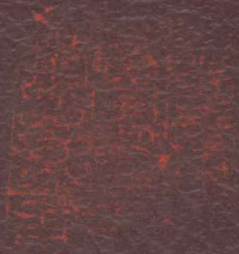
A STEREOSCOPIC ATLAS of HUMAN ANATOMY

DAVID L. BASSETT, M.D.

SECTION I
THE CENTRAL NERVOUS SYSTEM



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A STEREOSCOPIC ATLAS

of

HUMAN ANATOMY

by

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SECTION I

THE CENTRAL NERVOUS SYSTEM

REELS 29-34

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by
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CARE OF REELS

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Store in cool, dry place.
Keep Reel in its envelope when not in use.

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29-1

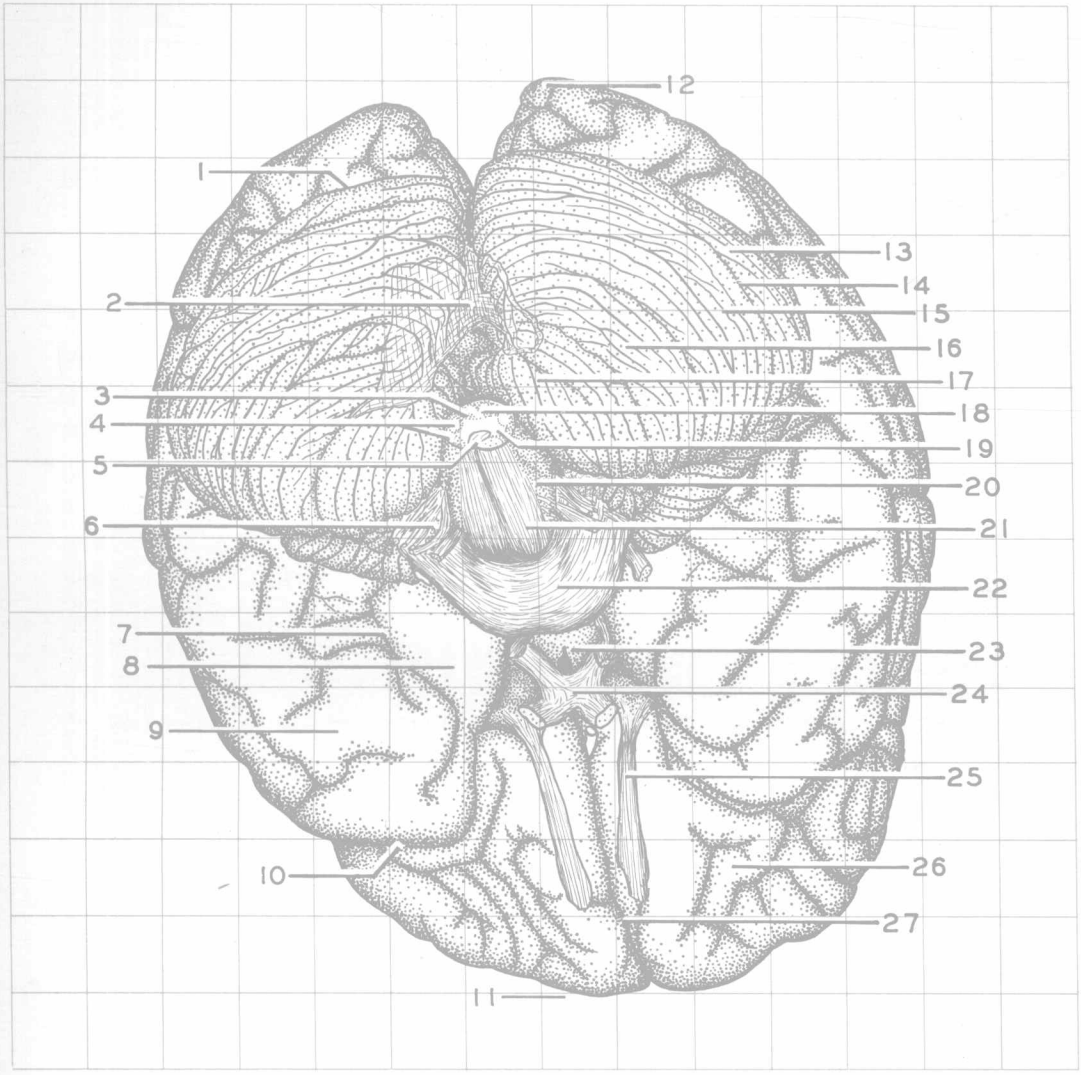
SERIAL TRANSVERSE SECTIONS OF THE BRAIN STEM

General orientation view: brain stem sectioned through decussation of pyramids

In this series of views of the brain, the brain stem has been cut transversely at successively higher levels and the cut surfaces stained with a dilute alcoholic solution of nile blue sulphate. By this means the myelin sheaths of nerve fibers become stained blue in contrast to gray matter which remains pale. (Note: connective tissue and blood vessels take on a dark color also.) In a general way the staining characteristics of the cut surface resemble those seen in sections stained by the Weigert method for microscopic study. Although detail here is diminished by the opacity of the tissue, the major features of the cut surface at each level are readily distinguished and these characteristics can be related to the gross features of the brain.

Following the first view, which shows the entire brain, succeeding views are comparatively close up. The specimen is tilted to illustrate the maximum number of brain structures and, at the same time, demonstrate the cut surface clearly. By visualizing the brain from behind and below, the cut surface appears upright, the usual manner in which it is studied in microscopic preparations.

1. Fissura transversa cerebri
2. Arachnoid membrane bounding cerebellomedullary cistern
3. Funiculus cuneatus
4. Nucleus tractus spinalis n. trigemini et funiculus lateralis
5. Decussatio pyramidum
6. Nn. glossopharyngeus (IX), vagus (X) et accessorius (XI)
7. Rhinal fissure
8. Uncus [gyri hippocampi]
9. Gyrus temporalis inferior
10. Fissura cerebri lateralis [Sylvii]
11. Polus frontalis
12. Polus occipitalis
13. Lobulus semilunaris superior (Crus I lobuli ansiformis)
14. Sulcus horizontalis cerebelli
15. Lobulus semilunaris inferior (Crus II lobuli ansiformis)
16. Lobulus biventer (paraflocculus dorsalis)
17. Tonsilla (paraflocculus ventralis)
18. Nucleus funiculi gracilis
19. Columna anterior medullae spinalis (anterior horn)
20. Oliva
21. Pyramis [medullae oblongatae]
22. Pons
23. Tuber cinereum
24. Chiasma opticum
25. Tractus olfactorius
26. Gyri orbitales
27. Fissura longitudinalis cerebri



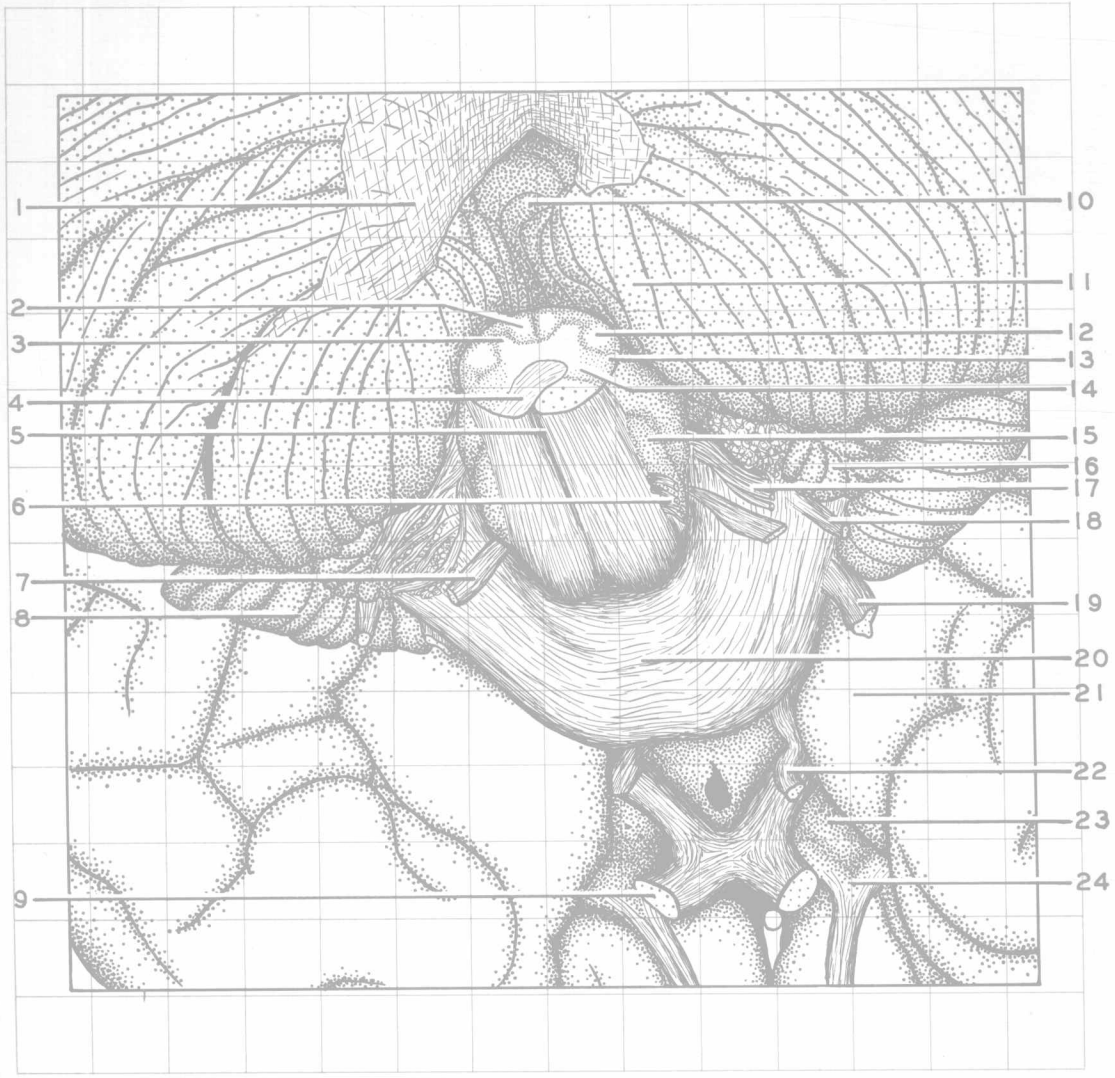
Scale—1 division=14 mm.

SERIAL TRANSVERSE SECTIONS OF THE BRAIN STEM

Medulla oblongata: decussation of pyramids, nucleus gracilis and nucleus cuneatus

This section is 3 mm. above the previous level and was cut through the upper limit of the decussation of the pyramids. At this level the funiculus gracilis is terminating rapidly in the nucleus gracilis (2). The surface eminence known as the clava overlies this area. Lateral to this the funiculus cuneatus is invaded from its anterior aspect by the nucleus cuneatus (3). The rounded nucleus of the spinal tract of the trigeminal nerve (12) is seen farther laterally. The spinal tract itself lies superficial to the nucleus. The anterior (ventral) gray columns are becoming broken up into the reticular formation of the medulla at this level. The pyramid on the right is well defined, that on the left is entering the decussation (4).

1. Arachnoidea
2. Nucleus funiculi gracilis
3. Nucleus funiculi cuneati
4. Decussatio pyramidum
5. Fissura mediana anterior
6. N. hypoglossus (XII)
7. N. facialis (VII)
8. Lobulus quadrangularis cerebelli
9. N. opticus (II)
10. Vermis
11. Tonsilla (paraflocculus ventralis)
12. Nucleus tractus spinalis n. trigemini
13. Dorsal spinocerebellar tract
14. Columna anterior (anterior gray horn)
15. Oliva
16. Flocculus
17. Nn. glossopharyngeus (IX) et vagus (X)
18. N. acusticus (VIII)
19. N. trigeminus (V)
20. Pons
21. Uncus
22. N. oculomotorius (III)
23. Substantia perforata anterior
24. Trigonum olfactorium



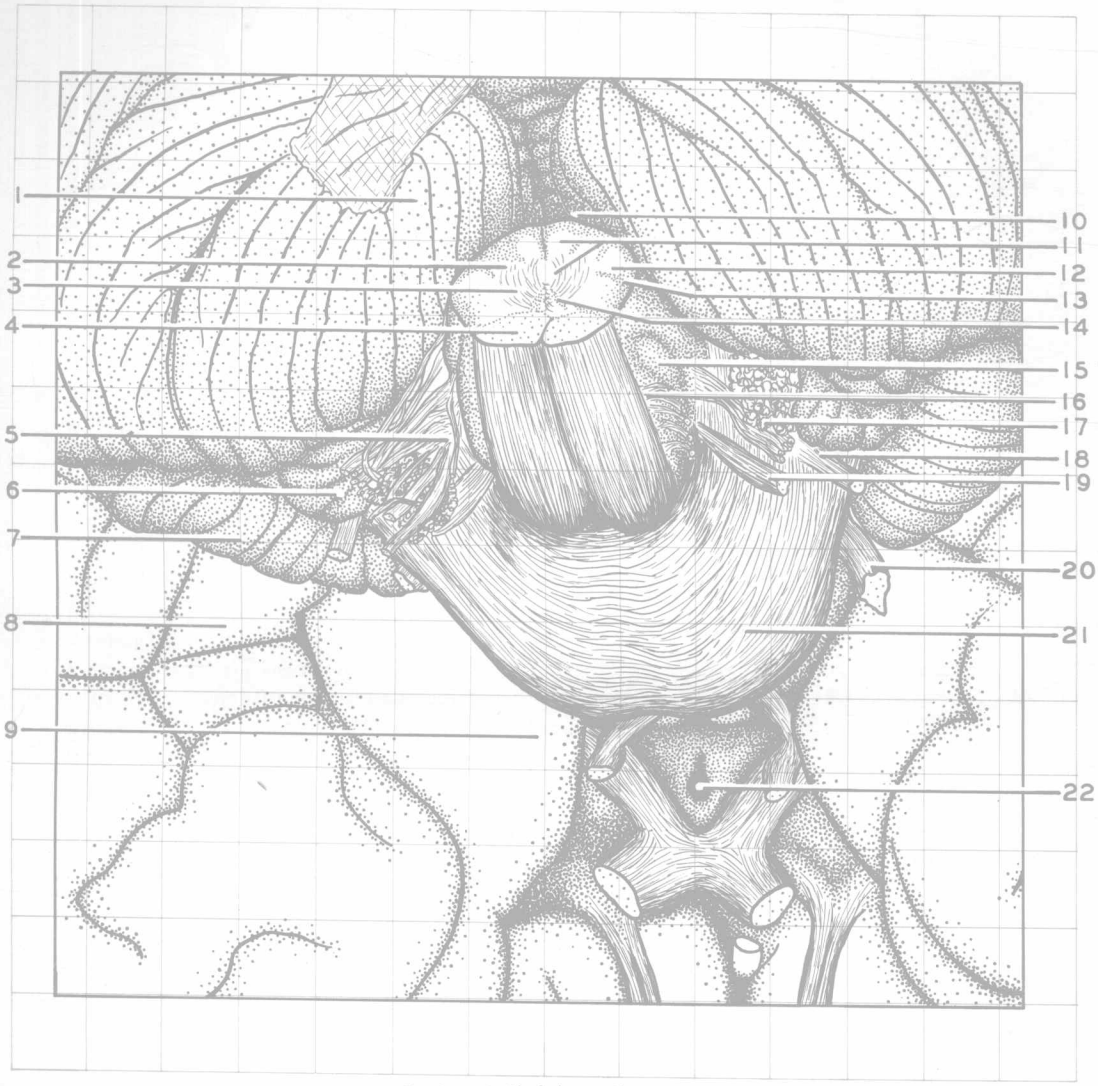
Scale—1 division=6 mm.

SERIAL TRANSVERSE SECTIONS OF THE BRAIN STEM

Medulla oblongata: decussation of medial lemniscus

The nucleus gracilis (11) and nucleus cuneatus (2) are of large size at this level, 3.5 mm. above the last section. Internal arcuate fibers from these nuclei pass through the reticular formation (3) to cross the midline and enter the opposite medial lemniscus (14). Only a faint indication of these arcuate fibers is visible in the view due to technical limitations of the method in areas of mixed fibers and cells.

1. Tonsilla (paraflocculus ventralis)
2. Nucleus funiculi cuneati
3. Fibrae arcuatae internae passing through substantia reticularis grisea
4. Pyramis [medullae oblongatae]
5. Nn. glossopharyngeus (IX) et vagus (X) (detached slightly from brain stem)
6. Flocculus
7. Lobulus quadrangularis
8. Gyrus fusiformis
9. Uncus [gyri hippocampi]
10. Vallecula cerebelli
11. Nucleus funiculi gracilis et substantia grisea centralis
12. Nucleus tractus spinalis n. trigemini
13. Dorsal spinocerebellar tract
14. Lemniscus medialis
15. Oliva
16. N. hypoglossus (XII)
17. Plexus chorioideus ventriculi quarti (protruding from lateral recess)
18. N. acusticus (VIII)
19. N. facialis (VII)
20. N. trigeminus (V)
21. Pons
22. Recessus infundibuli ventriculi tertii



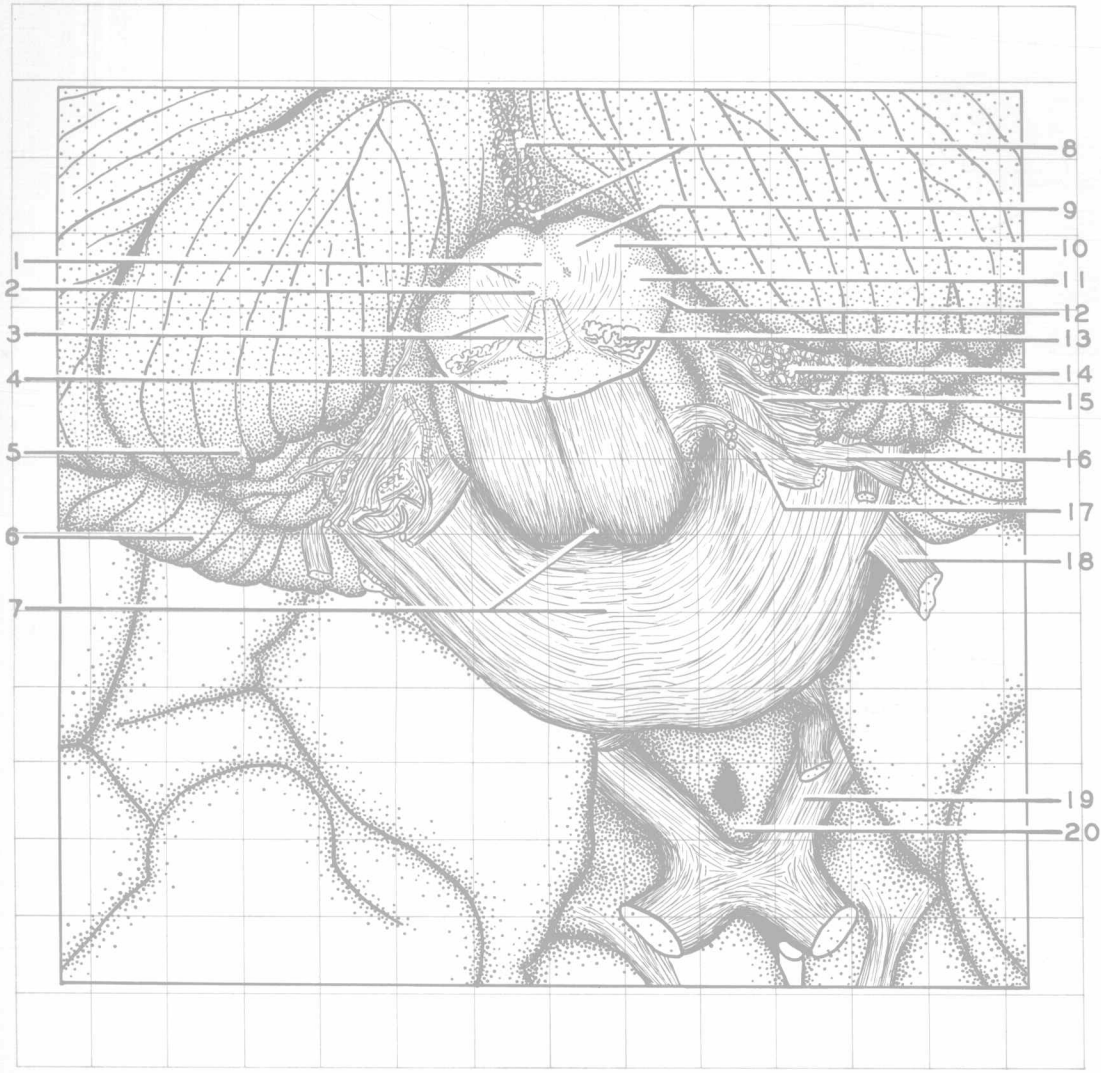
Scale—1 division=6 mm.

SERIAL TRANSVERSE SECTIONS OF THE BRAIN STEM

Medulla oblongata: inferior olive, decussation of medial lemniscus, hypoglossal nucleus and tractus solitarius

This section, 3.5 mm. above the one before, cuts through the caudal end of the inferior olivary nucleus. Numerous internal arcuate fibers from the gracile and cuneate nuclei enter into the decussation of the medial lemniscus at this level. The central gray matter (1) forms a dark area surrounding the central canal (not visible) just below its opening into the fourth ventricle. The tractus solitarius can be seen on each side as a small dark area bordering the central gray tissue.

1. Substantia grisea centralis et tractus solitarius
2. Nucleus n. hypoglossi
3. Fibrae arcuatae internae et decussatio lemniscorum
4. Pyramis [medullae oblongatae]
5. Tonsilla (paraflocculus ventralis)
6. Lobulus quadrangularis
7. Foramen caecum et pons
8. Incisura cerebelli posterior et apertura medialis ventriculi quarti [foramen Magendii]
9. Nucleus funiculi gracilis
10. Nucleus funiculi cuneati
11. Nucleus tractus spinalis n. trigemini
12. Dorsal spinocerebellar tract
13. Nucleus olivaris inferior
14. Plexus chorioideus
15. Nn. glossopharyngeus (IX) et vagus (X)
16. N. acusticus (VIII)
17. N. facialis (VII)
18. N. trigeminus (V)
19. Tractus opticus
20. Infundibulum (cut across)



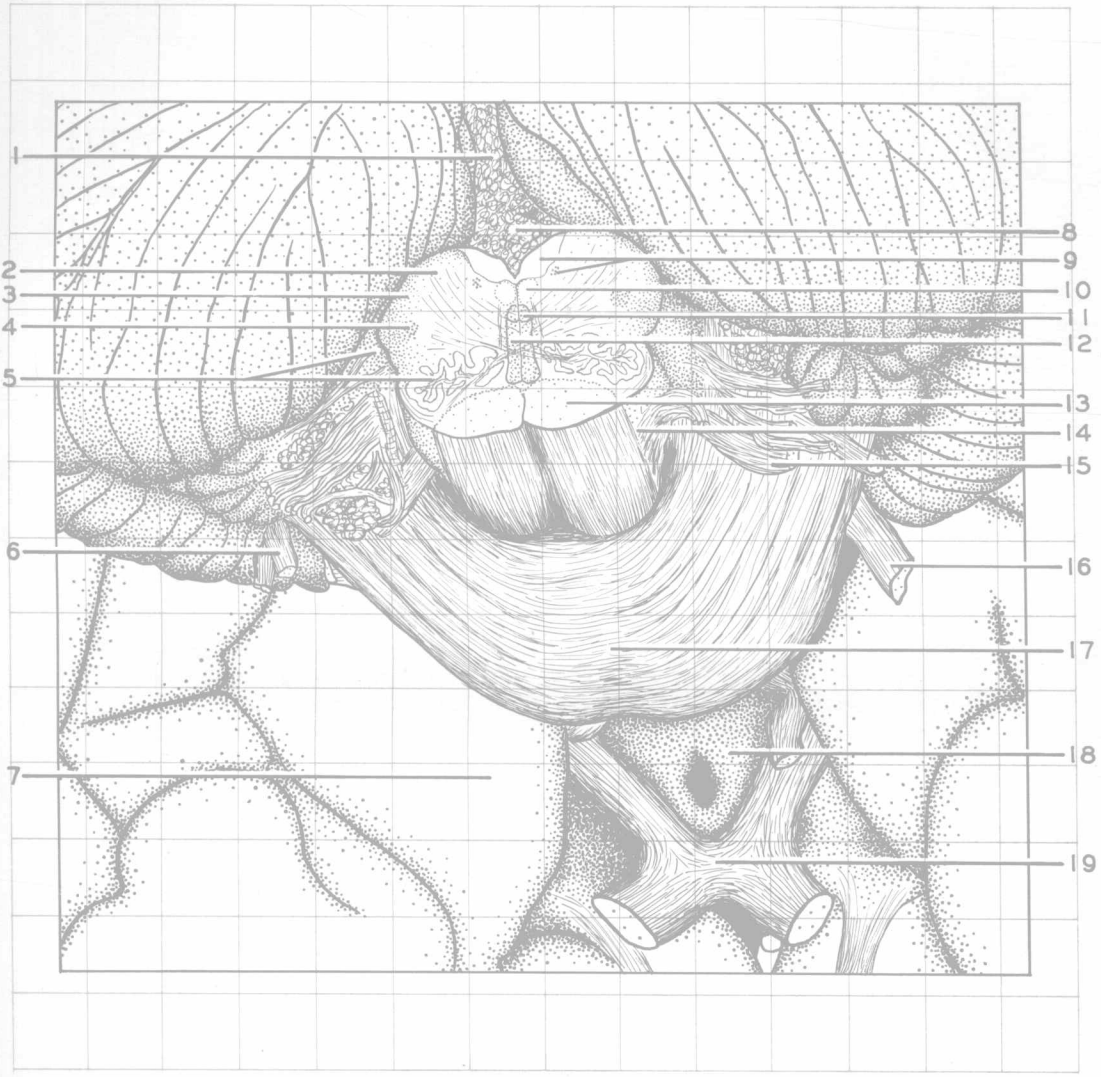
Scale—1 division=5 mm.

SERIAL TRANSVERSE SECTIONS OF THE BRAIN STEM

Medulla oblongata: inferior olivary nucleus

This section is cut through the central portion of the inferior olive 4 mm. above the previous level. Changes in appearance of the more dorsal parts of the medullary tegmentum are associated with the presence of the fourth ventricle, the organization of the restiform body and the termination of the posterior funiculi from the spinal cord. The central gray matter (9) is visible as a fairly wide dark band just beneath the floor of the ventricle. The dorsal motor nucleus of the vagus nerve lies in this area. The nucleus ambiguus is not clearly visible here but normally lies somewhat ventral and medial to the nucleus of the spinal tract of the trigeminal nerve.

1. Incisura cerebelli posterior
2. Nucleus funiculi cuneati
3. Corpus restiforme
4. Tractus spinalis n. trigemini (the nucleus of the spinal tract lies just medial to this)
5. Rootlet of vagus nerve and nucleus olivaris inferior
6. N. acusticus (VIII)
7. Uncus [gyri hippocampi]
8. Plexus chorioideus ventriculi quarti
9. Substantia grisea centralis et tractus solitarius
10. Nucleus n. hypoglossi (XII)
11. Fasciculus longitudinalis medialis (the tectospinal tract lies just beneath this bundle)
12. Lemniscus medialis
13. Pyramis [medullae oblongatae]
14. N. hypoglossus (XII)
15. N. facialis (VII)
16. N. trigeminus (V)
17. Pons
18. Tuberculum cinereum
19. Chiasma opticum



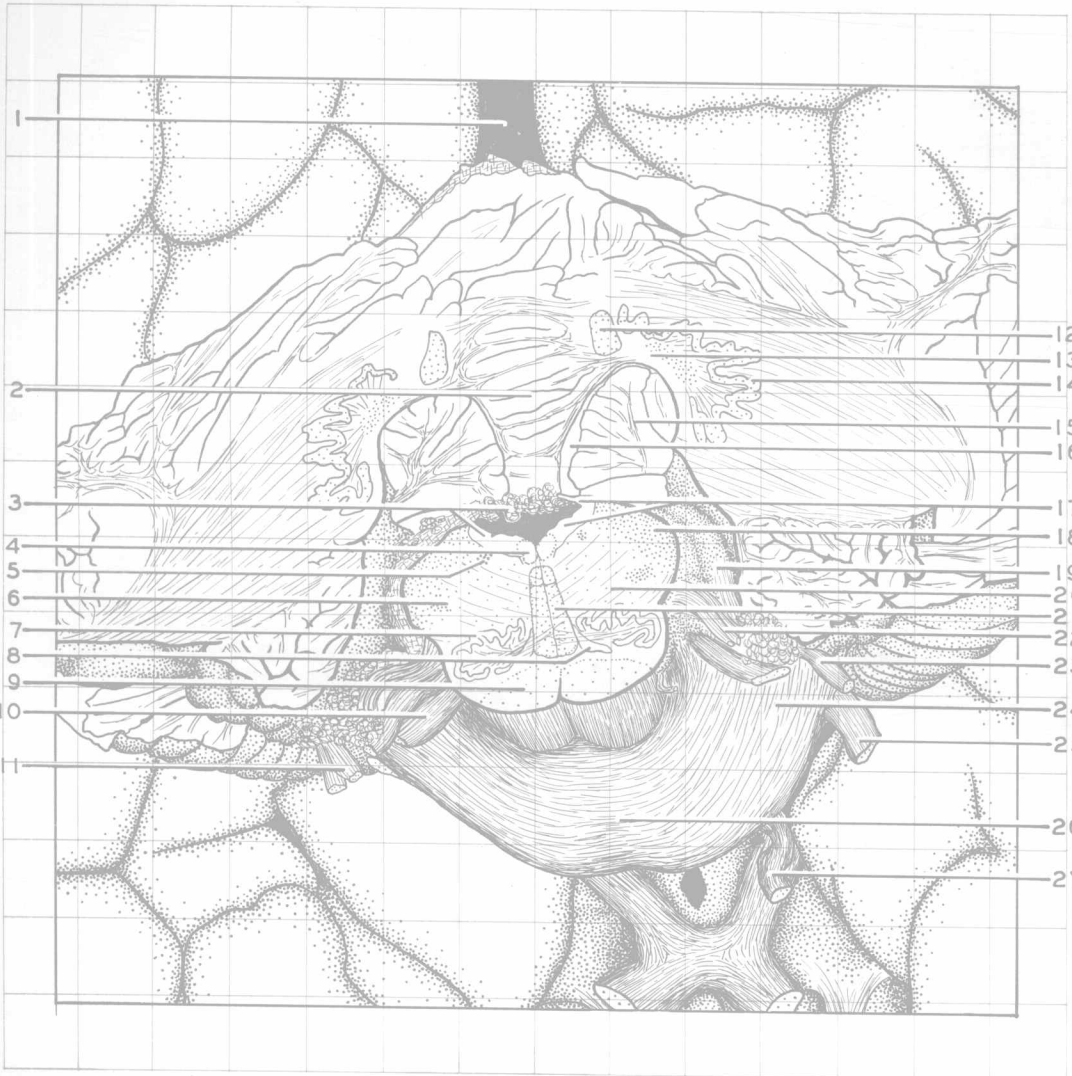
Scale—1 division=5 mm.

SERIAL TRANSVERSE SECTIONS OF THE BRAIN STEM

Medulla oblongata: inferior olivary nucleus and restiform body

The inferior olivary nucleus and medial accessory olive are prominent at this level, 4 mm. higher in the medulla. From these nuclei numerous olivocerebellar fibers pass as internal arcuate fibers to the restiform bodies which in this section are not completely organized. The hypoglossal nucleus (4) is still present, although not as clearly defined as before, and an emerging filament of the nerve is seen below the right olive.

1. Fissura longitudinalis cerebri
2. Uvula [vermis]
3. Plexus chorioideus ventriculi quarti et area acustica
4. Nucleus n. hypoglossi
5. Tractus solitarius
6. Tractus et nucleus tractus spinalis n. trigemini
7. Nucleus olivaris inferior
8. Nucleus olivaris accessorius medialis
9. Pyramis [medullae oblongatae]
10. N. facialis (VII)
11. N. acusticus (VIII)
12. Nucleus emboliformis
13. Hilus nuclei dentati
14. Nucleus dentatus
15. Tonsilla (paraflocculus ventralis)
16. Posterolateral fissure
17. Taenia ventriculi quarti et nucleus alae cinereae (dorsal motor nucleus of the vagus nerve)
18. Corpus restiforme
19. Nucleus n. cochlearis ventralis
20. Position of nucleus ambiguus
21. Lemniscus medialis
22. Nn. glossopharyngeus (IX) et vagus (X)
23. N. acusticus (VIII)
24. Brachium pontis
25. N. trigeminus (V)
26. Pons
27. N. oculomotorius (III)



Scale—1 division=6 mm.

SERIAL TRANSVERSE SECTIONS OF THE BRAIN STEM

Medulla oblongata: level of lateral recess of fourth ventricle and restiform body

A slice of tissue 3.5 mm. thick has been removed to expose this surface, cut through the rostral part of the inferior olive. The restiform bodies continue to increase in size as they ascend toward the cerebellum. The lateral recesses of the ventricle extend around the restiform bodies, and the tela chorioidea and roots of the ninth and tenth nerves lie in close relationship here. The cochlear nuclei are visible within the lateral recess on the right and on the cut surface at (18). The sulcus limitans forms a groove in the floor of the ventricle medial to the area acustica (3).

1. Uvula [vermis]
2. Tonsilla (paraflocculus ventralis)
3. Area acustica
4. Tractus solitarius
5. Corpus restiforme
6. Tractus spinalis n. trigemini
7. Lemniscus medialis and olivocerebellar fibers (the latter faintly visible in the view)
8. Nucleus olivaris inferior
9. Recessus lateralis fossae rhomboideae et plexus chorioideus
10. Pyramis [medullae oblongatae]
11. N. acusticus (VIII)
12. Nucleus emboliformis
13. Hilus nuclei dentati
14. Nucleus dentatus
15. Brachium pontis
16. Pedunculus flocculi (visible as white band in wall of ventricle)
17. Ventriculus quartus
18. Nucleus n. cochlearis dorsalis
19. Nucleus alae cinereae (dorsal motor nucleus N. X) et fasciculus longitudinalis medialis
20. Raphe
21. Flocculus
22. N. glossopharyngeus (IX)
23. N. facialis (VII)
24. Pons