zone of pro-cartilage. Laterally, the auditory capsules extend backwards but are separated from the parachordals by a gap which represents the future basicapsular fenestra.

In the splanchnocranium, the quadrate of the mandibular arch, the ceratobranchials of third branchial arch and the anterior median copula are now chondrified. Anteriorly the two Meckels' cartilages are connected with each other through a mass of intervening procartilage cells.

6. At 4.5 mm. stage, the anterior and posterior parachordals become continuous to form the basal plate of the neurocranium. Posteriorly the parachordals show a pair of developing occipital arches. The two trabeculae are fused anteriorly forming an ethmoid plate. In the splanchnocranium, the pterygoid develops as an outgrowth of the quadrate. The stylohyal and the hypohyal appear in the hyoid arch. The hypobranchials of the first and second branchial arches as well as the fourth pair of ceratobranchials are chondrified.

7. At 4.8 mm. stage, each occipital arch has fused with the corresponding auditory capsule to enclose the fissura metotica or jugular foramen for the exit of the vagus nerve. The pro-otic process of the auditory capsule and the post-palatine process of the parachordal are well marked. Behind the ethmoid plate, the trabeculae fuse together for a short length to form a beginning of the
trabecula communis. The posterior basicapsular commissure is now fully chondrified and the basicapsular fenestra is completely enclosed.

In the splanchnocranium, the fifth pair of ceratobranchials, the third pair of hypobranchials and a small posterior copula are formed. The fused third and fourth pharyngobranchials chondrify at this stage as a plate-like structure.

8. At 5 mm. stage, the lateral wall of the auditory capsule begins to develop. The basicapsular fenestra gets reduced and divided into an anterior smaller and a posterior larger fenestrae by the growth of a bridge of cartilage in between; the glosso-pharyngeal nerve passes out through the posterior basicapsular fenestra. The prootic and the post-palatine processes fuse to form the lateral commissure. The orbital cartilages chondrify in the orbito-temporal region as a pair of small independent, cartilaginous bars. The internasal septum begins to be formed in the form of a small vertical ridge from the anterior part of the ethmoid plate. In the splanchnocranium, a small median basihiyal and the epi-branchials of the first and the second branchial arches and the second pair of pharyngobranchials are also formed.

9. At 5.2 mm. stage, posteriorly, the lateral walls of the auditory capsules show the beginning of a pair of synotic processes. Each orbital cartilage is produced
mesially into an epiphysial process which arches over
the roof of the brain dorsally.

In the splanchnocranium, the epibranchials of the third
and fourth branchial arches are chondrified though the
third epibranchial is still procartilaginous.

10. At 6.3 mm. stage, the epiphysial processes of the orbital
cartilages fuse to form the epiphysial cartilage. Fur-
ther back the orbital bars fuse with the corresponding
auditory capsules.

In the splanchnocranium, the third pair of epibran-
chials are chondrified.

11. At 6.2 mm. stage, the synotic processes fuse over the
brain to form a tectum synoticum. Anteriorly, the
spenoseptal processes of the orbital cartilages fuse
with one another to form the sphenoseptal commissure
which fuses with the hinder region of the internasal
septum forming the posterior border of the olfactory
foramen. A small cartilaginous inter-orbital septum
appears in the posterior region of the otherwise
membranous interorbital septum as an upgrowth from
the hindermost portion of the trabecula communis,
immediately before it bifurcates into the trabec-
culae cranii. The ethmoid plate is produced into a
pair of processes called the lamina orbitonasales.

In the splanchnocranium, the pterygoid portion of the
upper jaw articulates with the ethmoid plate by an ethmopalatine articulation. The anterior and posterior 
copulae are in contact with each other.

12. At 6.7 mm. stage, the chondrocranium shows the first 
indication of a break between the trabeculae cranii 
and corresponding parachordals. A prootic bridge 
connects the two parachordals. The posterior myodome 
is well marked with its anterior intra-cranial and 
middle intramural sections. The hinder ends of the 
parachordals develop short epichordal processes which 
curve over the notochord. The sphenethmoid commissure 
of the orbital cartilage now fuses with the correspond-
ing lamina orbitonasalis forming a lateral wall to the 
hinder region of the nasal fossa. A small independent 
rostral cartilage appears in the median line immediately 
in front of the ethmoid plate.

In the splanchnocranium, the first pair of pharyngo-
branchials are chondrified. The third and fourth fused 
pharyngobranchials and the fifth pair of ceratobra-
anchials show the beginning of ossification.

13. At 10 mm. stage, the epichordal commissure is completed 
by the fusion of the epichordal processes over the noto-
chord. The posterior myodome shows all the three 
sections i.e., the anterior intra-cranial, the middle 
intramural and the posterior sub-cranial sections. Due 
to the ossification of the otic bones (the prootic bone
in the floor of the anterior region of the auditory capsule, the sphenotic anteriorly and pterotic posteriorly in the lateral wall and the epiotic in the dorso-posterior region of the auditory capsule) apparent vacuities are created in the respective regions of the auditory capsules due to the absorption of the underlying cartilages bordered by the ossifying lamellae of these developing bones. The ossification of the ex-occipital bone has also started and it extends forwards to the area surrounding the Fissura metotica with the result that a large irregular vacuity is seen which is confluent with the Fissura metotica due to the absorption of the cartilage. The trabecula cranii are completely absorbed and the posterior region of the trabecula communis has also been absorbed, so that the cartilaginous part of the interorbital septum is now seen as an isolated piece of cartilage. The epiphysial cartilage is produced backwards into a well developed, conical taenia tecti medialis.

In the splanchnocranium, progress of the ossification is seen in the pterygoid section of the upper jaw, the hyomandibular cartilage and also in the middle of the fourth pair of ceratobranchials.

14. At the 15.4 mm. stage, the anterior parachordal processes are completely absorbed. In the ethmoid region the cavum orbitonasales are very conspicuous and anteriorly present the appearance of a pair of tunnel-like
passages hollowed out in the thickness of the massive internasal septum. The anterior myodomes are absent. A pair of small independent cartilage bones appear laterally to the anterior region of the ethmoid plate which seem to correspond to the pre-ethmoid bone reported in *Esox* (Swinerton, 1902). The trabecula communis now appears as a small triangular structure projecting with the apex directed backwards from the ethmoid plate. The anterior portion of the orbital cartilage between the epiphysial bar and the ethmoid region becomes very slender due to the absorption of the cartilage all round, while the posterior portion continues to increase in thickness. The rostral cartilage has increased in size and shows signs of ossification in its hinder region.

The upper jaw shows only an ethmopalatine articulation and the rostropalatine articulation is absent. All the ceratobranchials now show ossification over their middle portion.

15. The olfactory nerve passes forwards through the cavum orbitonasale and enters the *nasal* organ through the foramen olfactorium advehens.

16. The ramii ophthalmicus of the trigeminal and facial nerves run forwards external to the orbital cartilage and the sphenoseptal commissure and passing over the olfactory organ, run to the snout by the side of the rostral cartilage.
17. A separate palatine foramen is absent and the ramus palatinus of the facial nerve passes out through the anterior aperture of the trigemino-facialis chamber along with the external rectus muscle and runs below the lateral commissure to innervate the palate.

18. The glossopharyngeal and the vagus nerves pass out of the cranium through separate foramina, the former through the reduced but persistent posterior basicapsular fenestra and the latter through the fissura metotica (jugular foramen).

19. The lateral aorta receives the first and second efferent branchial arteries separately and the common trunk of the third and fourth efferent branchial arteries.

20. The orbitonasal artery passes forwards through the cavum orbitonasale and the foramen olfactorium advehens along with the olfactory nerve into the nasalement fossa.

21. The blood to the pseudobranch is supplied by a common afferent pseudobranchial artery which is formed by the union of the primary afferent pseudobranchial artery and the secondary afferent pseudobranchial artery. The latter is formed from the orbital artery which curves down through the anterior opening of the trigemino-facialis chamber to join the primary afferent pseudobranchial artery.

22. The efferent pseudobranchial artery at no stage communi-
cates with the internal carotid artery; but becomes directly continuous with the opthalmica magna artery of its side, after forming a cross connection with the fellow of the opposite side.

23. In the earlier stage, the two internal carotid arteries run forward close to each other; but they are separate. In later stages however (15.4 mm. in length) in the region of the hypophysial fenestra, the two internal carotids fuse with each other to complete the circulus cephalicus and common trunk so formed, after a short distance, again separates out into the two carotid arteries.

24. The vena capitis medialis is absent even at the earliest 4 mm. stage. The secondary vein forms the head vein which lies median to both the glossopharyngeal and vagus nerves.

25. The vena capitis lateralis is absent and there is no trace of venous loops from the head vein round any of the branches of the vagus nerve.

26. The orbitonasal vein is formed in the ethmoid region and pass backwards through the foramen olfactorium advehens and the cavum orbitonasale to enter the superior orbital sinus.

27. The two pituitary veins which enter the inferior orbital sinus are formed as a result of bifurcation of a median common pituitary vein situated in the dorsal compartment of the posterior myodome.