The Throat and The Voice: Part 1, Chapter 1: General Construction of the Throat

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THE THROAT AND THE VOICE.

PART I.

THE THROAT.

CHAPTER I.

GENERAL CONSTRUCTION OF THE THROAT.

The throat is the common highway, so to speak, for the passage of air to the lungs and of food to the stomach.

It is protected and enclosed by various muscular and bony structures, chiefly occupying the neck, along which, too, course the great blood-vessels that nourish the head and the brain, as well as the great nerve-trunks that pass from the brain to the lungs, heart, stomach and intestines, and other organs; while the strong bones at the back of the neck enclose the most important, or most vital, part of the spinal cord.

Thus the throat and neck, together, are very important regions of the body. The neck is directly
exposed to atmospheric changes of wind and moisture, which sometimes induce disease in the throat or in the lungs; and the interior of the throat is exposed, in addition, to the baneful influences of whatever deleterious substances may happen to be floating in the atmosphere.

Fig. I. (see Frontispiece) is a diagramatic, anatomical sketch, showing the double route taken by the air through the nose and the mouth to the air-tube, as designated by the dotted lines, and the single route taken by the food through the mouth into the gullet behind the air-tube, indicated by the unbroken line.

Keeping the relations of the food- and air-tracts in mind, let the reader look into the throat of an individual whose tongue is kept flat down on the floor of the mouth by a paper-cutter, spoon-handle, or something of that kind. This will expose to view the interior of that portion of the throat (the middle portion of the pharynx) which is common to the two great avenues by which air and food are conveyed into the interior of the body. The avenue for air, or the respiratory tract, is a double one at top, air reaching, the pharynx by the interior of the nose above, as in ordinary breathing, or by the mouth in front, as in occasional breathing. Passing through the pharynx, the air next passes through a rigid tube (larynx and trachea), the windpipe, open on top,—except at moments of swallowing and during certain accidents,—

and always distended by means of stiff plates and rings of gristle (cartilage), which surround it more or less completely. Thence, the air passes along the subdividing continuations of the air-tube or windpipe (primitive, diminutive, and terminative or ultimate bronchial tubes) until it reaches the air-cells of the lungs, which are grouped in series around each ultimate extremity of this series of air-passages. These successive divisions of the air-tube are, progressively, smaller and smaller, the terminal ones being about one-fortieth of an inch in diameter.

The avenue for food, or the alimentary tract, passes through the mouth into the pharynx, which it follows down directly into the gullet (food-pipe, esophagus), continuous with the pharynx, and leading into the stomach. This gullet is located behind the upper part of the air-tube (larynx and trachea), and rests against the spinal column, or back-bone. The gullet, however, is a flaccid tube, its anterior and posterior walls being in contact, except when separated by the entrance of morsels of food or swallows of liquid.

Now, although air may enter the body by two avenues—nose and mouth,—it is to be remembered that respiration through the nose is the natural method. Consequently, whenever respiration takes place habitually through the mouth, that method of breathing is indicative of some obstruction in the nasal passages.
or in the upper portion of the pharynx, temporary or permanent, as may be.

If the reader will examine the image of his mouth and throat as reflected in a well-illuminated mirror, such as a hand-mirror, which he can move in such a manner as to throw the rays of light upon the various portions he is observing, he will notice a movable curtain, the soft palate, hanging from the back portion of the roof of the mouth, or hard palate. When a deep inspiration is taken through the mouth, it will be noticed that this soft palate is forced backward until it touches the back wall of the throat, the pharynx; but when the inspiration is taken through the nose, it will be seen that the soft palate moves forward somewhat, so as to leave a considerable space between it and the pharynx, in order that the air can pass by that route into the larynx, and thence through the windpipe into the lungs. This soft palate is composed chiefly of muscles, covered by the general lining membrane (mucous membrane) of the mouth and throat. Its lower border is crescentic on each side, the central portion being prolonged into a tapering extremity, the uvula, which, when elongated, is apt to touch the base of the tongue or the valve (epiglottis) on top of the larynx, and thus produce a sense of tickling, or other annoyance, which gives frequent rise to “hemming” or to a slight cough to relieve the disagreeable sensation. The soft palate on each side of the uvula is seen to divide into two folds, the front and narrower one of which reaches downward to the side of the root of the tongue, while the back and broader one reaches farther down to the side of the throat or pharynx. Between each of these pair of folds, a small body, the tonsil, is seen to project slightly. Each tonsil is a mass of glands, very apt to become enlarged in acute and chronic sore throat. Acute inflammation of the tonsil constitutes the prominent feature of the affection known as quinsy. The tonsils are apt to become permanently enlarged in scrofulous people, and then sometimes interfere so much with respiration as to require removal of a considerable portion of their bulk. They rarely enlarge for the first time after about the thirtieth year of age. Children with chronically enlarged tonsils are liable to a deformity of the chest, on account of the position they are compelled to assume in order to breathe with any degree of comfort. This likewise interferes with due expansion of the lungs, and proper aeration of the blood, and thus often leads to serious ill-health. It is therefore of the greatest importance to future well-being that diseased tonsils be properly treated,—the sooner the better. Confidence in the popular opinion that children “will grow out of it” will only end in prolonged suffering, to be finally terminated by the interference which should have been instituted long before.
The back portion of the throat is the posterior wall of the pharynx, and is continuous with the back wall of the gullet or food-pipe, the esophagus. Like the palate, it is chiefly muscular in structure, and is covered by a continuation of the same lining or mucous membrane. It is loosely attached to the spinal column and can be moved upon it. In diseases of the bones of the spinal column in this location, and in diseases of the glands between the gullet and the spinal column, this posterior wall of the throat is apt to become pushed forward into the free space of the throat by an abscess, or collection of pus, which interferes with respiration and with swallowing. As this disease occurs most frequently in children, the condition is often confounded with croup.

The pharynx continues upward along the spinal column behind the palate until it reaches the base of the skull, when it bends forward into a vaulted roof, which has much the shape of the crooked forefinger, or the top of a buggy wagon or phaeton. It is often easy to pass the finger up behind the palate of an individual and feel this roof of the pharynx. Being quite near the nerves from the brain, diseases of this portion of the pharynx are apt to be attended with a peculiar form of headache located just behind the upper portion of the root of the nose. If the forefinger carried up behind the palate is directed forward, a sharp ridge will be felt in front at the middle line. This is the hindermost portion of the septum or partition of the nose. On each side of it is an opening, which is the posterior orifice or outlet of the nasal passage. To each side of these openings, on the side wall of the pharynx, is a small protuberance, in the centre of which is a depression which leads into a delicate tube reaching to the drum portion of the ear, being in fact the vent-hole of that drum. When the nose is blown during the existence of a cold in the head, a crackling is heard in the ear, due to the driving of air through a collection of mucus which has accumulated at the mouth of this tube. Diseases of the back portion of the nose and of the sides of the pharynx are very apt to be continued into the ears in this way; and that is the reason why so many diseases of the ear follow the sore throat of scarlet-fever, chronic sore throat, chronic catarrh of the nasal passages, and so on. Some of the muscles of the palate cover a portion of the walls of the orifice of this tube, and this accounts for pain in the ears felt in many diseases of the throat, especially during the act of swallowing, which draws on the orifice of the tube to open it and let air penetrate into the drum of the ear.

If the tongue is pulled forcibly forward, a little curved projection is sometimes seen behind it, at its deepest portion. This, the epiglottis, is a valve of gristle, by which the air-passage is covered over, dur-
ing the movement of swallowing, to prevent the food or drink from going the wrong way, i.e. into the larynx instead of the gullet. [See Larynx and Epiglottis, article Voice.] It participates with the movements of the tongue, to the root of which it is attached by a strong ligament. It is also attached by ligaments to the sides of the throat; and when these ligaments are very tense, their edges present to the finger the sensation of a thin and firm foreign body, such as a pin or fish-bone, and are even liable to be mistaken for the intruder in cases in which such foreign bodies have been swallowed, and be thus ruthlessly pulled upon by those who are not aware of this circumstance.

The larynx, which is guarded by this trap-door-like epiglottis, and which will be described in the article on Voice, to which it more appropriately belongs in this volume, is the vestibule or entrance into the windpipe (trachea). The windpipe is a hemispherical or tunnel-shaped tube running down the front part of the neck, dipping behind the breastbone into the chest, where it divides and subdivides into the bronchial tubes. As respiration must be continuous, it is essential that this tube should always be open; and it is therefore strengthened by a series of hoops of cartilage in its front or hemispherical portion, while its posterior or flat portion is membranous and flexible, so as to yield to the pressure of articles of food or drink which pass down the gullet or food-pipe, which is just behind it. Most popular accounts of this tube convey an impression that it is circular rather than more or less hemispherical, as here described and figured. The membranous portion is smaller in the female than in the male.

All the structures of the throat are lined, or covered, rather, with mucous membrane containing numerous little glands which secrete a bland, lubricating fluid which keeps the parts moist, pliable, and comfortable. When this fluid is deficient, the parts become dry and uncomfortable; and when it is in excess, it becomes mingled with little cast-off scales, similar to those cast off by the skin, as observed in the water after a bath, forming thick, tenacious masses of mucus, which irritate the parts and give rise to cough to get rid of them. The mucous membrane of the nasal passages and of the windpipe is provided with minute brush or hair-like processes, visible only under the microscope, which are continually waving towards the exterior of the body, and thus assist in brushing out any excess of mucus or particles of dust.

Fig. II.—Diagram of a Transverse Section through the Main Windpipe, or Trachea, of a Male Subject.

1. Cartilage of the windpipe. 2. Membranous posterior wall of the windpipe. 3. Free space or cavity of the windpipe.
which have been inhaled into the nose or windpipe. In certain affections, these little hair-like appendages (cilia) are destroyed, without being reproduced, as they are in the healthy state; and then there is some difficulty in getting rid naturally of the products alluded to in the last sentence, giving rise to more or less painful voluntary efforts of hawking, hemming, and coughing to eject them. Besides this, the delicate mucous membrane is exposed to the irritation of the air, and thus becomes further and further diseased, sometimes leading to the formation of real sores or ulcers. It is quite likely that many severe sore throats would be prevented, if the little annoyances which the loss of the cilia occasion were promptly remedied by application to the physician instead of the more frequent resort to the various cough mixtures, expectorants, and lozenges exposed for sale. Many of these preparations are absolutely injurious, while there is only one chance out of very many that the article resorted to will happen to suit the individual case to which it is applied, even when the remedy is a good one.

CHAPTER II.
CARE OF THE THROAT.

There are few individuals who pass their lives without having been at some time affected with more or less sore throat. In variable climates sore throat is much more frequent than in equable climates. It is much more frequent, also, in localities where individuals are exposed to the irritating influences of particles of dust and other materials in the atmosphere, and which are inhaled in respiration. Consequently, people working in factories, chemical laboratories, and the like, are quite subject to sore throat independently of any special proclivity thereto; while they are still more likely to suffer if constitutionally subject to sore throat. Such individuals are recommended to wear little respirators in front of the nose and the mouth during exposure, in order to filter the respired air, as it were, and catch these little particles in their passage towards the throat. There is a variety of respirators for use, under these circumstances, some of which are so arranged as to contain masses of raw cotton or wool, which collect the dust.