

upper orifice of the incisive canal. The *lateral border* of the process is incorporated with the rest of the bone. The *medial border* is thicker in front than behind, and is raised above into a ridge, the **nasal crest**, which, with the corresponding ridge of the opposite bone, forms a groove for the reception of the vomer. The front part of this ridge rises to a considerable height, and is named the **incisor crest**; it is prolonged forward into a sharp process, which forms, together with a similar process of the opposite bone, the **anterior nasal spine**. The *posterior border* is serrated for articulation with the horizontal part of the palatine bone.

**Ossification.**—The maxilla is ossified in membrane. Mall<sup>1</sup> and Fawcett<sup>2</sup> maintain that it is ossified from *two* centers only, one for the maxilla proper and one for the premaxilla. These centers appear during the sixth week of fetal life and unite in the beginning of the third month, but the suture between the two portions persists on the palate until nearly middle life. Mall states that the frontal process is developed from both centers. The maxillary sinus appears as a shallow groove on the nasal surface of the bone about the fourth month of fetal life, but does not reach its full size until after the second dentition. The maxilla was formerly described as ossifying from six centers, viz., one, the *orbitonasal*, forms that portion of the body of the bone which lies medial to the infraorbital canal, including the medial part of the floor of the orbit and the lateral wall of the nasal cavity; a second, the *zygomatic*, gives origin to the portion which lies lateral to the infraorbital canal, including the zygomatic process; from a third, the *palatine*, is developed the palatine process posterior to the incisive canal together with the adjoining part of the nasal wall; a fourth, the *premaxillary*, forms the incisive bone which carries the incisor



FIG. 161.—Anterior surface of maxilla at birth.



FIG. 162.—Inferior surface of maxilla at birth.

teeth and corresponds to the premaxilla of the lower vertebrates;<sup>3</sup> a fifth, the *nasal*, gives rise to the frontal process and the portion above the canine tooth; and a sixth, the *infravomerine*, lies between the palatine and premaxillary centers and beneath the vomer; this center, together with the corresponding center of the opposite bone, separates the incisive canals from each other.

**Articulations.**—The maxilla articulates with *nine* bones: two of the cranium, the frontal and ethmoid, and seven of the face, viz., the nasal, zygomatic, lacrimal, inferior nasal concha, palatine, vomer, and its fellow of the opposite side. Sometimes it articulates with the orbital surface, and sometimes with the lateral pterygoid plate of the sphenoid.

#### CHANGES PRODUCED IN THE MAXILLA BY AGE.

At birth the transverse and antero-posterior diameters of the bone are each greater than the vertical. The frontal process is well-marked and the body of the bone consists of little more than the alveolar process, the teeth sockets reaching almost to the floor of the orbit. The maxillary sinus presents the appearance of a furrow on the lateral wall of the nose. In the adult the vertical diameter is the greatest, owing to the development of the alveolar process and the increase in size of the sinus. In old age the bone reverts in some measure to the infantile condition; its height is diminished, and after the loss of the teeth the alveolar process is absorbed, and the lower part of the bone contracted and reduced in thickness.

#### The Lacrimal Bone (Os Lacrimale).

The **lacrimal bone**, the smallest and most fragile bone of the face, is situated at the front part of the medial wall of the orbit (Fig. 164). It has two surfaces and four borders.

<sup>1</sup> American Journal of Anatomy, 1906, vol. v.

<sup>2</sup> Journal of Anatomy and Physiology, 1911, vol. xlv.

<sup>3</sup> Some anatomists believe that the premaxillary bone is ossified by two centers (see page 299).