

the absence of voice, but there was no difficulty in understanding it. In this case the air which was moulded into speech came not from the lungs, but from the pharynx. If we close the lips tightly and compress the air in the mouth and make an effort to blow, the pharynx expands under the pressure of the confined air, just as a rubber ball would expand if you were to blow into it. Upon opening the lips the contraction of the pharynx causes a sudden puff of air. A puff of air of this character can be produced even though the glottis is closed. By long practice this man had acquired such expertness in the use of the muscles about the pharynx that he could produce explosive effects of this kind which could be distinctly heard at a distance. When he spoke, the consonants were formed with very great firmness, and the removal of the consonant position resulted in a puff of air through the vowel positions assumed by the mouth, so that the puff had vowel quality sounding like a whispered vowel. I can imitate the character of his speech so that you may understand, more clearly than I can describe it, the nature of his articulation.

The point that I would have you observe is, that in this case vowel effects were unmistakably produced, although no air passed through the larynx into the mouth.

DR. HEWSON: Do I understand you to say that this individual who had the larynx closed, made audible speech?

DR. BELL: Yes, sir; quite audible speech.

DR. HEWSON: I merely wish to make a statement from actual surgical experience that, in cases where the operation of tracheotomy has been performed, it is impossible to make any sound under such circumstances, unless the finger is placed over the tube in the trachea. Now, of course, that may be due to the condition which you have already indicated; that is, that the speech was produced by this individual by long practice. Now it is possible for people to speak when that tube is closed, even though the principal part of the vocal apparatus is lined with diphtheric membrane. There is some sort of sound made, at least, but there is no audible speech. The remark I made some time ago about the vowel sounds being made in the larynx, I will amend by saying that of course the experiments that you have had the opportunity of seeing, had not come to the notice of either myself or the gentlemen who have preceded me, in making statements in text-books from which I have quoted. Your experience, I believe, is very unique; because I have never heard of any one who had been able to see the experiments,