II Typical Structure of the Chondrocranium.

The Chondrocranium constitutes 'Neurocranium' (Brain case) and 'Splanchnocranium' (Visceral arches).

Neurocranium is a trough like structure formed of a floor, sides and a roof. The floor consists of a basal plate formed of paired trabeculae infront and paired parachordals behind. The parachordals lie on either side of notochord which extends forwards upto infundibulum. Between the anterior ends of the parachordals there is present an unchondrified region of the basal plate or basicranial fenestra in all groups of vertebrates except Dipnoi, Anura, and Crocodilia. A transverse bar of cartilage the acrochordal, or the prootic bridge forms the anterior boundary of the basicranial fenestra. From the posterior ends of the parachordals arise aortic arches which enclose fenestra metotica and join the occipital arches above. The glossopharyngeal and vagus nerves and the internal jugular vein pass through this fenestra metotica. The trabeculae enclose a space the hypophysial fenestra through which the internal carotids enter the brain case. The skull is said to be platybasic (or plathytrabic) if the trabeculae are wide apart as in frog. If on the other hand the trabeculae are close together as in trout, the skull is said to be tropobasic (or tropitrabic). Tropitrabic skulls are commonly associated with the formation of an interorbital septum and
whenever there is a median nasal septum it appears to be a
direct prolongation of the trabecular plate or trabeculæ
communis. Anteriorly the trabeculae meet to form an ethmoid
plate which forms the nasal capsules. The nasal capsules are
formed of (i) a lamina orbitonasalis contributing the side
and hind walls (ii) copula anterior forming the front wall
and (iii) a medial wall which may be lateral to and distinct
from the median rostrum (anterior prolongation of the trabec-
cular plate). In those forms where true medial wall of the
capsule disappears it is replaced by the rostrum forming the
nasal septum, or it may leave a vestage in paraseptal carti-
lage forming a capsule in which Jacobson's organ is lodged.
The roof joins the medial wall with the orbitonasalis. Lamina-
orbitonasalis is attached to the preoptic root of the orbital
cartilage to form an orbitonasal foramen. The sides of the
neurocranium are formed by the auditory capsules behind and
the orbital cartilages and three pillars in front. These pillars
are (i) Preoptic root, (ii) Pila metoptica, and (iii) Pila
antotica. The auditory capsules lie on either side of the
parachordals and are attached with the latter by basicapsular
commissures. The structure of the auditory capsule becomes
modified according to the shape of the auditory vesicle.
Its cavity is partitioned into various chambers by septa.
A constant feature is the crista parotica forming a ledge
on the lateral surface of the auditory capsule. Against it
abuts the head of the hyomandibula, hyosymplectic or latero-
hyal, and the otic process of the pterygoquadrate. The roof of the neurocranium is composed of the following cartilages which are by no means always present:

(i) a tectum synoticum, connecting the auditory capsules,
(ii) a tectum posterior, connecting the occipital arches,
(iii) an epiphyseal cartilage, connecting the orbital cartilages half-way along their length,
(iv) a paraphysial cartilage connecting the orbital cartilages anteriorly,
(v) a tectum transversum, connecting the orbital cartilages posteriorly, where they or the taeniae marginales join the auditory capsules or parietal plates,
(vi) a sagittal taenia tecti medialis, which may connect two or more of the above mentioned transverse cartilages or which may be reduced to a process projecting backwards or forwards from one or other of them.

The splanchnocranium consists of the mandibular arch (the pterygoquadrate of the upper jaw, Meckels' cartilage of the lower jaw), the hyoid arch (the hyomandibula and ceratohyal), and the cartilages of the branchial arches. The pterygoquadrate cartilage possesses one or more processes with which it comes in contact with the neurocranium.

There are three types of jaw suspension. In the amphistylic type the otic process of the upper jaw as well as the hyomandibula connect the upper jaw with the neurocranium.
This is found in *Hexanchus* and in *Cladoselache*. In the hyostylic type, as found in *Scyllium* the upper jaw is suspended by the hyomandibula and ligaments. While in Autostylic type the upper jaw is suspended with the neurocranium by its own processes. This type is found in *Ceratodus* and higher vertebrates.