

inferior, left antero-inferior, and right antero-inferior directions. Preyer considers this due to the stimulation of all the ampullæ being of equal intensity.

By normal hearing, a sound from the left is never projected to the right, and *vice versa*, on account of the much greater strength of the stimulation of the ampulla of the side nearest the sound. For the same reason, no sound from the left or right is normally projected in the median plane, nor one in the median plane projected to the right or left.

Preyer next experimented with both ears closed, first by pressing in the tragus, or by filling the meatus with a solution of sodium chloride. The results arrived at were as follows :

1. The correct right and left projections which had been so good before were now uncertain. This being clearly to be expected since the horizontal canals are more easily affected by the movement of the stapes produced by ærial sound vibrations from the right or left than are the other two canals, the stapes lying in an almost parallel plane to the horizontal semicircular canal. Hence the cutting off of the ærial transmission by the meatus must annul the effects of this factor.

2. The absolute transposition of right to left or of either side to the median plane, and *vice versa*, only occur as with open ears, for the first few trials. This holds even in a large series of experiments ; hence one cannot discover a difference in audition by head conduction as compared to the ordinary audition.

3. The recognition of the direction is greatly increased in difficulty, likely from the absolute decrease in intensity of the sounds, and correspondingly relative decrease of the difference of intensity.

4. The number of correct decisions is greatly lessened.

In regard to the perception of sound direction with one ear closed, Chladni found, in 1802, that sound is always projected to the side of the open ear. (If bone conduction is equal normally to ærial, then sound would appear to come from the side of the closed ear.)

The idea is false that in usual audition the sound is entirely conducted by the labyrinthine fluid. Chladni showed, in 1802,