

THE PREVENTION OF EAR AND THROAT TROUBLES IN INFANCY.

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The prevention of ear and throat troubles during infancy is one of the most important branches of infant welfare. To carry out efficiently this prevention one must be equipped with a knowledge of the structure and function of the organs concerned with the sense of hearing, of those that are designed to deal with the preparation of the incoming air in respiration, and of those which, arranged about the entry to the food and air passages, form one of the most important factors of the body's line of defence against bacterial invasion. Armed with such knowledge, a vast amount of good could be done by health workers, nurses, mothers, and other persons having to do with infants, towards the prevention of diseases which, if not always fatal, may leave disabilities whose serious effects may last throughout life.

I shall, therefore, preface my lecture with a brief account of the structure and functions of the mouth, the throat, the nose, and the ear.

The mouth is a cubical cavity between the upper and lower jaws, the roof of which is formed by the hard and soft palates; the floor is occupied by the tongue, and the sides are made by the cheeks. When the mouth is closed the tongue fits closely into the dome formed by the palate. In front is the opening between the lips, whereby the mouth communicates with the outside world; behind, it opens into the throat. This opening is called the *fauces*, and has above it the *soft palate*, with its dependent *uvula*. Below, is the base of the tongue. On either side the soft palate splits to form the *pillars of the fauces*, between which lies the *tonsil*, one on each side.

Above the cavity of the mouth, and separated from it by the hard palate, lies that of the nose, divided into two *nasal chambers* by a partition, part bone, part cartilage (or gristle), called the *nasal septum*. The roof of the nose is formed by certain of the bones at the base of the skull; the floor is made by the hard palate. On the outer side of each nasal cavity are three projecting, scroll-like bones, the *turbinates*, covered by a thick membrane very richly supplied with blood-vessels, and glands which secrete a watery fluid. These turbinates project into each nasal cavity in such a manner as slightly to delay the air which passes through

the nose during respiration. The two nasal cavities open in front by the nostrils, whilst at the back they communicate with the space behind the nose and mouth.

Now it is this space behind the mouth and nose (which is called the *pharynx*) that is of greatest importance in infancy and childhood and, indeed, also in adult life. It is important throughout our life history, but most so during the first two chapters of that history. The pharynx is a space of considerable size in adult life, but is much smaller in the infant, leading from the back of the nose and mouth down to the gullet (or *oesophagus*) and windpipe. Its upper part, from its near relation to the nose, is called the *nasopharynx*, or *post nasal space*. What is especially noticeable about it is the number of passages it has leading into or out of it. In front there are two nasal cavities above and the mouth below, both of which, communicating with the outer world, can bring microbes to it. On either side of it open the two Eustachian tubes leading into the ears, whilst at its lower part are the openings of the windpipe in front, leading to the lungs, and the gullet behind, leading to the stomach. I shall return to the significance of this arrangement of the parts presently. Another important fact is that in the roof of the nasopharynx is a tonsil, called the *pharyngeal tonsil*, enlargement of which constitutes the growths so well known as *adenoids*. I may mention here that at the base of the tongue is another tonsil, the *lingual tonsil*. So that the pharyngeal, faucial, and lingual tonsils form a sort of ring of tonsillar tissue round the entrance of the food and air passages.

Before turning to the ear it will be convenient here to compare the functions of the nose and mouth. The nose serves three purposes: it contains the organ of smell; it is the natural pathway for the air to enter in breathing; and it plays a considerable part in giving resonance to the voice. It is a matter of common knowledge that when the nose is blocked, as it is during the height of a common cold, that the voice sounds very "dead," and that certain consonants, "m" and "n," are almost lost. By most people the nose is thought of only as the organ of smell, and yet that portion of it which has to do with the olfactory sense is quite small, and tucked away high up above the middle of the three turbinates, so that, in order adequately to perceive an odour, one has to sniff it well, so that the odoriferous particles may reach the site of the sense. As a matter of fact, the most important work of the nose is its respiratory function. It has to prepare the air for the delicate structures of which the

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