

vowels were all perfectly produced, although the larynx had been excised.

We have seen that a metal reed can be used in place of the vocal cords; and I am inclined to think that the real larynx, if detached from the body and operated by means of a wind chest or organ bellows, would produce an effect more resembling the sound of a beating reed, than the human voice. The quality or "timbre" of the human voice, I believe, is due in a very minor degree to the vocal cords, and in a much greater degree, to the shapes of the passages through which the vibrating column of air is passed. As the shape of the passage above the vocal cords controls the quality or *timbre* of the voice, we may be sure that the false vocal cords exert some influence upon the quality of the voice, especially if they are capable of approximation, a point I am unable to decide. The ventricles, also, the spaces between the true and false vocal cords on either side, should, theoretically, exert an influence upon the quality of the voice, for they constitute two small resonance-chambers, situated close to the source of sound. In the howling monkey the ventricles are expanded into pouches, and the characteristic howl produced by the creature is due to the resonance of air in those chambers.

In the case of the Scotchman at the Glasgow University, the pitch of the artificial voice produced was undoubtedly due to the reed employed, but the quality of the voice, and the consonant and vowel effects were due to the passages above, through which the vibrating column of air was passed.

I have already directed your attention to the case reported by Dr. Moore of Rochester, New York, in which he claimed that certain vowels are formed in the larynx and not in the mouth. Dr. Moore directed my attention to the case of another patient of his which seems to prove the converse proposition. * Dr. Moore had performed upon this man the operation of tracheotomy. At the time I saw the patient he had for over twenty years been dependent for life upon air supplied through a silver tube inserted in the trachea. The glottis had become completely closed and no air could be forced through the larynx into the mouth. The strange feature of the case was that under these circumstances the man could talk. Of course the speech was peculiar on account of

*Case of Edward Matthews. See Transactions of the New York State Medical Society, 1872, pp. 276-282.