

the quality of the voice, as we do in the sound produced by the lips when the trumpet is removed. The beauty of the voice would be gone, and you would simply have a reed-like effect.

In the case of the trumpet, the character of the tube affects not only the quality, but the pitch of the sound produced. For example: If you lengthen the tube, the lips vibrate more slowly, and the sound becomes lower in pitch. In the instrument of speech, however, the lips of the glottis are so admirably adapted for independent vibration, that changes in the passage-way do not affect their rate of vibration, but simply change the quality of the resulting sound.

A number of years ago I visited a large school for the deaf, and taught all the pupils to use their voices. In a few cases the effect was decidedly unpleasant, the voice resembling somewhat the cry of a peacock. The effect, indeed, was so unnatural and distressing to the ear that some of the teachers expressed the opinion that the vocal cords had been affected by the disease that had caused deafness. They thought, therefore, that it would hardly be worth while attempting to teach these children to speak. Knowing that the quality of the voice is chiefly determined by the shape of the passage through which it is passed, I did not consider it necessary to assume a defect in the vocal cords, but rather sought the cause of the peculiarity in some constriction of the passage-way higher than the vocal cords.

I was careful to avoid discouraging the pupils by any expression of disapproval, so they were entirely unconscious of the fact that their voices were unpleasant. They had no hesitation, therefore, in repeating the disagreeable sound as often as I desired; and I encouraged them to repeat it a great many times, so that I might study the effect and become familiar with the sound. I then found it possible to imitate the effect myself. This was proof positive that the existence of the peculiarity was quite consistent with the possession of perfect vocal organs. Having acquired the ability to repeat the effect, I set myself to work to find out what I did with my mouth during the production of the sound. I could feel a constriction somewhere in the back part of the mouth, and therefore examined my vocal organs in a hand mirror while I depressed the tongue so as to exhibit the whole of the pharynx. At once the cause of the peculiarity became manifest. The muscles constituting the side walls of the pharynx were seen to be forcibly contracted, and they were approximated so closely together as almost to touch. After a little practice I found myself able to move these