Palate developmental defects result in voice and speech disturbances due to:
a) incomplete closure of the throat ring; b) disturbances of the resonator function of the mouth cavity. In spite of an obvious theoretical value this problem has an urgent practical aim of restoring speech communication of the cleft palate carriers, and their social and labour rehabilitation.

With the modern rates of development of social, political and scientific life, the actuality and social significance of the problem of restoring the lost communicative functions have grown greatly. Hearing, speech and voice disturbances should be looked at from the standpoint of pathophysiology of these organs, which makes it possible to develop a more rational system of measures to restore these functions.

Clinical and social observations indicate that the restoration of speaking and vocal functions of the cleft palate carriers is a complex process of rehabilitation, and it is insufficient to make one operation to create a plastic resonator. The analysis of the results of the investigations, which we have carried out, shows that the presence of pathophysiological and conditioned-reflex relations in the central nervous system of the cleft palate carriers before the operation has caused the absence of acquired reflexes of correct phonational respiration, of the voice formation process, and have resulted in disturbances of the neurophysiological speech mechanisms. According to the statistic data, cleft palates are a frequent occurrence: 1.5 - 2 cases per 1000 new-born children. Face and jaw developmental defects may be caused by various exogenous and endogenous factors affecting the fetus at the early stage of its development before 7-9 weeks. Cleft lips and palates are one of the most serious psychotraumatizing defects since the early childhood, as they create a feeling of inferiority of their carriers.

The representatives of phonetic sciences will certainly get interested in and find useful the submitted results of investigations of a live model of an anatomic defect of the mouth cavity resonator with all the disturbances, which follow, including the muscular system function of the loud speech motor apparatus: breathing, phonation and articulation muscles. In this pathology a hearing disturbance aggravates the influence upon the phonetic system of speech. The most characteristic feature of a speech disturbance at cleft palates is rhinolalia sperta: nasalization, which has appeared due to the absence of a demarcation between the nasal and mouth cavities, changes greatly the acoustic characteristics of phonemes. A voice disturbance is versatile. The most prominent features are timber alterations, the presence of an unpleasant nasal resonance, a clear nasal shade of oral sounds. The nasal sounds (M,H) are pronounced quite normally. The sounding of vowels changes insignificantly. Rhinophonia may be accompanied by rhinolalia, i.e. incorrect pronunciation and distortion of sounds in the following cases: 1) if the acquired factors, developed due to a cleft palate, begin to make its influence during the first years of a child's life when the articulation mechanisms have not yet been formed; 2) if an articulation disturbance of the central origin joins; if a hearing disturbance (even of short duration), causing the formation of wrong articulation reflexes, joins during the articulation formation period. Palate developmental defects
result in voice and speech disturbances due to: a) incomplete closure of the throat ring; b) disturbances of the resonator function of the mouth cavity; c) accompanying hearing disturbances. The absence of voice caused by deformations in the mouth cavity and incomplete closure of the throat ring, functional derangements are observed in all resonator cavities. Pathological changes of the soft palate muscles usually develop at the age of 4 - 5. Due to a lower functional load in the muscles and mucous pharynx, a dystrophic process gross progressively worse. The mucous membrane of the back wall of the pharynx becomes gradually pale, atrophic. The absence of a pharyngeal reflex is indicative of the atrophy of muscular fibers of the pharynx constrictor, and of degenerative changes of the sensitive and trophic nerve fibers of this region. The chronaximetry data (time necessary for the muscle to react to an electric stimulus) testify to a significant disturbance of the muscle function of the closing throat ring expressed by the increased chronaxy of these muscles from 0.30 to 0.40 sec/sec. Eventually chronaximetric asymmetries appear between the right- and leftside muscles, if the clefts have not been operated on. The upper pharynx constrictor, whose chronaxy becomes longer and longer, is subject to much deeper dystrophic and functional changes and then the muscle ceases reacting to an electric stimulus. In cases of disturbances of the closing throat ring function, the speech becomes monotonous without any melody or accent. In phonation children and teen-agers continue to breathe simultaneously the larynx. The laryngeal way of forming the voice spectrum deprives it of clarity and make the voice less legible. A change of the voice timbre of the cleft palate carriers with an acoustic defect of the supratracheal pipe, which results in functional asymmetries of the resonator cavities of the larynx, pharynx, and nasopharynx, approximates the function of the palate-larynx complex, in which the palate plays the role of a starting mechanism, and palate clefts the phonation mechanism is so specific that at rhinolalia the voice is singled out as a separate disturbance and is called "palatal dysphonia" or "palatophonia". The combination of an acoustic defect of the palate, laryngeal sound formation, motor dysfunction with an incorrect voice behaviour provokes the development of organic changes in the larynx of the type of nodulations and chronic inflammatory processes, resulting as a result in internal muscles of the larynx, functional - as Phonasthenia. Violations of the integrity, anatomical and functional asymmetries of the soft palate and pharynx muscles bring with age to a functional overload of the vocal apparatus. In cases of speech and language disorders, phonosthenia makes the nasal cavity a double resonator, the nasalization expressiveness depends on the inadequacy of closure, the mobility of the palate curtain and the co-ordination of the tongue and soft palate motions. Due to the escape of air into the nose, the pressure falls sharply and it becomes impossible to sound the aperture (closure breachage) during the articulation of consonant phonemes. Besides, the escape of air into the nose makes it more difficult to form a directed air flow in the mouth, and as a result almost all the plosive and fricative voiceless consonants are pronounced in a pharyngeal way. The mediolinguinal palatal and bidental palatal sounds cannot be articulated because of the absence of one of the closure components - palate. The forelingual consonants /b, d, p, t/ become weaker or are replaced with a laryngeal or pharyngeal closure on /b, d, p, t/. All the latest results of the pathophysiological investigations, which have revealed detailed peculiarities of the pathological respiration, voice and speech formation at rhinolalia, have been assumed as a basis of methodical recommendations developed in our country by I.I. Yermakova to correct the speech of children and teen-agers at rhinolalia. The author has taken into account that spontaneous speech occurs after unconscious, but the pathological sound formation at rhinolalia has anthropogenic and somatogenic foundations: a) replacement of one phoneme with another (e.g., the consonant «t» is replaced, for example, with the consonant «d»); b) a change in the place of pronunciation of the given phoneme (e.g., a speech distortion) and phonologic disorders (e.g., replacement of one phoneme with another) are present, whereas only phonologic disorders are used as a basis of methodical recommendations developed in our country by I.I. Yermakova: 1) an ability to single it out from other speech elements; 2) to articulate it with some definite articulation; 3) to correctly pronounce the articulation; 4) to use this ability in a flow of connected speech. In spite of the obvious theoretical value, this problem has an urgent practical aim of restoring speech and language functions of cleft palate carriers, and their social and labour rehabilitation.