

Poland until 2000

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Abstract

The beginnings of phoniatics are to be referred to Dr Jan Siestrzynski (1788-1824) a physician and the teacher of the deaf who graduated at the Vienna University Medicine Faculty. In 1815 he founded the Institute for the Deaf and Dumb in Warszawa. His fundamental work was the book on 'The Theory and Mechanism of speech'. At the end of 19th century phoniatics was presented in many papers of famous Polish professors of medicine. The following names should be here mentioned: J. Dietl (1804-1878) professor of the Jagiellonian University (pathology and treatment of stuttering), A. Jurasz (1847-1923) pediatrician and laryngologist, professor of the Universities in Heidelberg, Lwów, Poznan ("phoniatics paresis of the larynx") T. Heryng, laryngologist in Warszawa who published in (1889) paper on surgical treatment of singing voice, P. Pieniazek (1850-1916) the founder of ENT in Poland, professor of Jagiellonian University, whose post doctorat thesis was dealing with the role of cartilagineous glottis in voice production.

The first medical doctor who entirely devoted his activity to phoniatics was Dr. W. Oltuszewski (1855-1922), a pupil of A. Gutzmann. Between 1896-1922 together with his wife Zofia he founded a phoniatic unit in Warsaw for speech disturbances treatment and published 46 papers on phoniatics among them in 1905 a handbook on "Speech and its deviations".

After the World War I at the following Universities phoniatics units were established: Kraków (1925 prof. A. Mitrinowicz-Modrzejewska), Wilno (1926 Prof. B. Dylewski), Poznan (1932 Doc. M. Laczowska), Warszawa (1935 Prof. A. Mitrinowicz Modrzejewska).

After the World War II the first departments for phoniatics were founded in Warsaw, Poznań and Wrocław (1950 Prof. L. Handzel). In 1954 Prof. A. Mitrinowicz-Modrzejewska was nominated as the first professor in Phoniatics in Poland, this date is also accepted as the establishment of clinical phoniatics in this country. Actually, at all University ENT departments there are phoniatic units. In Poznań in 1982 was founded the first independent Department for Phoniatics and Audiology (head Prof. A. Pruszewicz) and in Lublin in 1995, Department for Children ENT and Phoniatics /Audiology (head Prof. C. Niedzielska). Apart from above mentioned units in Poland we have polyclinics and outpatients departments for phoniatics in the district cities and other public health institutions in the whole country. Here it should be mentioned that special phoniatic units are installed also at the University Schools of Music and different central institutions like for example Center for Medical Postgraduate Education. At the time we have in Poland 6 professors and 2 assistant professors in phoniatics. In 1959 the Minister of Health and Welfare established phoniatics as an independent medical specialization and founded Phoniatic Commission at the Center for Medical Education. Since then phoniatic in Poland has its own training program (3y curriculum) and about 120 ENT specialists graduated as the specialists in phoniatics.

In 1965 Phoniatic Section at the Polish ENT/HNS Society was established and the number of its members amounts to 180. Every year 2 day Phoniatic

Symposia are organized; in the Journal of Polish Otolaryngology a special division is devoted to Phoniatics and Audiology. The Phoniatics Section is an affiliated member to IALP, organized 2 Congress of UEP (1975 Wroclaw, 1985 Poznań) and its members are represented in the different bodies of IFOS and EUFOS. However, Phoniatics in our country is an independent medical specialization in last years a tendency to combine it with audiology is presented by the authorities of Ministry of Health and Welfare.



(Fig.3)

The first remarks on phoniatics published by Jan, Hieronim Chrósciejewski, a Polish Renaissance physician from Poznan, we can find in his book: De Morbus Puerorium Tractatus edited in Venice in 1583 (Fig 3). This book was edited till 18th century several times and was also translated into German (edited by F. Uffenbach, Frankfurt). Some topics dealing with phoniatic problems were as follows: 1. The speech disturbances were divided into peripheral and central ones. 2. Special attention was paid to the normal functioning of lips and tongue in the proper articulation.

3. Apart from the softness and wetness of the tongue, which influence its contact with the teeth he also mentioned the influence of the tongue frenulum on articulation, recommending its incision with a fingernail by the midwife immediately after birth. 4. Describing the tumors of the neck the author stressed the danger of their surgical treatment due to the vicinity of laryngeal vessels and the recurrent nerve (n.recursorius).

The Developmental History of Phoniatics in Poland

Jan Siestrzynski (1788 –1824), who was a doctor as well as a teacher working with deaf-mutes, is considered to be the precursor of phoniatics in Poland. In 1813 he graduated from the Department of Medicine at the University of Vienna and started his work under the supervision of famous Vienna professors Hildenbrandt and Rust. Besides medicine he was also interested in deaf children pedagogics. He became famous for working in the institutes for hearing-impaired children in Prague, Berlin and Wroclaw, before he took over a post as a teacher in the Deaf-Mute Institute in Warsaw, where he popularized the audible, articulated speech introducing it in place of the sign language or mechanical sign and letter-form recognition methods, which had been used before. Around 1821 he finished his lifetime work "Teoryja i mechanizm mowy" ("The Theory and the Mechanism of Speech", which consists of two parts. The first one concerns the theory of speech and reading and the other one includes the theory of human speech mechanism as well as remarks on deaf children education. The above work preceded other volumes in the same domain published in England (Borthwick "Remarks on the elements of language") and Austria (Brücke "Grundzüge der Physiologie und Systematik der Sprachlaute") in 1856. After Siestrzynski's death in 1824 articles on the pathophysiology of voice, hearing and speech, written by famous Polish physicians, appeared in a number of Polish and foreign journals. Many important papers in the area of phoniatics were prepared on the turn of the XIX century, when otolaryngology started to become independent of surgery, constituting a separate branch of science. I would like to

mention here the works on the pathology and therapy of stammering (1847) by Józef Dietl (1804-1878), professor at the Universities of Vienna and Cracow, the works on the recognition of the "phonic" laryngoparalysis (1878) and on the phonatory activity of Mm. cricoarytaenoidei posteriores (1900) by Antoni Jurasz (1847-1923), a paediatrist and laryngologist, professor at the Universities of Heidelberg, Poznań and Lwów (Fig.6), as well as the works on the surgical treatment of disturbances in a singer's voice (1898) by professor Teodor Heryng, a laryngologist from Warsaw.



(Fig.6)



(Fig.4)

The professorship-qualifying thesis by Przemyslaw Pieniazek (1850-1916), the founder of clinical otolaryngology in Poland, entitled "The Mechanism of the Glottal Closure" also refers, to some extent, to the problems of phoniatrics. However, neither in the above works nor in many others, which we cannot mention here, were phoniatric issues presented as the main problems.

The first physician who devoted all his activity to the pathophysiology of voice, hearing and speech was Wladyslaw Oltuszewski (1855-1922) (Fig. 4). He worked in Warsaw, where he graduated from the Department of Medicine in 1878. After completing his professional training in the Therapeutic Clinic for Internal Diseases at the Holy Ghost Hospital as well as a course in the area of phoniatrics (among others at Albert Gutzman's in Berlin) he engaged exclusively in the treatment of patients with voice and speech disturbances. From 1896 to 1922 he and his wife Zofia ran the Therapeutic Institute for Speech Impairments. Besides his practical activity he also conducted scientific research. He created the foundations for Polish phoniatric literature publishing 46 works in this domain, among them the handbook "On Speech and its Deviations" issued in the Warsaw Medical Library in 1905.(Fig.5)



(Fig.7)

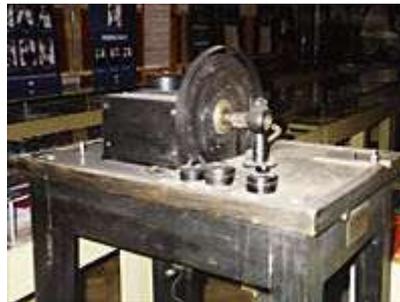


(Fig.5)

First phoniatics centers were established after World War II, especially at numerous university otolaryngology clinics. The first institution of this type was organized in 1925 by professor A. Mitrinowicz-Modrzejewska at the Neurology and Psychiatry Clinic of the Cracow Jagielonian University (supervised by professor Jan Pilz) (Fig.7) and was the first clinic for people with speech deviations. At the same time (1925 - 1926) Benedykt Dylewski, subsequently professor at the High School of Medicine in Lublin, established the first phoniatics center at the Otolaryngology Clinic of Stefan Batory University in Wilno, supervised by prof. Jan Szmurlo. For many years professor Dylewski dealt with the problems of voice and speech disturbances in schoolchildren and he published a number of works in this domain. Another two phoniatics institutes were established at university otolaryngology clinics in the 1930's. In 1932 assistant professor M. Laczkowska, supported by the head of the Otolaryngology Clinic professor A. Laskiewicz, organized an advice center for speech deviations in Poznan (Fig. 1 and 2). A clinical phoniatics ward with an advice center for voice and speech disturbances was founded in Warsaw in 1935, with the help of professor A. Mitrinowicz Modrzejewska and great engagement on the part of the head of the Otolaryngology Clinic professor F. Erbrich.



(Fig.1) Polyaryngoscope



(Fig.2) Stroboscope



Current development trends in phoniatics

The phoniatic ward of the Otolaryngology Clinic in Warsaw was the first one to start working after the end of the Second World War. In 1950 the advice center of the Otolaryngology Clinic in Poznań resumed its activity and in 1951, on the initiative of assistant professor L. Handzel, a new phoniatic institute was founded at the Mental Health Clinic in Wroclaw. Many phoniatics institutes have appeared since that time which can be divided as follows:

1. Institutions at the otolaryngology clinics of high schools of medicine. Phoniatrists work basically in each university otolaryngology clinic but laboratories or advice centers have been created only at the clinics in Warsaw, Wroclaw, Poznań, Cracow and Łódz. Now in each University ENT Department (11 in Poland) phoniatic units are established. In 1972 the Phoniatic Unit was separated from the Otolaryngology Clinic in Wroclaw and it became the first independent phoniatic laboratory in Poland, being the first autonomous unit at a university school of medicine. In 1982 the first independent Department for Phoniatics and Audiology (bed station and outpatients polyclinic) was established at the University School of Medical Sciences in Poznan (head: Prof. A. Pruszewicz). Similar Department for Child ENT and Phoniatics/Audiology was

founded in 1995 in Lublin (head Prof. G.Niedzielska) and in 1998 Łódź (head Prof.D.Gryczyńska). Phoniatic laboratories have beds in otolaryngology clinics, which enables them to admit patients for diagnosis as well as conduct surgeries or rehabilitation activities. Individual regional hospitals with polyclinics (Toruń, Poznań) and sanatoria (Garwolin near Warsaw, Zagórze, Zaskoczyń near Gdańsk) have beds for patients with voice and speech disturbances as well. Advice centers and laboratories are venues for phoniatic courses prepared for students and physicians specializing in otolaryngology, phoniatics and dentistry. The advice centers are also a place where most scientific papers in the area of the pathophysiology of the communication process are prepared.

2. Phoniatic institutions operate at the administration units of the National Health Service. These are mainly specialized independent phoniatics polyclinic centers working within regional advice centers, (district and larger cities) whose activity includes mostly prophylaxis and therapeutic issues.

3. Institutions at high schools of music, where phoniaticists do not only prepare lectures and seminars for students but also look after them and carry out scientific research on the physiopathology of vocal and respiratory organs. Phoniatics laboratories of this type already exist in Warsaw, Wrocław, Gdańsk and Poznań and the establishment at the High School of Music in Warsaw became an independent chair of voice physiopathology in 1971.

In 1959 the minister of health and social welfare signed a decree recognizing phoniatics as an independent medical specialization. He also created a phoniatics committee working at the center of medical education. The aim of the committee is to determine specialization and training norms in phoniatics as well as to give specialization examinations in this domain. Till 1998 a position of state consultant for phoniatics existed, since 1999 it is combined with audiology.

Guidelines of the Polish specialization program for phoniatics in Poland.

His specialization in phoniatics is a second-degree specialization available exclusively to medical doctors with the first-degree specialization in otolaryngology, neurology or psychiatry. It has been recently decided that phoniatics education must be preceded by a the specialization in otolaryngology. Another prerequisite is a three-year phoniatic practice in centers with appropriate resources in terms of staff and equipment. At the moment this type of education takes place in Warsaw, Wrocław, Poznan and Lublin but it can also be available in other centers appointed by the phoniatic committee.

In Poland clinical phoniatics is generally recognized as an independent scientific discipline and a medical specialization, dealing with the pathophysiology of voice and speech organs as well as with audiology (esp. children audiology) as far as it is related to the process of communication. The processes of voice and speech pathophysiology are very complicated and they require extensive knowledge of other medical disciplines as well as non-medical subjects, which makes the specialization period relatively long. As far as the specialization is concerned, phoniatics collaborates with otolaryngology, neurology, psychiatry, physiological acoustics, clinical psychology, endocrinology, allergology, logopedics, psycholinguistics etc.. Phoniatic is most closely related to otolaryngology, which is its base specialization. The mutual activity of organs responsible for the production and perception of voice and speech sounds, the common basic

research methods, the necessary knowledge of the rudiments of laryngological oncology, laryngological allergology etc. require considerable preparation. This why it is possible to start phoniatic education only after the first-degree specialization in laryngology and a three-month practice in neurology and child psychiatry. Full command of the theory and practice in the whole domain as well as extensive knowledge in the area of epidemiology, radiology and the organization and administration of phoniatic institutions are the necessary conditions for the recognition of the phoniatic specialization.

The specialization examination, consisting of a theoretical and a practical part, takes place twice a year - in the spring and in the autumn semesters. In 1973 the ministry of health and social welfare decided to modify the examination regulations. As a result phoniatics became a so-called subspecialization, which means that the intending phoniaticist has to obtain the second-degree specialization in otolaryngology first. In this situation the number of candidates for this specialization has fallen so the proper authorities appeal for the reintroduction of the previous regulations, according to which the first-degree specialization in laryngology was sufficient to start the specialization in phoniatics. Since 1987 till now the phoniatic specialization was realized after the I degree of ENT. Due to this fact the number of specialists in phoniatics amounts to about 120. During last two years a tendency to combine phoniatics with audiology after ENT complete training is proposed by the Ministry of Health and Welfare. Actually we have in the country 4 full professors and 4 assistant professors in phoniatics. The UEP has determined an index according to which one phoniaticist must be available to 200 - 250 000 citizens. In this situation Poland lacks about 50 phoniaticists.

Specialized courses organized by university phoniatic centers in Wroclaw, Warsaw and Poznań are another form of educating phoniaticists. On average there are 6 -7 courses a year, which last from one to three weeks and are compulsory for those specializing in phoniatics.

On 25 June 1965 The Phoniatic Section, one of four sections working within the Polish Otorhinolaryngologic and Head/Neck Surgery Society, was established in Wroclaw. It unites phoniaticists and laryngologists specializing in phoniatics. The Phoniatic Section has 160 members now and its aim is to integrate, stimulate, and supervise the scientific, organizational and educational activities of Polish phoniaticists. This section is managed by the board and it organizes one scientific symposium every year. Since 1972 the section has also been a member of the International Association of Logopedics and Phoniatics (IALP) and it participated in organization of the IVth Congress the Union of European Phoniaticists (UEP) in 1974 in Wroclaw and The XIIth one in Poznan in 1985. Members of the Phoniatic Section have been involved in different bodies of international organizations such as IALP, IFOS, EUFOS, World Voice Consortium etc.

As far as the publishing activity of Polish phoniaticists is concerned there are a few works which should be mentioned: The chapter on voice and speech disturbances in children by B. Dylewski in the handbook "School Hygiene" (1958); the handbooks by A. Mitrynowicz-Modrzejewska "The Physiology and Pathology of Voice, Speech and Hearing" (1963) and "Infancy Deafness" (1974) as well as her materials for University School of Music students and educationalists and for philological sections; S. Klajmann (1975) "An Outline of Voice Hygiene"; M. Laczowska (1976) "The Principles of the Anatomy and

Physiology of Hearing and Speech Organs". Besides A. Pruszewicz prepared the chapters on voice and speech disturbances in two editions of the handbook for otolaryngology specialists "Clinical Otolaryngology" (1972-1980), edited by A. Zakrzewski, and in the book for Child Laryngologists "Developmental Laryngology" (1979), edited by E. Kossowska. He also published and was the editor of two hand books: Clinical Phoniatics (1992), Outlines of Clinical Audiology (1994) and the Proceedings of the XXth UEP Congress in Poznan (1985).

L. Handzel prepared the chapter entitled "The Physiology and Pathology of Voice as Essential Problems of Phoniatics" in the handbook " Otolaryngology for Students of Medicine", edited by St. Iwankiewicz (1973), and J. Tronczynska wrote a chapter on the phoniatic treatment of cleft palate for the handbook by J. Bardach (1974) entitled "Upper Lip and Palate Cleavage".

In 1966, on the suggestion of L. Handzel, the Phoniatic Section started to issue "Phoniatic News", edited by A. Pruszewicz. This journal appeared 2-3 times a year with a circulation of around 400 and was printed in the rotaprint technique. Altogether there have appeared 24 editions, which included not only reports on scientific meetings of the Phoniatic Section and on its activity but also information about the history, scientific achievements and organization of phoniatic centers as well as historical data on Polish phoniaticists. The first thing to be published was the Polish phoniatic bibliography before 1965 as well as works which appeared after this date and were considered to be novelties in the Polish and foreign phoniatic bibliography. Individual editions included communiqués on specialized training, reports on the ongoing courses as well as original scientific works concerning the pathophysiology of the communication process, theoretical foundations of phoniatics as a scientific discipline and the problems of phoniaticist education. The publishing of the Phoniatic News was suspended in 1970 . Now Polish phoniaticists publish their scientific papers in the bimonthly "Polish Otolaryngology", which is an organ of the Polish Society of Otorhinolaryngologists and H/N Surgeons. Division of the journal called "Phoniatics" changed its name to "Phoniatics and Audiology" in 1979. Polish phoniatics has a representative in the State Otolaryngology Board, which consists of five people. The aim of the board is to control and program the development of individual specializations.

Scientific activity within Polish phoniatics

Phoniatics as a scientific discipline has been developing in Poland in close relation with the trends, tendencies and scientific achievements of the European phoniatics. All famous Polish phoniaticists of the old generation were trained along with Austrian (E. Froeschels, D. Weiss) or German (Flatau, Lange, Nadoleczny) phoniaticists and held close relations with them. Many phoniaticists of the younger generation were in a close scientific and friendly contact with professor M. Seeman and his successors Eva and Karel Sedlacek, who organized the first independent phoniatics clinic. We also feel associated with the school of H. Gutzman, due to professor Seeman, who was a famous student of this great phoniatician.

Polish phoniaticists are also in the close and friendly relations with their colleagues from other European countries like Russia, France, Switzerland, Yugoslavia, Spain, Holland or the Scandinavian countries. As a result main trends

in the scientific activity of Polish phoniatrists also reflect, besides some peculiarities characteristic of the given language and country, the problems of phoniatrics in Europe.

The main trends in the activity of Polish phoniatrists

1. Hearing disturbances and children deafness. Works in this domain concern mainly audiological diagnosis methods (the examination of hearing with filtered noise bands, the examination of phoneme recognition and discrimination in word tests, objective topodiagnosics of hearing disorders, construction of new acoustically balanced speech audiometry tests. electrophysiological examination, ERA , otoacoustic emission), acoustical voice structure examination methods, the formation of musical speech factors, X-ray larynx examination and state-of-the-art in rehabilitation methods for children with hearing disturbances. The above methods are not limited to the rehabilitation of articulated speech only but they also include voice, hearing and the environment the child lives in (e.g. advice centers for mothers with deaf children). Recently were worked out the complex problems of diagnostics and rehabilitation in patients with cochlear implants together with evaluation of their influence on voice performance. New solutions in hearing screening in neonates and children were prepared as well as basic problems in prophylaxis and prevention of hearing disabilities.

2. Stammering examinations, performed mainly in the centers in Wroclaw, Warsaw, Gdańsk, and Poznań. Their aim is to explain some problems in the area of etiopathogenesis (electrophysiological examination like ERA, EMG, EEG and those of the electrolyte volume in blood serum, usg, X-ray kinematographic examination of respiratory, articulatory and phonatory organs). The results of these examinations led up to the isolation of the tetany stammering and subsequently made it possible to suggest an appropriate therapy including the application of kinesiotherapy, musical motor exercise, pharmacological preparations or complex treatment in appropriate specialized institutions. Further investigation in this domain concerned the development of a cybernetic model for the disphatic stammering resulting from damage to the central nervous system, especially its integration and coordination centers.

3. The pathophysiology of substitute voice after total laryngectomy. Works in this domain concern the influence of various factors before, during and after the surgery on the results of voice and speech rehabilitation, the classification of the substitute voice and speech qualities and the comprehensibility examination for this speech together with acoustic analysis using MDVP and CSL methods. Especially should be emphasize the X-ray kinematographic examination of the pseudoglottis and oesophagus as well as the electroacoustical and aerodynamic examinations of the alaryngeal voice.

There are also interesting findings related to the examination of the substitute voice after the surgical formation of a pseudoglottis in patients after laryngectomy or after the application of a neck vibration apparatus. Some works discuss the examination of voice after partial laryngectomies and after X-ray and CO60 radiation therapy. These examinations have shown the important role of phoniatrists in the rehabilitation of the communication process and in the resocialization of the growing number of patients after laryngectomy.

4. The examination of the macrostructure and the microstructure of the physiological and pathological speech and singing voice (in the deaf, after partial laryngectomies as well as in cases of different forms of laryngoparesis, of voice in virilization and other endocrinological diseases, cleft palate, in noise induced hypoacusis, after larynx papillomatosis extirpation and posttraumatic larynx cicatrices, in profesional dysphonia). The examinations of the macro- and microstructure of the singing voice are also concentrated on University Schools of Music.

5. The disturbances of voice, hearing and speech in the case of cleft palate are also a serious scientific problem, which has been given a lot of attention. The research has been concentrated on EMG, anthropological and X-ray examinations of the skull pneumatization systems, EEG and intelligence tests. New methods of rhinospirometry and nasometry together with acoustic methods for evaluation of the rhinophonia were introduced into the clinical practice. The importance of this research both for the rehabilitation of the communication process and for the selection of the appropriate surgical therapy has been emphasized in many works. It has also been stressed that the treatment of patients with cleft palate must be concurrent with their rehabilitation.

6. The examination of hearing voice and speech disturbances caused by changes in the central nervous system is concentrated basically on the symptomatology and rehabilitation of these disturbances in the case of different cerebral forms of infantile paralysis and in children with low birth weight (LBW)..

Another group of works is constituted by publications on prophylaxis and prevention in the case of infantile voice disturbances and for people using their voice for professional purposes. This research is the first step towards testing a compulsory examination of suitability for voice-strained occupations in our country.

Other scientific papers going beyond the scope of topics discussed before concern the pathophysiology of the communication process as a whole. They show the necessity for a comprehensive presentation of all disturbances in this domain by university phoniatrics centers.

Most of the problems discussed in this paper have been presented in Polish literature; a great number of articles have been published in foreign journals and presented as lectures during international symposia, which is confirmed by the following bibliography.

Literature

Barcinski J.: Przemyslaw Pieniazek, Franciszek Nowotny i Antoni Jurasz/ Sen./pionierzy laryngologii i otologii zwiatowej. Arch. Hist. Med., 1970, 33, 409-413.

Biesalski P., Pruszewicz A.: Positionspaper: Paedaudiologie in der UEP. Sprache, Stimme, Gehör, 1987, 11, 79-81. –

Dietl J.: Ein Beitrag zur Pathologie und Therapie des Stotterns. Z. der Kais. Kön. Gesellschaft der Ärzte zu Wien. 1847, 2, 199-228.

Dylewski B.: Wady głosu i mowy. W: Higiena szkolna pod red M. Kacprzaka. PZWL, Warszawa, 1958.

Golebiowska I.: Jan Siestrzynski - lekarz i nauczyciel głuchoniemych. Otolar. Pol., 1970, 24, 583-586.

Handzel L.: Wlasne dos wiadczenia w rehabilitacji glosu. *Otolar. Pol.*, 1963, 17, 413-416.

Handzel L., Weiss B.: Continuation de recherches sur les troubles de la parole du type begaiement dans l'insuffisance parathyroïdienne. *Proceedings of the XIIth International Speech and Voice Therapy Conference. Padua 1962.* Ed. by L. Croatto and C. Croatto-Martinolli, Padua, 1963, 452-456.

Handzel, L.: *Musische Faktoren in der Sprache der tauben Kinder.* XIII. *Congressus Vindobonae 1965. De Therapia Vocis et Lozuelae.* 1965, 53, 231-233.

Handzel L., Moron K.: Functional Pattern of the Larynx in Deaf Children. *Pol. Rev. Rad. Nuci. Med.*, 1972, 34, 17-21.

Handzel L., Weiss B.: Le traitement de certains aspects du begaiement. *Acta Otorhinolaryngol. Belg.*, 1973, 27, 38-41.

Handzel L., Zalewski J., Denderes F.: Problemy diagnostyczne mikrostruktury glosu. *IVth Congress of the Union of European Phoniaticians. Wroclaw, 1975. Papers and Abstracts 1976*, 81, 87.

Handzel L., Jarosz A.: Education de la voix et de la parole chez les enfants sourds. *XVIIth IALP Congress Proceedings. Copenhagen, 1978*, 855-858.

Heryng T.: Die Behandlung der Singstimme mittest operativer Eingriffe. *Comptes du XII. Congr. Inter. d. Medicine Moscou 7-14. VIII. 1897. Vol. VI, Sect. XII b. Malades du larynx et du nez Moscou, 1898*, 101-109.

Jankowski P., Pruszevicz A., Swidzinski P.: VEP latency and some properties of simple motor reaction - time distribution. *Psychol.Res.*, 1990, 52, 28-34.

Jordan J., Klajman S.: Investigations comparatives ayant pour objet la structure histologique de la levre de l'homme et celle du macaque. *Rev. Laryngol.*, 1965, 85, 44-58.

Jurasz A.: Beitrage zur Diagnostik der phonischen Kehkopflahmung. *D. Med. Wochenschrift*, 1878, 52, 180-181.

Jurasz A.: Über die phonatorische Tatigkeit der Mm. cricoarytaenoidei postici. *VII. Versammlung der Suddeutschen ORL in Heidelberg, 1900*, 19-23.

Klajman S., Betlejewski S., Novak A., Sedlácková E.: Zur Stimmbildung bei Kindern mit Syndrom Down. *De Therapia Vocis et Lozuelae Vol.*, 1965, 2, 219-222.

Klajman S.: Some physiological speech problems in hyperbaria. *Proc. of the VIth Int. Congr. Phonetic Sc. Acad. Publ. House of Cs. Ac. of Cs. Prague, 1968*, 489-491.

Laczowska M.: Die postoperative Behandlung der Lippen-Kiefer-Gaumenspalten. *Arch. Ohren-usw. Heilk.*, 1958, 173, 539-542.

Laczowska M.: Concerning the function of the velum. *Folia Phoniatr.*, 1961, 13, 107-111.

Laczowska M.: Ergebnisse der Audiometrie in angeborenen Entwicklungsanomalien des Gaumens. *Proceedings of the XIIth International Speech and Voice Therapy Conference Padua, 1962*, 483-490.

Laczowska M.: Die Nasennebenhöhlen als Resonanzräume. *Proceedings XVI Int. Congr. Logopedics and Phoniatics Interlaken, Karger, Basel, 1976*, 278-281.

Laczowska M.: Velopharyngeal closure in speech. *The Study of Sounds. The Phonetic Society of Japan 1978*, 18, 357-360.

Lobacz P., Tarnowska C.: Phonetic evaluation of alaryngeal speech. *Speech Analysis and Synthesis, 1981*, 5, 185-200 (Pol. Acad. of Sciences, Inst. of Fundamental Technological Research. Ed. by W.Jassem).

Mozolewski E., Zietek E., Wysocki R., Jach K., Jassem W.: Arythenoid shunt in laryngectomized patients. *Laryngoscope*, 1975, 85, 853-861.

Mozolewski E., Tarnowska C., Jach K., Zietek E., Wysocki R., Jassem W., Lobacz

P.: Primary mucoplastic vocal shunt - surgical and prosthesis approaches to speech rehabilitation. W: Surgical and Prosthesis Appr. to Speech Rehabil. Chapt. 11 Ed. by Donal P. Sheed M.D., Weinberg B., G.K. Hall, Medical Publishers Boston, Massachusetts, 1980, 139-185.

Mitrinowicz-Modrzejewska A.: The development of Audiology, Phoniatory and Logopedics in Poland. Polish Medical History and Science Bulletin, 1962, 10, 99-101.

Mitrinowicz-Modrzejewska A.: Fizjologia i patologia głosu, sluchu i mowy. PZWL, Warszawa, 1963.

Mitrinowicz-Modrzejewska A., Pawlowski Z., Tluchowski W.: Wady rozwojowe podniebienia jako zaburzenia wieloukladowe. Rozpr. Wydz. Nauk Med. PAN, Warszawa, 1965, 10, 1.

Mitrinowicz-Modrzejewska A.: Gluchota wieku dziecięcego. PZWL, Warszawa, 1968.

Mitrinowicz-Modrzejewska A.: Akustyka psychofizjologiczna w medycynie. PZWL, Warszawa, 1974.

Mitrinowicz A.: Współczesna foniatrya, jej cele i drogi rozwoju

Niedzielska G., Pruszevicz A., Swidzinski P.: Acoustic evaluation of voice in individuals with alcohol addiction. Folia Phoniatr. Logoped., 1994, 46, 115-122.

Niedzielska G., Kupisz K., Jezierska E.: Kształt pseudogłosni u pacjentów po laryngektomii wykonanej bypassem ślinowym a jakość mowy zastępczej. Otolaryngol. Pol., 1959, 49, supl. 19.

Niedzielska G., Katska E. Wartość behawioralnych metod sluchu w odniesieniu do ABR. Annales Universitatis Mariae Curie-Sklodowska Lublin-Polonia, 1995, 34, 193-196.

Niedzielska G., Katska E.: Ocena uszkodzenia narządu sluchu w przebiegu cukrzycy u dzieci. Otolaryngol. Pol., 1997, 22, 274-277.

Niedzielska G., Pruszevicz A.: Acoustic and morphological lesions of the larynx in alcoholics. Voice Update, Elsevier Science, M.Pais Clemente, 1996, 337-362.

Niedzielska G., Katska E.: ABR disturbances in children with insulin dependent diabetes mellitus. Int J Paed Otorhinolaryngol, 1998, 44, 1-4.

Niedzielska G., Katska E., Sikora P., Szajner-Milart I.: ABR differences before and after dialyses. Int J Paed Otorhinolaryngol, 1999, 48, 27-29.

Obrebowski A., Kierzek A.: Anlässlich des 100. Jubiläum der Warschauer Phoniatischen Heilanstalt. Folia Phoniatr., 1991, 43, 306.

Obrebowski A., Kierzek A.: Władysław Otluszewski - organizator pierwszej w Polsce lecznicy foniatrycznej (w 100 rocznicę założenia). Otolaryngol. Pol., 1992, 46, 415-418.

Obrebowski A., Pruszevicz A.: Bemerkungen zur Prophylaxe und Therapie der exogene bedingten Stimmvirilisation. Sprache, Stimme, Gehör, 1990, 14, 103-106.

Paciorkiewicz M., Wyszogrodzki P., Szmurlo-Tarnowska M.: Jan Szmurlo - życie i działalność naukowa (w 25 rocznicę zgonu). Otolaryngol. Pol., 1978, 32, 339-342.

Pawlowski Z.: Obiektywna metoda badania czynności fonacyjnej krtani. Arch. Akust., Warszawa, 1970, 5, 331-351.

Pawlowski Z.: Comparative analysis of microphone recordings registered at various points of the vocal tract. Folia Phoniatr., 1972, 24, 360-370.

Pruszevicz A., Obrebowski A.: Wyrazistość i różniczalność głosek testu jednosylabowego dla dzieci. Otolaryngol. Pol., 1970, 24, 447-451.

Pruszevicz A., Obrebowski A., Stachowski B., Kaczmarek J.: Elektromyographische Untersuchung der Muskeln des Gaumens, des Rachens und der Lippen während der Phonation und des Schluckens. HNO, 1971, 19, 77-81.

Pruszewicz A., Obrebowski A., Donat-Jasiak T., Szmejowa A.: Radiologic picture of the hypopharynx recessus after laryngectomy. *J ORL*, 1972, 34, 296-302.

Pruszewicz A., Obrebowski A., Jassem W., Kubzdela, H.: Ausgeprägte akustische Merkmale virilisierter Mädchenstimmen. *Folia Phoniatr.*, 1973, 25, 331-341.

Pruszewicz A., Jassem W., Waclawik W.: Effect of noise on some acoustical parameters of speech. *Folia Phoniatr.*, 1974, 26, 307-318.

Pruszewicz A., Obrebowski A.: Einfluss des hohen Alters sowie der von diesem bedingten Faktoren auf die Stimm- und Sprachrehabilitation bei Laryngektomierten. *Geriatrische Aspekte in der HNO-Heilkunde*. Thieme, Leipzig, 1976, 178-183.

Pruszewicz A., Obrebowski A., Gradzki J.: Postmedicamentous voice virilisation. X-ray examination of the larynx. *XVIth Int. Congr. Logopedics and Phoniatics Interlaken*. Karger, Basel, 1976, 396-399.

Pruszewicz A., Obrebowski A., Zgorzalewicz B.: Selected problems in the hearing, voices and speech disturbances in the extrapyramidal form of cerebral palsy. *Folia Phoniatr.*, 1977, 29, 302-310.

Pruszewicz A.: Pädaudiologische und phoniatische Untersuchungen bei mittelgradig hörgestörten Kindern. *Sprache, Stimme, Gehör*, 1980, 4, 102-106.

Pruszewicz A.: *Volksrepublik Polen - 75 Jahre Phoniatrie*. Humboldt Universität zu Berlin, 1980, 143-154

Pruszewicz A., Obrebowski A., Swidzinski P., Rydzewski A.: Kochleare Gehörbeschädigung bei Kindern mit serologischer Unverträglichkeit. *Folia Phoniatr.*, 1980, 32, 274-284.

Pruszewicz A., Obrebowski A., Woznica B.: Ausgewählte Probleme aus dem Bereich elektrischer und elektrophysiologischer Untersuchungen bei Laryngektomierten. *HNO Praxis*, 1981, 6, 220.

Pruszewicz A., Kruk-Zagajewska A., Szyfter W., Smolinska K.: Lipid levels in patients with sudden deafness of unknown etiology. *Audiology*, 1983, 22, 63-72.

Pruszewicz A.: Phoniatic Section of Polish Otolaryngological Society. *Folia Phoniatr.*, 1984, 36, 305.

Pruszewicz A., Kruk-Zagajewska A.: Phoniatic disturbances in patients after partial tongue resection for malignant neoplasma. *Folia Phoniatr.*, 1984, 36, 84-92.

Pruszewicz A., Obrebowski A.: Aspetti diagnostici della balbuzie. *Foniatra e logopedia oggi*. Omega, Torino, 1985, 191-197.

Pruszewicz A., Sekula A.: Prof. dr Antoni Jurasz (sen.), a cofounder of laryngology and a precursor of clinical phoniatics. *Folia Phoniatr.*, 1985, 37, 305-306.

Pruszewicz A., Narozny K., Obrebowski A., Swidzinski P., Chmielecka K.: Evaluation of time parameters of acoustic reflex arc using ERA and SMR techniques. *Logopedics and Phoniatics, Proc. of XXth IALP Congress, Tokyo*, 1986, 544-545.

Pruszewicz A., Sekula A.: Jan Siestrzynski (1788-1824) Cofounder of the Institute for the Deaf and Dumb established in 1917 in Warsaw. *Folia Phoniatr.*, 1987, 39, 272.

Pruszewicz A., Sekula A., History Committee Page. The 85th Anniversary of the Publications of the First Handbook of Phoniatics in Poland. *Folia Phoniatr.*, 1989, 41, 53.

Pruszewicz A., Niedzielska G.: Prof. B. Dylewski (1894-1988). One of the First University Phoniaticians in Poland. *Folia Phoniatr.*, 1989, 41, 54.

Pruszewicz A.: *Disturbi evolutivi negli immaturi. Stato dell'arte in foniatra e logopedia*. Ed. O.Schindler, Omega, Milano, 1990.

Pruszewicz A.: History page. Jan Hieronim Chosciejewski's (Ioannes Groscesius P

et MD) a Polis Renaissance Physician's Remarks on Phoniatics in the Handbook „De morbis puerorum“ based on Hieronim Mercurialis Lectures. *Folia Phoniatr.*, 1990, 42, 332-335.

Pruszewicz A., Obrebowski A., Narozny K., Swidzinski P.: Zeitparameter des psychoneurologischen Krankheiten. *Sprache, Stimme, Gehör*, 1991, 15, 110-112.

Pruszewicz A., Obrebowski A., Swidzinski P., Demenko G., Wika T., Wojciechowska A.: Usefulness of Acoustic Studies on the Differential Diagnostics of Organic and Functional Dysphonia. *Acta Otolaryngol. (Stockh.)*, 1991, 11, 414-419.

Pruszewicz A., Obrebowski A., Gasiorek J., Gasiorek M.: Psycho-Social Conditions of Laryngectomized Patients. *Bull d'Audiophon. Ann. Sc. Univ., Franche-Comte*, 1992, 8, 113-120.

Pruszewicz A., Woznica B., Kruk-Zagajewska A., Obrebowski A.: Electromyography of Cricopharyngeal Muscles in Patients with Oesophageal Speech. *Acta Otolaryngol. (Stockh.)*, 1992, 112, 366-369.

Pruszewicz A., Demenko G., Wika T.: Variability analysis of Fo parameter in the voice of individuals with hearing disturbances. *Acta Otolaryngol. (Stockh.)*, 1993, 11, 450-454.

Pruszewicz A., Obrebowski A., Woznica B., Gasiorek J.: Ausgewählte Dysphagieprobleme in der Phoniatrie. *Sprache, Stimme, Gehör*, 1995, 19, 4, 162-166.

Pruszewicz A., Sekula A.: Hard of hearing children: factors negatively influencing rehabilitation. *Folia Phoniatr. Logop.*, 1996, 48, 122-126.

Szyfter W., Pruszewicz A., Woznica B., Swidzinski P., Szymiec E., Karlik M.: The acoustic analysis of voice in patients with multichannel cochlear implant. *Rev. Laryngol. Otol. Rhinol.*, 1996, 117, 3, 225-227.

Tarnowska C., Mozolewski E., Lobacz P., Jassem W., Wysocki R.: Die Fistelsprache nach Laryngektomie aus phoniatischer Sicht. *HNO-Praxis*, 1979, 4, 284-292.

Tarnowska C., Mozolewski E., Pruszewicz A., Jassem W., Jach K., Zietek E., Wysocki R., Paczesniak E.: Próba porównania mowy zastępczej uzyskanych po klasycznych i chirurgicznych metodach rehabilitacji. *Otolar. Pol.*, 1982, 36, 215-228.

Tarnowska C., Mozolewski E., Pruszewicz A., Zietek E.: Oesophageal speech after sphincteroplasty. *Aktuelle Beiträge zur Oto-Rhino-Laryngologie*. Wilhelm Pieck Universität Rostock, 1989, 29-31.

Tarnowska C., Mozolewski E., Zietek E., Richter L., Demenko G.: Perceptiv-akustische Charakteristik von Oesophagusstimme und -sprache nach plastischer Umformung des pharyngo-oesophagealen Abschnittes der sogenannten PhOA-plastik. *Otorhinolaryngol. Nova*, 1997, 7, 143-149.

Tluchowski W., Kacprowski J., Mikiel W., Niedzwiecki A., Komorowska A.: Fonospektroskopie kliniczna. *Otolar. Pol.*, 1975, 29, 251-259.

Tluchowski W.: Ocena elektrolaryngomiograficzna śród- i pooperacyjnych uszkodzeń nerwów krtaniowych wstecznych. *Pamiętnik XLVI Zjazdu Chirurgów Polskich*. Lublin 14.-16. IX 1972., 1972, 1, 442-448.

Tluchowski W., Komorowska A.: Czynność bioelektryczna mięśni krtani w pooperacyjnych uszkodzeniach nerwów zwrotnych. *Pamiętnik XXIX Zjazdu Otolaryngologów Polskich*. Białystok 5.-7. IX 1974, 364- 367.- 85.

Tronczynska J., Sobotkowski K.: Anatomiczne warunki wytworzenia głosu przelykowego po laryngektomii. *Otolar. Pol.*, 1965, 19, 215-220.

Tronczynska J., Sobotkowski K. : Anatomiczne warunki wytworzenia głosu przelykowego po laryngektomii. *Otolar. Pol.*, 1965, 19, 215-220

Tronczynska J.: Electrorhinopneumography as an objective method of assessment of velopharyngeal insufficiency in cleft-palate patients. *Folia phoniatr.*, 1972, 24, 371-380.

Tronczynska J., Sulkowski W.: Problemy diagnostyki i orzecznictwa w zawodowych chorobach glosu w swietle wlasnych obserwacji. *Med. Pracy*, 1974, 25, 437-444.

Zakrzewski A., Jassem W., Pruszevicz A., Obrebowski A.: Identification and discrimination of speech sounds in monosyllabic meaningful words and nonsense words by children. *Audiology*, 1975, 14, 21-26.

Zaleski T.: Rhythmic skills in stuttering children. *De Therapia Vocis et Loquellae*. XIX Congr. Vindobonae, 1965, 371-373.

Zaleski T., Dillenschneider E., Klotz G., Greiner G.F.: Aspects sonographiques des operes du maxillaire superier. *J. Franc. Otorhinolaryngol*, 1970, 19, 727-729.

Zaleski T.: Speech development in the small institutionalised children under multidirectional stimulation. XVIIth IALP Congress Proc., Copenhagen, 1977.