frequently in connection with the anterior or cartilaginous portion, the so-called "cartilago-quadrangularis." In some cases they extend half way back along the junction of the perpendicular plate of the ethmoid with the vomer; but the posterior half of the latter, according to the reports of the best authorities, is never deflected. One happy result of the confinement of these deformities to the anterior portion of the septum is that it renders them accessible to treatment. The subject of classification of deviations is not a satisfactory one, as almost every writer originates one for himself. Lowenberg divides them, according to the situation and direction, into superior, inferior, horizontal, and vertical. Jarvis into osseous, cartilaginous, and osseo-cartilaginous. Zedziak gives two main divisions: (1) Simple deviations to one side or the other. (2) Deviations with partial thickenings. Of course these are both subdivided still further, while combinations of both divisions may be found in the patient. Mackenzie, Ingals, and Rosenthal each have their own special list. Bosworth,[7] on the other hand, as no two cases are alike, discards all classification, treating each distinct case upon its merits.

For practical purposes, Zedziak's division would seem to cover the ground. (1) Deviations without thickening. They may be to the right or left, a mere bending of the cartilage, with a concavity on the opposite side of each convexity. Sometimes the curvatures are sigmoid, having two curves in opposite directions in the one septum, or they may be irregular without well-defined form. This class are by far the most numerous, covering the vast majority of all human septa; and where no impediment to nasal respiration is produced, surgical interference is uncalled for. Zedziak's second group consists of deviations produced by partial thickenings, in the form of spinæ or cristæ. These are comparatively frequent, and in the majority of cases occur where asymmetry exists, though perfectly straight septa are not always free from them. The spinæ are real spurs, and may be either rounded or sharp pointed. They are usually situated at the anterior part of the cartilaginous septum, near the entrance of the nasal cavities, and opposite the inferior turbinated bone. Sometimes they arise further backwards, and, in rare instances, from the suture of the plane of the ethmoid with the vomer. Cristæ or ridges are like spinæ with an elongated origin, extending perpendicularly or laterally; in some cases completely occluding the passage.

According to Woakes,[8] both varieties of thickening are produced by a slow inflammatory process, resulting in the formation of a buttress of hypertrophied cartilage or bone. That the deformities are in some measure the result of inflammatory action is proved by the histological investigations of Miot and Duret, who found these prominences to consist of plastic infiltration, establishing the fact that they were the result of true perichondritis.

Etiology. The causes of deviation of the nasal septum, particularly when unattended by thickening, are often very obscure, and, consequently, many theories have been advanced upon the subject by experienced rhinologists. Jarvis and Gleitsmann supposed them to be hereditary. Duplay, Woakes, and Stoker regard deviations as congenital. Morgagni and Chassaignac[9] believe them to arise from excessive development of the vomer. Trendelenberg[10] suggested the idea that the septum was forced out of place by a highly-arched palate. While Zuckerkandl apparently unimpressed by theories of heredity or development, affirms that deviations of the septum never occur until after the seventh year. Bosworth, after an exceedingly large clinical experience, expresses the view that traumatism is by far the most frequent cause of all varieties of septal deformity. He says that even in those cases in which direct injury cannot be verified, it is safe to assume that injury has occurred, although so slight as to escape notice until the subsequent more serious results have become manifest.

Injury to the nose, insufficient to produce fracture, is not always followed immediately by deformity. It may, however, set up a low grade of morbid action, lasting for years, and in the end producing more or less stenosis upon the affected side. In early childhood, owing to the softness of the parts, falls on the face are especially liable to produce sutural injury, followed by slow inflammatory hypertrophy, and the formation in course of time of

7. "Diseases of Nose and Throat," 1889, p. 283.

8. *Journal of Laryngology*, October, 1890.
9. "Bulletin de la Societé de Chirurgie," 1851-2.
10. Cited by Schaus, loc. cit.