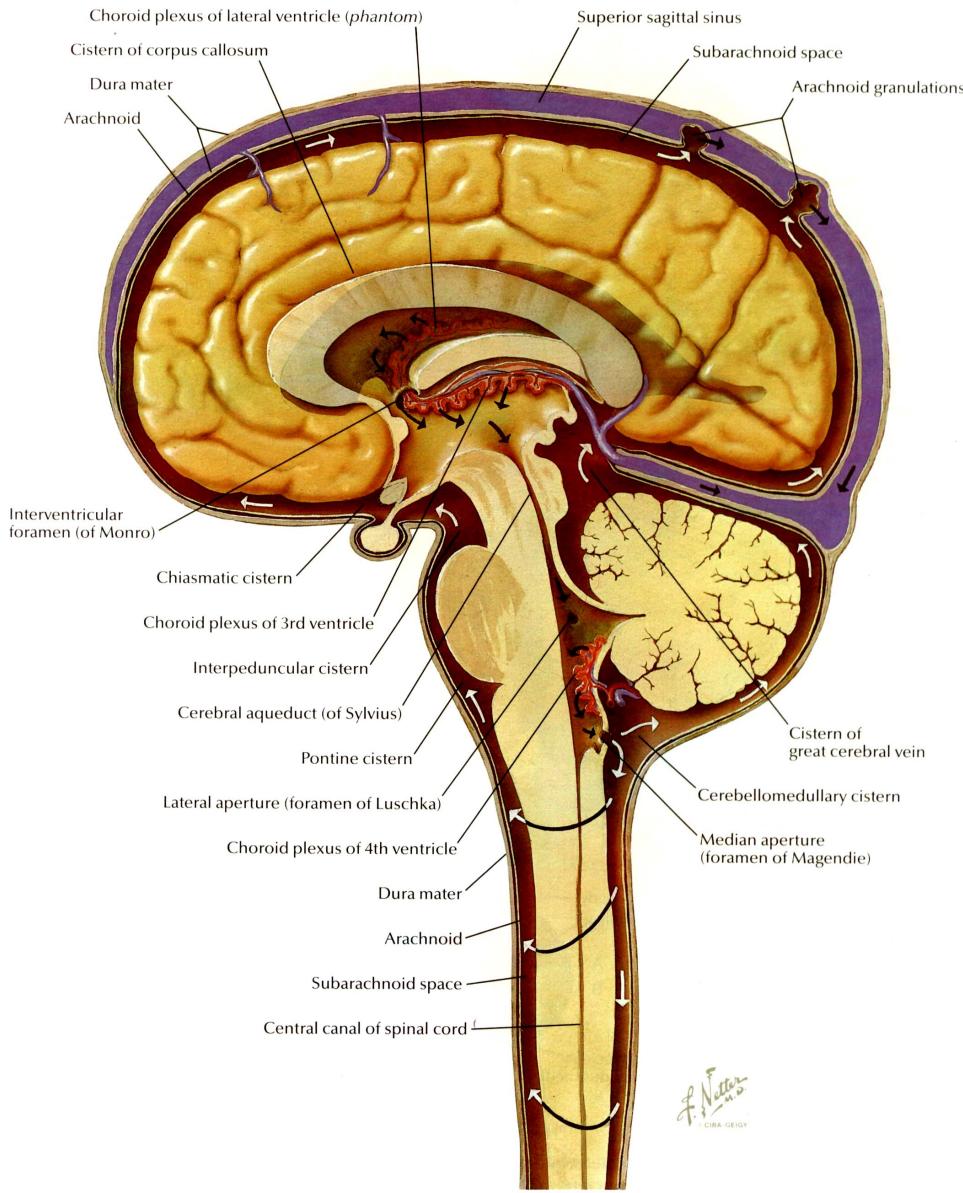
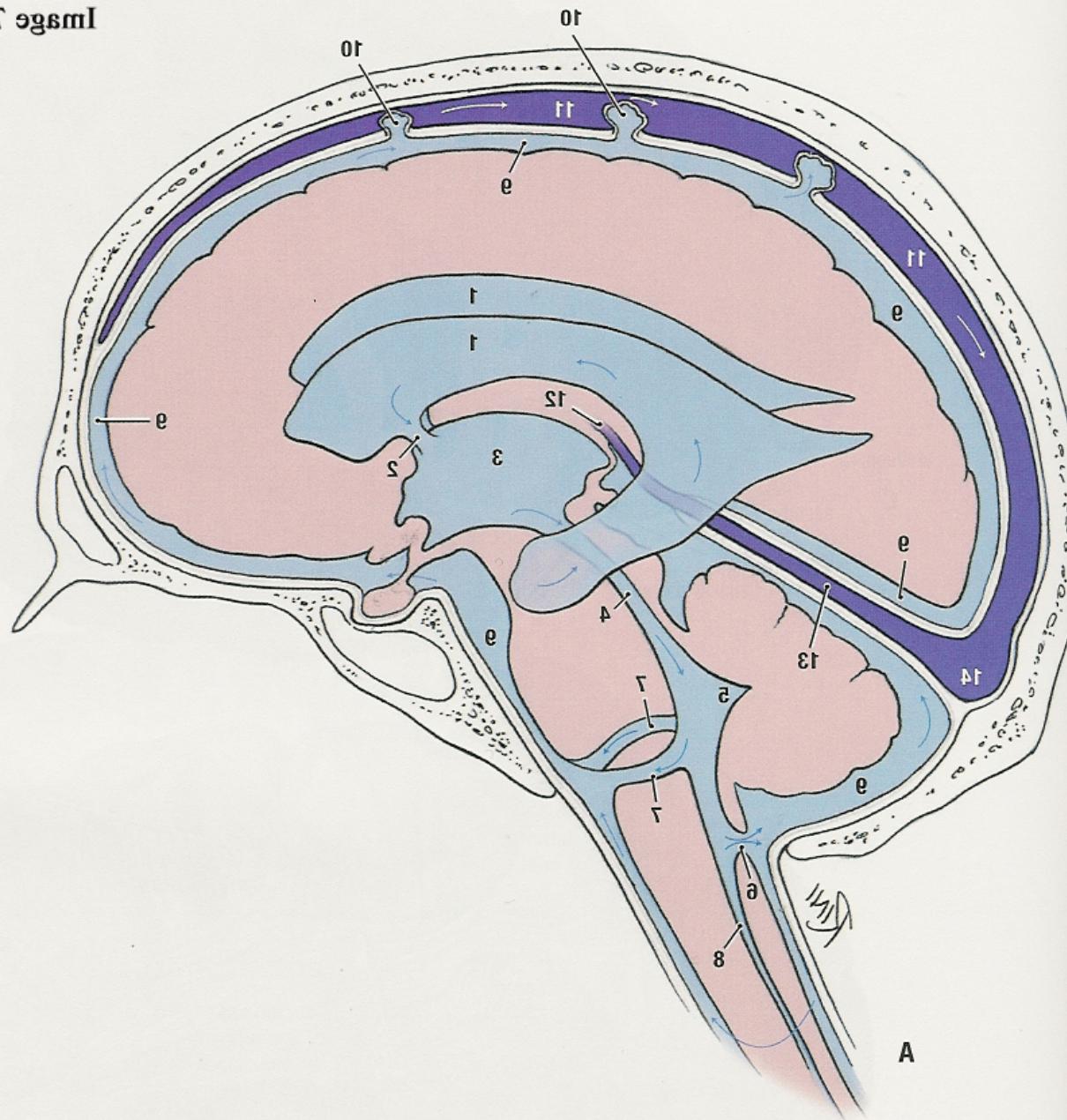


Image 7.25 - VENTRICULAR SYSTEM



The Spinal Cord

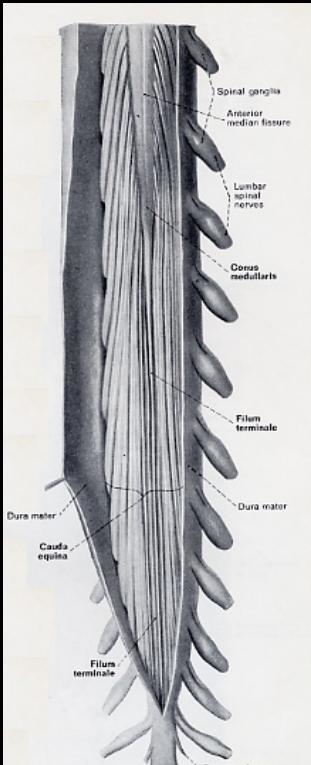


Fig. 421: The Conus Medullaris and Cauda Equina (Ventral)

NOTE: 1) the termination of the neural portion of the spinal cord at the conus medullaris but its membranous continuation as the filum terminale which consists principally of pia mater.

2) the long (approx. 8 inches) cauda equina (horse's tail) consisting of the intravertebral portions of the lower spinal nerves.

3) prolongations of the dura mater continue to cover the spinal nerves for some distance as they enter the intervertebral foramina.

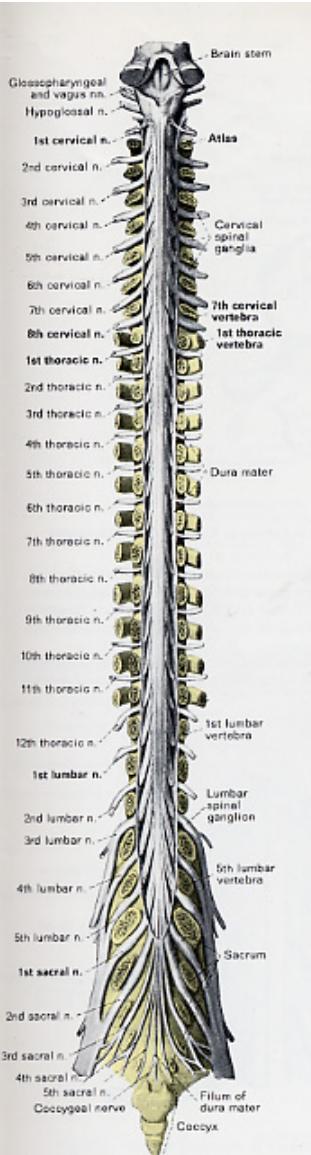


Fig. 419: The Spinal Cord within the Vertebral Canal (Dorsal View)

NOTE: 1) the 1st cervical nerve emerges above the first vertebra and the 8th cervical nerve emerges below the 7th vertebra.

2) the cervical spinal cord is continuous above with the medulla oblongata of the brain stem.

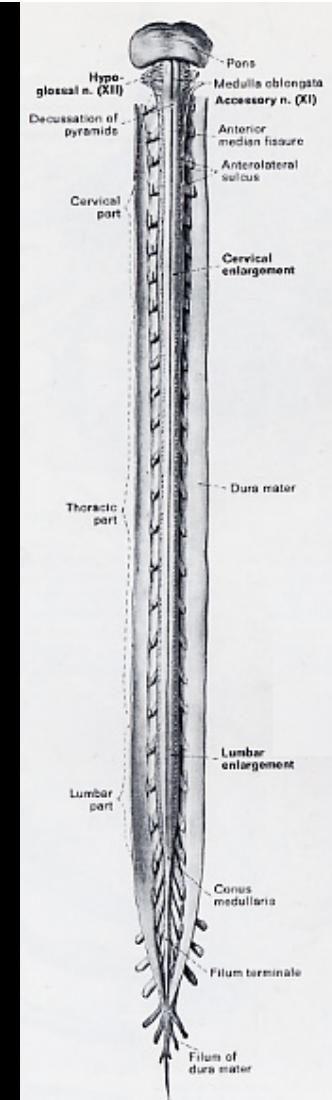


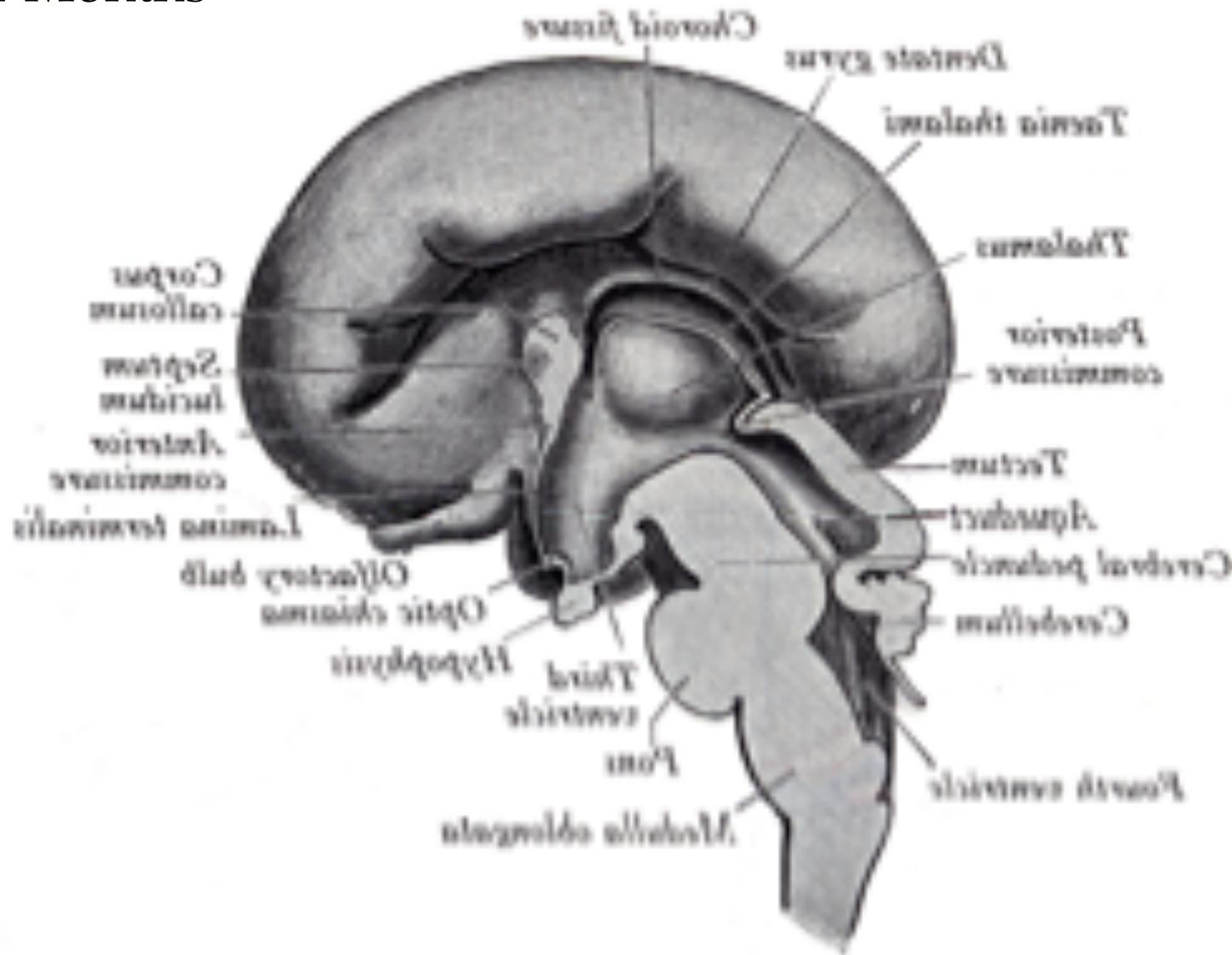
Fig. 420: The Spinal Cord (Ventral View)

NOTE: 1) the origin of the spinal portion of the accessory nerve (Cranial XI) arising from the cervical spinal cord and ascending to join the bulbular portion of that nerve.

2) the alignment of the rootlets of the hypoglossal nerve (Cranial XII) with the ventral roots of the spinal cord.

Photo: Clemente, A Regional Atlas of the Human Body Figs. 419-421

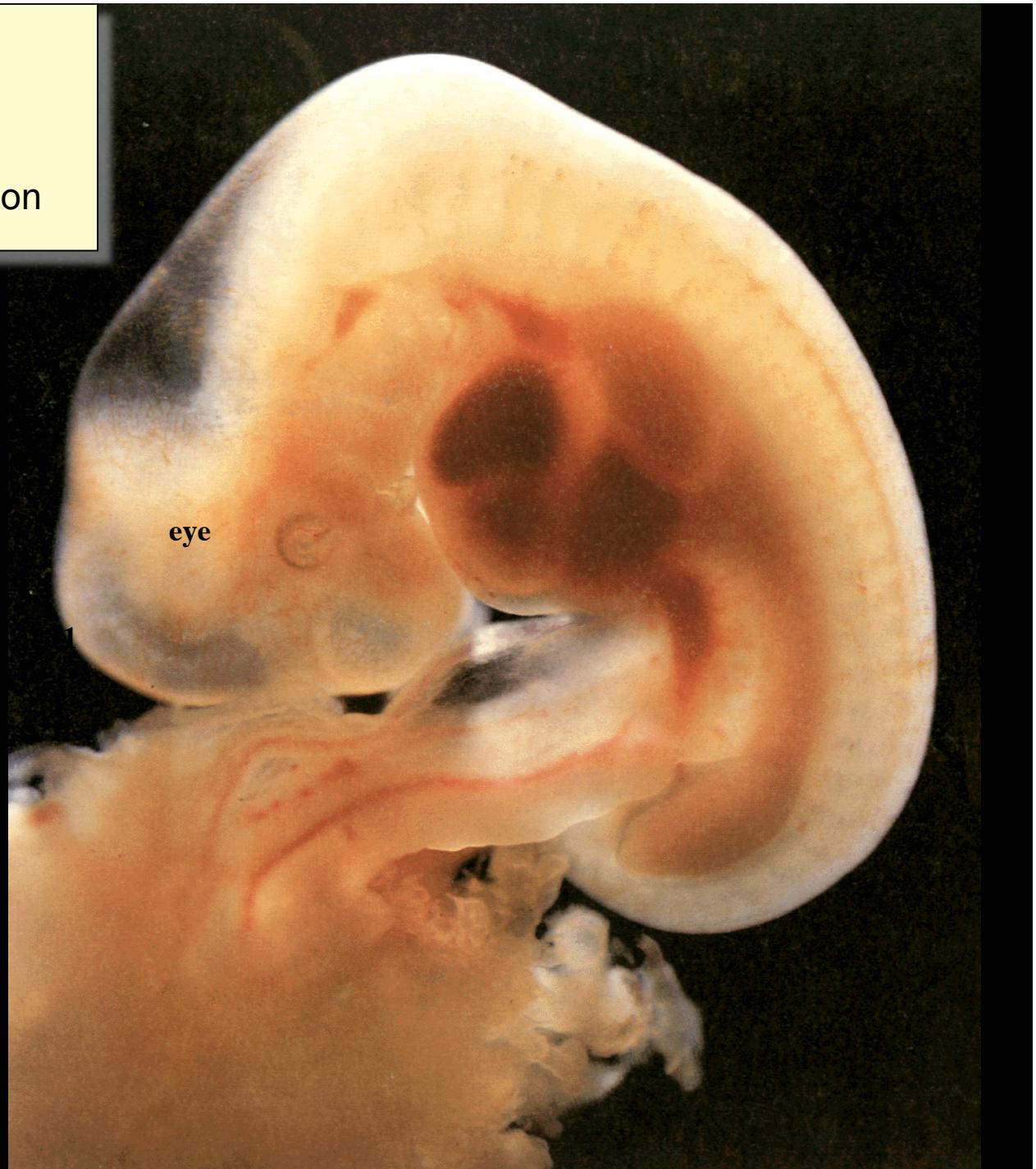
Four Months



It's been a long time since I've had a good laugh like that.

5 weeks .4" long

1. Forebrain = Prosencephalon
2. Midbrain = Mesencephalon
3. Hindbrain = Rhombencephalon



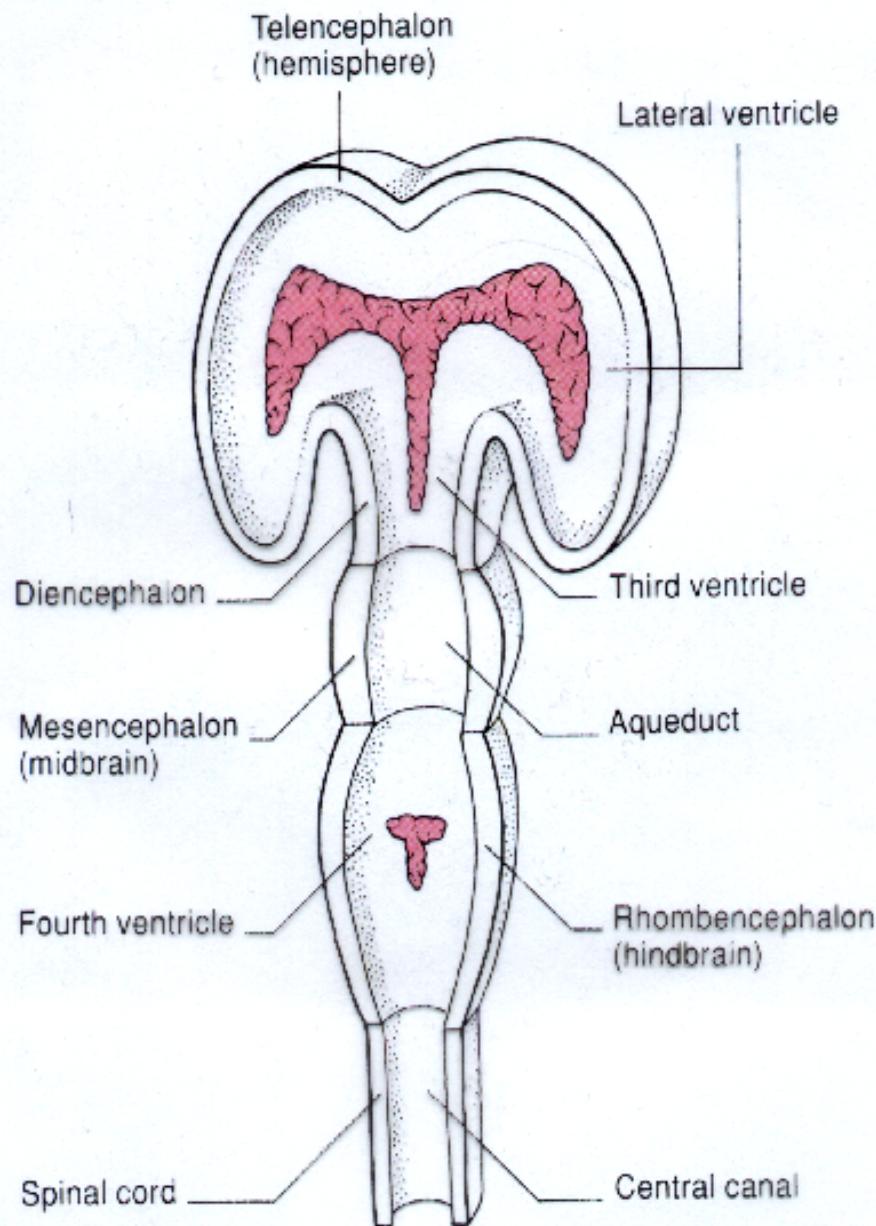
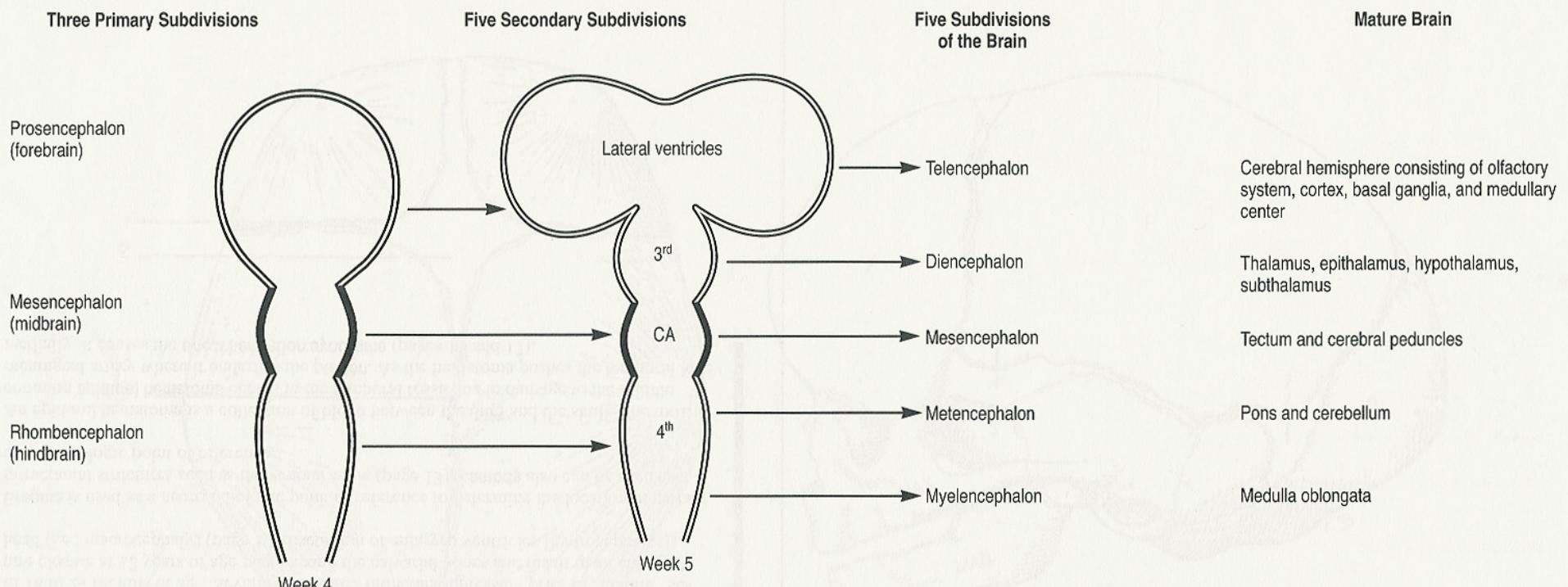


Figure 1.4 Diagram of the developing ventricular system. Choroid plexuses are shown in red.

Development of the Mature Brain from the Brain Subdivisions



McNeill, Neuroanatomy Primer, page 5