

## 1.6. THE ORGANS OF SPEECH

It should be mentioned that the human being does not possess the organs which are exclusively used for producing speech sounds. All the organs involved in pronunciation of speech sounds, and human speech in general, primarily fulfil other functions – the functions of swallowing and digesting food, respiratory functions, etc.

The organs of speech began to be used by human beings for the production of speech sounds in the course of their development as *Homo sapiens*.

It is most important for a learner of a foreign language to know the functioning of the speaking apparatus.

When a thought which is to be communicated arises in the cortex an impulse is transmitted through the nervous system to the organs of speech. The organs of speech, obeying this impulse, produce speech sounds by which the thought is expressed.

The human speaking apparatus consists of the following main parts which participate in the formation of speech sounds.

The air exhaled from the lungs passes through the bronchi, then through the windpipe (trachea) and gets into the upper part of the windpipe which is called the **larynx**.

The larynx is a rather wide pipe which is made up of two main cartilages. The lower cartilage, which is called the **cricoid**, is firmly connected with the windpipe. The form of the cricoid resembles a signet ring, the signet of which is turned to the rear. The second cartilage, which is called the **thyroid** cartilage, lies on the cricoid and resembles two shields connected at an angle.

Inside the larynx, on the upper part of the signet there are two small movable cartilages which are called **pyramidal**. The bundles of elastic muscles called **vocal chords** are stretched horizontally across the larynx from the bases of pyramidal cartilages.

Owing to the mobility of the pyramidal cartilages, to which the vocal chords are attached, and to the elasticity of the vocal chords, the latter can occupy different positions. They may be tense or lax drawn together to different degrees or drawn apart, forming an opening. The opening between the vocal chords is called the

**glottis.**

An erect cartilage at the root of the tongue which lowers during swallowing to cover the glottis is called the **epiglottis**.

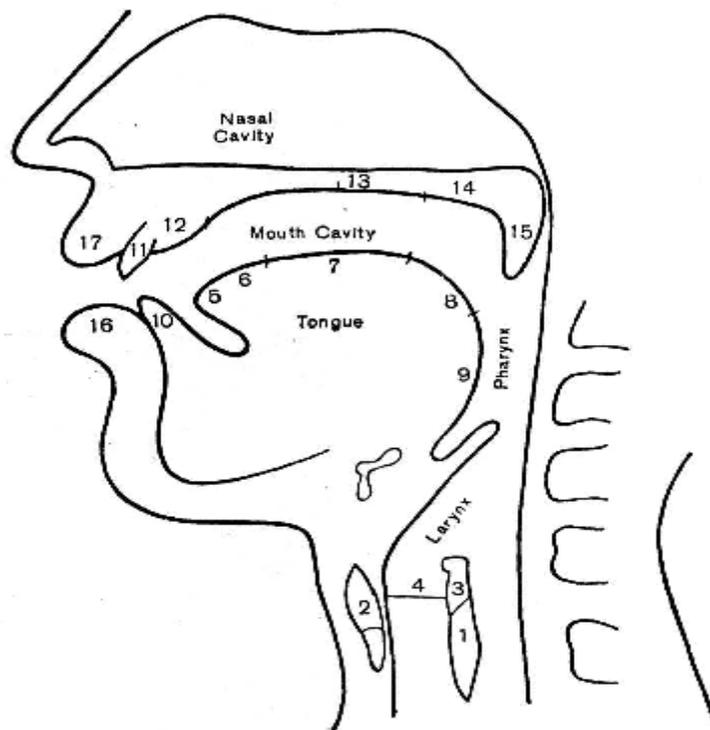


Fig. 1.17. The organs of speech

- 1. Cricoid 2. Thyroid 3. Pyramidal Cartilages 4. Vocal Chords 5. Tip of the Tongue 6. Blade of the Tongue 7. Front of the Tongue 8. Back of the Tongue 9. Root of the Tongue 10, 11. Teeth 12. Alveoli 13. Hard Palate 14. Soft Palate 15. Uvula 16. Lower Lip 17. Upper Lip

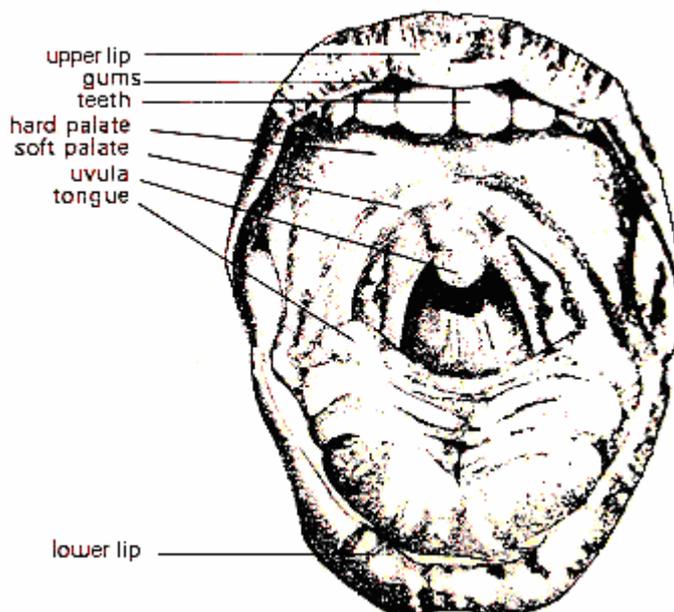


Fig. 1.18. The mouth cavity

For practical purposes it is enough to consider three main positions of the vocal

chords:

1. The pyramidal cartilages are drawn wide apart, the vocal chords are lax and do not vibrate, the glottis is broad. Neither voice nor noise is produced. This is the position typical of breathing. The glottis is wider while inhaling and narrower while exhaling. Speech sounds in English, as well as in most other languages, are produced while exhaling.

The above described position of the vocal chords is also characteristic of the formation of voiceless consonants (see fig. 1.19 - A).

2. The pyramidal cartilages are brought together, the vocal chords are tense and vibrate when the air is exhaled from the lungs and passes between them. This position is characteristic of vowels and voiced consonants (see fig. 1.19 - B).

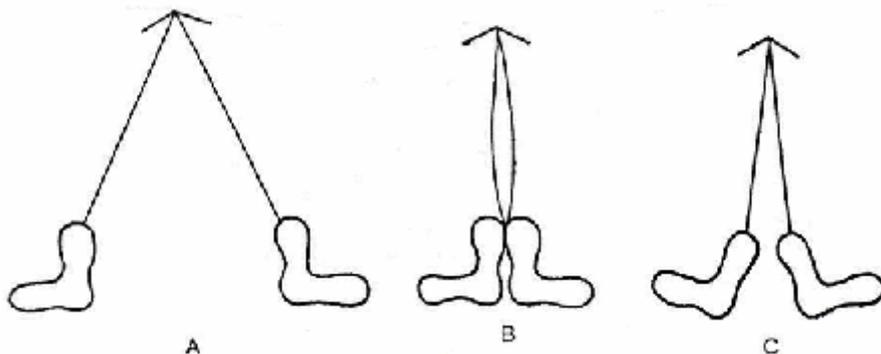


Fig. 1.19. The position of the vocal chords

3. The pyramidal cartilages are slightly drawn apart, the glottis is narrowed but the vocal chords are not tense. This is the position characteristic of a whisper (see fig. 19 - C).

Having passed the larynx the air passes through the pharynx (the cavity above the larynx) and gets into the mouth cavity or the nasal cavity.

The following organs of speech participate in the formation of speech sounds: the tongue, the hard and the soft palate, the upper and the lower lips, the upper and the lower teeth and the lower jaw.

The tongue may be conventionally divided into blade, front, back and root. The very front part of the tongue is called the tip. The roof of the mouth is divided into the alveoli (situated immediately behind the upper teeth), the hard palate and the soft palate ending in the uvula.

The mouth and the nasal cavities, as well as the larynx, serve as resonance chambers.

Sounds may be oral or nasal depending on the cavity through which the air passes. In English and Ukrainian, as well as in Russian, there are no nasalized vowels.

The volume of the nasal resonance chamber remains unchanged. The volume of the mouth resonance chamber depends on the position of the tongue, the lips, the soft palate with the uvula and the size of the mouth opening.

Those organs of speech which, owing to their mobility, take an active part in the production of speech sounds are called **active**.

The active organs of speech are: the vocal chords, the tongue, the soft palate with the uvula, the lips and the lower jaw. The most movable organ of speech is the tongue.

The immovable organs of speech are called **passive**. They are: the upper jaw, the alveoli, the teeth and the hard palate.

The tongue is the main organ of producing speech sounds – consonants and vowels, and speech in general.

The mouth cavity, the pharynx and the nasal cavity serve as resonance chambers.

The main organ of hearing is the **ear**, with the help of which speech is heard and interpreted.

The human ear may be conventionally divided into three sections – the outer ear, the middle ear and the inner ear.

The outer ear plays a protective role for the middle ear and functions as a resonator.

The middle ear is a cavity within the skull and plays an important role as a protector of the inner ear and transmits the mechanic vibrations of the membrane further to the inner ear.

The inner ear is the most complicated section of the ear.

The main elements of the inner ear are the **semicircular canals** with the **cochlea**, filled with liquid. Inside the cochlea there are two membranes, one of them with the numerous cells of the highly sensitive **organ of Corty** converts the vibrations into neural signals and transmits them by the auditory nerves to the brain.

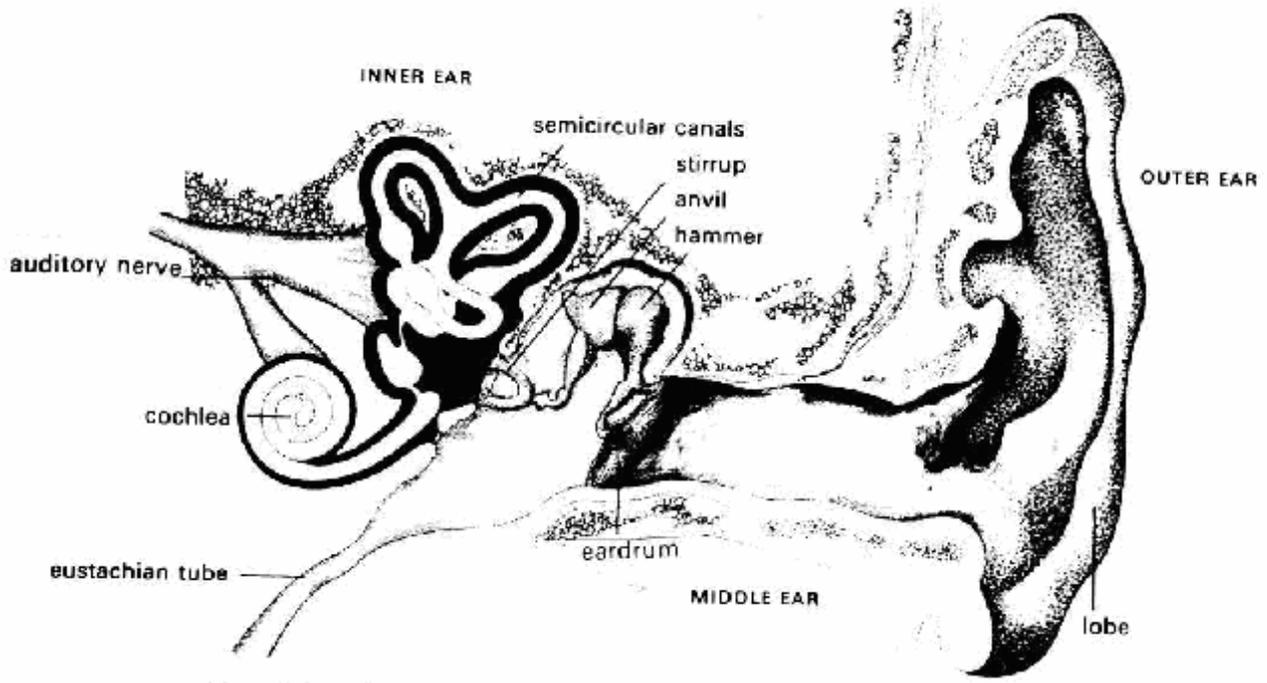


Fig. 1.20. The organs of hearing (the ear)