

cancellous tissue is called the **diploë**, and this, in certain regions of the skull, becomes absorbed so as to leave spaces filled with air (*air-sinuses*) between the two tables. The flat bones are: the **occipital, parietal, frontal, nasal, lacrimal, vomer, scapula, os coxæ** (*hip bone*), **sternum, ribs**, and, according to some, the **patella**.

Irregular Bones.—The irregular bones are such as, from their peculiar form, cannot be grouped under the preceding heads. They consist of cancellous tissue enclosed within a thin layer of compact bone. The irregular bones are: the **vertebræ, sacrum, coccyx, temporal, sphenoid, ethmoid, zygomatic, maxilla, mandible, palatine, inferior nasal concha, and hyoid**.

Surfaces of Bones.—If the surface of a bone be examined, certain eminences and depressions are seen. These eminences and depressions are of two kinds: articular and non-articular. Well-marked examples of **articular eminences** are found in the heads of the humerus and femur; and of **articular depressions** in the glenoid cavity of the scapula, and the acetabulum of the hip bone. **Non-articular eminences** are designated according to their form. Thus, a broad, rough, uneven elevation is called a **tuberosity, protuberance, or process**, a small, rough prominence, a **tubercle**; a sharp, slender pointed eminence, a **spine**; a narrow, rough elevation, running some way along the surface, a **ridge, crest, or line**. *Non-articular depressions* are also of variable form, and are described as **fossæ, pits, depressions, grooves, furrows, fissures, notches**, etc. These non-articular eminences and depressions serve to increase the extent of surface for the attachment of ligaments and muscles, and are usually well-marked in proportion to the muscularity of the subject. A short perforation is called a **foramen**, a longer passage a **canal**.

DEVELOPMENT OF THE SKELETON.

The Skeleton.—The skeleton is of mesodermal origin, and may be divided into (*a*) that of the trunk (**axial skeleton**), comprising the vertebral column, skull, ribs, and sternum, and (*b*) that of the limbs (**appendicular skeleton**).

The Vertebral Column.—The notochord (Fig. 19) is a temporary structure and forms a central axis, around which the segments of the vertebral column are developed.¹ It is derived from the entoderm, and consists of a rod of cells, which lies on the ventral aspect of the neural tube and reaches from the anterior end of the mid-brain to the extremity of the tail. On either side of it is a column of paraxial mesoderm which becomes subdivided into a number of more or less cubical segments, the **primitive segments** (Figs. 19 and 20). These are separated from one another by **intersegmental septa** and are arranged symmetrically on either side of the neural tube and notochord: to every segment a spinal nerve is distributed. At first each segment contains a central cavity, the **myocœl**, but this is soon filled with a core of angular and spindle-shaped cells. The cells of the segment become differentiated into three groups, which form respectively the cutis-plate or dermatome, the muscle-plate or myotome, and the sclerotome (Fig. 64). The **cutis-plate** is placed on the lateral and dorsal aspect of the myocœl, and from it the true skin of the corresponding segment is derived; the **muscle-plate** is situated on the medial side of the cutis-plate and furnishes the muscles of the segment. The cells of the **sclerotome** are largely derived from those forming the core of the myocœl, and lie next the notochord. Fusion of the individual sclerotomes in an antero-posterior direction soon takes place, and thus a continuous strand of cells, the **sclerotogenous layer**, is formed along the ventro-lateral aspects of the neural tube. The cells of this layer proliferate rapidly, and extending medialward surround the notochord; at the same time they grow backward on the lateral aspects of the neural tube and eventually surround it, and thus the notochord and neural tube are enveloped

¹ In the amphioxus the notochord persists and forms the only representative of a skeleton in that animal.