

The specimens of the larynx which have been placed in your hands by Dr. Hewson, will have shown you that the vocal cords do not look like "cords" or strings at all—nor perhaps are they very suggestive of trap doors—they look more like lips. In fact, we may consider that we have a pair of lips within the larynx capable of approximation, with various degrees of tension.

The false vocal cords also resemble lips, but it is doubtful whether they can be approximated sufficiently to touch one another. If the lips of the throat are shut and the abdominal muscles are contracted, the air compressed within the thorax tends to blow the vocal cords apart. The muscular tension may be so adjusted as to allow the vocal cords to yield sufficiently to permit of the escape of a puff of air—the aperture closing again immediately and remaining closed until the pressure within the thorax causes the escape of another puff. In this way a regular series of puffs may be produced, the alternate opening and closing of the glottis constituting vibration of the vocal cords. The frequency of the vibration depends upon the tension of the vocal cords. The more tightly they are drawn, the more rapid will be the vibration produced.

With slow vibrations, distinct puffs of air can be heard, producing a sound known as "throat trill." If the glottis is opened and closed more than thirty-two times in one second, the ear fails to distinguish the individual puffs, and perceives only a continuous effect of a musical character denominated "voice." The pitch of the voice rises as the vibrations become more rapid.

There are two ways of varying the pitch of the voice, just as there are two ways of changing the pitch of a violin string. Observe the violinist tuning his instrument. He turns a peg at the end, thus tightening the string. At each increase of tension the pitch of the string becomes higher. When, however, he plays the instrument, the pitch is varied in a different manner. He presses his finger upon a string so as to permit only a portion of the string to vibrate, instead of the whole—and the pitch becomes higher. The shorter the vibrating portion, the higher is the pitch produced. In this case the tension of the string remains uniform.

In a similar manner variations of pitch in the voice may be produced by allowing a portion only of the vocal cords to vibrate, instead of the whole. Observations made by means of the laryngoscope, seem to indicate that the variations of pitch, in what is termed the "head register" of the voice, are produced in this manner; whereas, in the "chest register," the vocal cords vibrate