

The degree of projection of the jaws is determined by the *gnathic* or *alveolar index*, which represents the proportion between the basialveolar and basinasal lengths, thus:

$$\frac{\text{basialveolar length} \times 100}{\text{basinasal length}}$$

The following table, modified from that given by Duckworth,¹ illustrates how these different indices may be utilized in the classification of skulls:

Index.	Classification.	Nomenclature.	Examples.
1. Cephalic	Below 75 Between 75 and 80 Above 80	Dolichocephalic Mesaticephalic Brachycephalic	Kaffirs and Native Australians. Europeans and Chinese. Mongolians and Andamans.
2. Orbital	Below 84 Between 84 and 89 Above 89	Microseme Mesoseme Megaseme	Tasmanians and Native Australians. Europeans. Chinese and Polynesians.
3. Nasal	Below 48 Between 48 and 53 Above 53	Leptorhine Mesorhine Platyrrhine	Europeans. Japanese and Chinese. Negroes and Native Australians.
4. Gnathic	Below 98 Between 98 and 103 Above 103	Orthognathous Mesognathous Pregnathous	Europeans. Chinese and Japanese. Native Australians.

The chief function of the skull is to protect the brain, and therefore those portions of the skull which are most exposed to external violence are thicker than those which are shielded from injury by overlying muscles. Thus, the skull-cap is thick and dense, whereas the temporal squamæ, being protected by the temporales muscles, and the inferior occipital fossæ, being shielded by the muscles at the back of the neck, are thin and fragile. Fracture of the skull is further prevented by its elasticity, its rounded shape, and its construction of a number of secondary elastic arches, each made up of a single bone. The manner in which vibrations are transmitted through the bones of the skull is also of importance as regards its protective mechanism, at all events as far as the base is concerned. In the vault, the bones being of a fairly equal thickness and density, vibrations are transmitted in a uniform manner in all directions, but in the base, owing to the varying thickness and density of the bones, this is not so; and therefore in this situation there are special buttresses which serve to carry the vibrations in certain definite directions. At the front of the skull, on either side, is the ridge which separates the anterior from the middle fossa of the base; and behind, the ridge or buttress which separates the middle from the posterior fossa; and if any violence is applied to the vault, the vibrations would be carried along these buttresses to the sella turcica, where they meet. This part has been termed the "center of resistance," and here there is a special protective mechanism to guard the brain. The subarachnoid cavity at the base of the brain is dilated, and the cerebrospinal fluid which fills it acts as a water cushion to shield the brain from injury. In like manner, when violence is applied to the base of the skull, as in falls upon the feet, the vibrations are carried backward through the occipital crest, and forward through the basilar part of the occipital and body of the sphenoid to the vault of the skull.

In connection with the bones of the face a common malformation is *cleft palate*. The cleft usually starts posteriorly, and its most elementary form is a bifid uvula; or the cleft may extend through the soft palate; or the posterior part of the whole of the hard palate may be involved, the cleft extending as far forward as the incisive foramen. In the severest forms, the cleft extends through the alveolus and passes between the incisive or premaxillary bone and the rest of the maxilla; that is to say, between the lateral incisor and canine teeth. In some instances, the cleft runs between the central and lateral incisor teeth; and this has induced some anatomists to believe that the premaxillary bone is developed from two centers (Fig. 199) and not from one, as was stated on p. 163. The medial segment, bearing a central incisor, is called an *endognathion*; the lateral segment, bearing the lateral incisor, is called a *mesognathion*. The cleft may affect one or both sides; if the latter, the central part is frequently displaced forward and remains united to the septum of the nose, the deficiency in the alveolus being complicated with a cleft

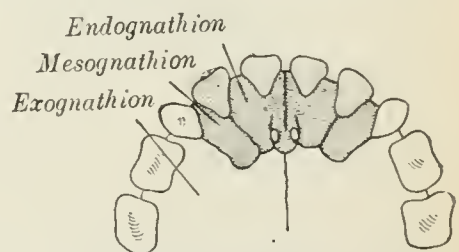


FIG. 199.—The premaxilla and its sutures. (After Albrecht.)

¹ Morphology and Anthropology, by W. L. H. Duckworth, M.A., Cambridge University Press.