

## REPORT ON THE SECOND CONGRESS FASE - 78

Warsaw, September 18-22, 1978

The Second Congress FASE, organized by the Institute of Fundamental Technological Research in cooperation with the Polish Acoustical Committee of the Polish Academy of Sciences and the Polish Acoustical Society took place in the conference rooms of the Palace of Science and Culture on 18-22 September. The Congress was sponsored by FASE (Federation of Acoustical Societies of Europe) authorities represented by the president of FASE prof. dr. H. G. DIESTEL, vice-president prof. dr. O. W. van WULFFTEN-PALTHE and FASE secretary dr. F. KOLMER.

During the Congress, a meeting of FASE members was held at Jablonna near Warsaw. The members discussed current matters of the Federation and chose new authorities. Dr. Paul FRANÇOIS was elected the president of FASE, prof. dr I. MALECKI the vice-president and dr. F. KOLMER was reelected as the secretary.

320 scientists from all over the world participated in the Congress. They represented 22 countries namely: Great Britain, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, France, Greece, GDR, GFR, Holland, Hungary, Iran, Italy, Japan, Poland, Roumania, Spain, Sweden, USA, USSR and Yugoslavia.

The number of the Polish participants amounted to 153 persons, the number of foreign participants - to 167 persons.

The number of papers amounted to 174 including 1 plenary, 11 invited, 118 contributed and 44 poster form papers.

During the opening ceremony, chaired by the President of the Congress prof. dr. Stefan CZARNECKI, several speeches were presented by: prof. dr Ignacy MALECKI, vice-president of the Polish Academy of Sciences prof. dr. A. TRAUTMAN and FASE president prof. dr. H. G. DIESTEL. Finally, prof. dr. I. MALECKI presented a plenary paper entitled "How the structure of matter is seen by the acoustic waves".

After the opening ceremony the participants saw three films:

1. Fragments of 9th ICA Congress, Madrid, 1977.
2. Computer simulation of elastic waves from transducer: a) longitudinal waves, b) transversal waves - K. HARUMI, T. SAITO, T. FUJIMORI (Japan).
3. Influence of ultrasound on liquid flow through inhomogeneous media - H. V. FAIRBANKS (USA).

The second film evoked special interest among the participants. It presented, in a demonstrative way, simulation of resilient vibrations in non-steady state. The Japanese side presented the Organizing Committee of the Congress with this valuable film.

The Congress debates were held in three parallel sections which were divided into particular sessions.

Section I - *Acoustic Waves and the Structure of Matter* included the following session:

1. Acoustics of Fluids (8 papers).
2. Ultrasonic Waves. Generation and Propagation in Solids (15 papers).
3. Interaction of Acoustic Waves with Material Structure (8 papers).
4. Nondestructive Testing and Flaw Recognition (13 papers).

### 5. Materials characterization (15 papers).

Section II — *Ultrasonic Methods of Location and Recognition* was divided into following sessions:

1. Wave Propagation.
2. Ultrasonic Diagnostic Methods.
3. Holography and Optical Methods in Acoustics.
4. Underwater Acoustics (4 papers).
5. Geoacoustics (5 papers).
6. Transducers (8 papers).

Section III — *Objective and Subjective Evaluation of Sound in Limited Space* dealt with the following groups of problems:

1. Concert Halls and Auditoria (18 papers).
2. Industrial Halls (8 papers).
3. Urban Areas (16 papers).
4. Methods of Measurements and Subjective Evaluation (11 papers).

Broadly understood problems of nondestructive testing were the most popular among the participants of Section I and the topics discussed involved not only flaw recognition of material macrostructure but also attempts at quantitative evaluation of it and analysis of physical state of materials.

The problem of material cracking was another important subject of Section I.

Moreover, Section I dealt with development of research on generation of acousto-electric waves and phenomena accompanying it as well as with investigations of liquid relaxation and generation of acoustic waves by means of lasers.

In Section II the greatest attention was devoted to the theme of ultrasonic diagnostic methods, understood in a broad sense. It not only included new methods of this quickly developing scientific field but also a number of fundamental problems in the field of ultrasonic waves propagation in biological media as well as construction of piezoelectric transducers.

The popularity of this theme is justified by both tradition of Polish research which has investigated this field for several years as well as rapid progress of ultrasonic diagnostic methods all over the world. According to current prospects these methods will be soon as widely used in medicine as X-ray methods nowadays.

Several interesting papers dealing with underwater acoustics and geoacoustics completed the section forming a synthetic view of ultrasonic methods applied in detection and recognition of objects of different kinds.

During the debates of Section III a series of lectures were devoted to the problems which joined psychoacoustics and interior acoustics. They presented interrelation of objective measurement methods and subjective evaluation. Such interrelation is especially important when acoustical conditions differ from the statistic theory. Most of the papers touching the problem of subjective evaluation dealt with speech for which it was easier, compared with music for example, to have a selection of quantitative criteria.

Significant development of research based on computer simulation and the latest measurement methods were characteristic factors of the III Section lectures.

## Section I

### Acoustics of Fluids

L. M. LIAMSHEV, *Laser Generated Sound in Liquid* (invited paper).

R. PŁOWIEC, *Viscoelastic Relaxation Region in some Natural and Synthetic Oils* (poster form).

E. SOCZKIEWICZ, *Propagation of Ultrasound and Hole Volumes in the Hole Theory of Liquids.*

K. TAKAGI, K. NEGISHI, *Study of Vibrational Relaxation in Liquid Pyridine by High-Resolution Bragg Reflection Method.*

E. YARONIS, A. VOLEISIS, B. VOLEISIENE, *Interferometric Studies of Ultrasound Velocity Dispersion in Aqueous Solutions of Lanthanide Salts.*

A. JUSZKIEWICZ, J. KOPYŁOWICZ, Z. KOZŁOWSKI, *Measurements of some Anomalies in the Propagation of Ultrasonic Waves in Pure Water.*

L. WERLBAŃ, L. SKUBISZAK, *Properties of Mixtures of Gamma-Butyrolactone with Selected Ethers and Water Fixed by Ultrasonic Methods.*

#### Materials Characterization

R. W. B. STEPHENS, *Acoustics and Material Properties* (invited paper).

L. FRÖHLICH, W. MORGNER, Z. PAWŁOWSKI, *Applications of Acoustic Methods to Assess Material Structure* (poster form).

S. KOZAKOWSKI, *Effect of Internal Stresses in Castings on the Changes in Ultrasonic Wave Velocities* (poster form).

A. KULIK, J. RYLL-NARDZEWSKI, *Applications of Flexural Vibrations of Thick Circular Plates in Physical Examinations of Solids* (poster form).

H. GAWDA, *Ultrasonic Investigations of the Mechanical Properties of Stalks of Wheat* (poster form).

A. BROKOWSKI, *Remarks upon the Lateral Displacement at Rayleigh and Lamb Critical Angle* (poster form).

A. PILARSKI, Z. PAWŁOWSKI, *Bond Strength Evaluation with Ultrasonic Method* (poster form).

B. PEŃSKO, L. FILIPCZYŃSKI, *Ultrasonic Method and Apparatus for Fatigue Testing of Steel Wires* (poster form).

K. A. KUNERT, Z. KOZŁOWSKI, *Ultrasonic Investigation of Cross-Linked Polyethylene* (poster form).

J. LEWANDOWSKI, J. RANACHOWSKI, E. RYLL-NARDZEWSKA, *Ultrasonic Method of Mechanical Properties Estimation of Ceramic Materials.*

Z. PAWŁOWSKI, G. FUNKE, *Evaluation of Fracture Risk with Ultrasonic Method.*

Z. T. KURLANDZKA, *Brittle Fracture of Elastic Dielectric in Presence of Electromagnetic Forces.*

K. ELEK, J. GRANAT, P. PFELIEGEL, *Measurement of the Complex Young's Modulus on Samples of Annular Discs, e.g. Grinding Wheels.*

J. LEWANDOWSKI, *Scattering of Compression Acoustic Waves in Inhomogeneous Media.*

#### Ultrasonic Waves. Generation and Propagation in Solids

D. SETTE, *Sound in Liquid Crystals* (invited paper).

R. LEĆ, *Piezoelectric Properties of  $\text{LiIO}_3$  Crystals* (poster form).

V. K. NGUYEN, W. PAJEWSKI, *Generation of the Acoustoelectric Wave by Means of the Shear Vibrations Source* (poster form).

A. BYSZEWSKI, A. DRZEWIECKA, M. SZUSTAKOWSKI, *Applications of Optical Reflected Method for Surface Acoustic Waves.*

W. CIURAPIŃSKI, K. GOŹDZIK, M. SZUSTAKOWSKI, B. SWIETLICKI, *Acousto-optic Diffraction of Light in Thin Plates of Lithium Niobate Single Crystals.*

L. SOLARZ, *Diffraction of Surface Waves on a Waveguide.*

T. S. LIEM, *Electromagnetic Acoustic Transducer in Non-Destructive Testing of Metals.*

S. KOLNIK, J. KLIMKO, *Electromagnetic Generation of Ultrasonic Surface Waves a Perturbed Boundary Conditions.*

P. LORANC, M. SZUSTAKOWSKI, *Some Remarks on Causes of Damage in LiIO<sub>3</sub> Piezoelectric Transducers.*

E. DANICKI, *Theory of Generation of SAW Bulk Waves and Plate Modes by ITD.*

K. REGIŃSKI, *Quasi-Continuous Description of the Acoustic and Optical Vibrations in Ionic Crystals.*

J. BERGER, F. PLIQUE, K. ROUSSEAU, A. ZAREMBOWITCH, *Ultrasonic and Brillouin Scattering Investigation of the Structural Phase Transition of Antiferro-distorsive Crystals.*

M. FISCHER, B. PERRIN, A. ZAREMBOWITCH, *Acoustical Investigation of Anharmonic Behaviour of Crystal Showing Structural Phase Transition.*

D. HOLZ, *Problems on Measuring Mechanical Data Important for Acoustics of Inhomogeneous Anisotropic Material.*

#### Interaction of Acoustic Waves with Material Structure

W. EISENMENGER, *Emission, Absorption and Propagation of Acoustic THZ Waves in Solids* (invited paper).

P. BOCH, A. DANGER, C. GAULT, *Ultrasonic Investigation of the Formation of Guinier-Preston Zones in Aluminium-Magnesium Alloys* (poster form).

L. LIPIŃSKI, *Modulus Defect Stimulated by Ultrasonic Excitation in Polycrystalline Metal Samples* (poster form).

W. CHOMKA, D. SOMATOWICZ, *Influence of Sodium Oxide on Internal Friction in Iron-Metaphosphate Glass* (poster form).

J. DEPUTAT, *Temperature Dependence of Dislocation Internal Friction in Sodium Chloride* (poster form).

B. FAY, *Calculation of the Density of Scattering Centres.*

L. OPILSKA, A. OPILSKI, *Acoustical Method of the Energy Gap Determination in Semiconductors.*

J. A. GALLEGU-JUAREZ, E. RIEVA, *Ultrasonic Aggregation of Micron Aerosol Particles.*

#### Nondestructive Testing and Flaw Recognition

J. OBRAZ, *Some New Achievements in Ultrasonic Nondestructive Testing* (invited paper)

M. PRZYBYŁOWICZ, J. KARLE, *Digital Evaluation of the Flaw Size in Ultrasonic Nondestructive Testing* (poster form).

Z. PAWŁOWSKI, J. GORZNY, J. SZELAŻEK, *Experience in Ultrasonic Testing of Pipeline Weld* (poster form).

L. ADLER, *Selected Problems in Quantitative Nondestructive Evaluation.*

T. R. LICHT, *Developments in Acoustic Emission Instrumentation.*

C. GAZANHES, *Targets Transfer Functions and Impulse Responses.*

T. PRITZ, *Transfer Function Method for Determining Complex Modulus of Viscoelastic Materials.*

A. JUNGMAN, F. COHEN-TENOUDJI, B. R. TITTMANN, *Characterization of Surface Flow by Wideband Spectrum Analysis.*

A. F. BROWN, E. A. LLOYD, *Broad-Band Ultrasound in Non-Destructive Testing.*

J. P. SESSAREGO, *Bojarski's Identity - Application to the Target Recognition.*

J. ŁOZIŃSKI, *Study of Temperature Variation within the Heat-Seal Zone. The Ultrasonic Heat Sealing of Polycarbonate Film Depending on the Physical Parameters of the Process.*

A. ERHARD, H. WÜSTENBERG, E. MUNDREY, *Detection of Near-Surface Cracks with Creeping Waves.*

B. AUDENARD, P. POMES, *Acoustic Emission Applications during Pressure Testing of Vessels.*

K. PELLANT, *Results of Measurements of Artificial Resin Elastic Moduli.*

- J. ŁOZIŃSKI, W. OLIFERUK, T. PIOTROWSKI, *Application of Infrared Radiation in Studying the Ultrasonic Heat-Seal Zone of Polycarbonate Film.*  
 I. GRABEC, *Insensitivity of Acoustic Emission to Shock Loading.*

## Section II

### Holography and Optical Methods

- P. GREGUSS, *Ultrasonic Methods of Material Recognition* (invited paper).  
 F. I. BRAGINSKAYA, Y. I. VARSHAVSKI, *Problems in the Use of Ultrasonic Holography in Medical Diagnostics* (poster form).  
 E. YABONIS, A. VOLEISIS, K. KUNDROTAS, V. SUKACKAS, *System of Ultrasonic Digital Interferometers* (poster form).  
 R. REIBOLD, *Calibration of Ultrasonic Probe Transducers by Means of Holographic Interferometry.*  
 P. KWIEK, O. LEROY, A. ŚLIWIŃSKI, *Verification of the Theory of Ultrasonic Light Diffraction by Adjacent Ultrasonic Beams.*  
 P. KACZMARSKI, A. LESZCZYŃSKI, J. NARKIEWICZ-JODKO, P. RAJCHERT, *Frequency Characteristics of the Laser Beam Acoustooptic Deflector Utilizing  $\text{LiIO}_3$  Piezoelectric Transducer.*  
 J. NARKIEWICZ-JODKO, A. LESZCZYŃSKI, P. RAJCHERT, P. KACZMARSKI, *Laser Beam Acoustooptic Deflector — Experimental Models.*  
 R. O. PRUDHOMME, *Les Spectres de Sonoluminescences.*  
 S. SAJAUSKAS, V. DOMARKAS, *Laser Meter of Pulse Response of Ultrasonic Transmitters*

### Wave Propagation

- A. P. SARVAZYAN, *Velocity of Ultrasound in Biological Tissues* (poster form).  
 R. C. CHIVERS, R. J. PARRY, *Ultrasonic Modelling of Human Tissue. A Prototype Foetal Head.*  
 K. P. RICHTER, R. MILLNER, *Ultrasonic-Pulse-Spectroscopy and Tissue-Backscattering of Human Liver in Vitro.*  
 W. H. ROUND, R. C. CHIVERS, *Ultrasonic Propagation in the Human Eye: Parameter Measurement and Beam Profiles.*  
 L. FILIPCZYŃSKI, *Temperature Effect in Soft Tissue — Estimated and Measured.*  
 G. YARONIENE, *Response of Biological Systems to Low Intensity Ultrasonic Waves.*  
 W. H. ROUND, R. C. CHIVERS, J. K. ZIENIUK, *Influence of the Human Eye on an Ultrasonic Beam: A Ray Tracing Approach.*  
 E. A. VASILTISOV, V. I. KORONCHENTSEV, *Field Problems of Acoustic Antenna Arrays on Cylindrical Screens.*  
 R. C. CHIVERS, *Amplitude and Phase Fluctuations in the Propagation of Longitudinal Waves in Inhomogeneous Media.*  
 T. SALAVA, *Heart Sound Analysis in Computer Assisted Systems.*  
 V. T. KORONCHENTSEV, *Synthesis of Acoustic Arrays in Impedance Screen.*  
 R. J. PARRY, R. C. CHIVERS, *Sampling of Fast Waveforms in Ultrasonic Materials Science.*  
 H. TODA, H. FUKUOKA, *Analysis of Wave Mode in Composite Cylinder.*  
 R. DYBA, *Perturbation and Taylor Series Approach to Finite-Amplitude Problems in the Case of Intermediate Mach Numbers.*

### Ultrasonic Diagnostic Methods

- I. HRAZDIRA, *Biophysical Aspects of Ultrasonic Tissue Characterization* (invited paper).
- J. LASKARIS, K. KIRKOU-IATRIDOU, D. KATSIMANTIS, *Value of Ultrasonography in Cytologic Diagnosis of Cancer in Abdominal Organs* (poster form).
- A. HADIDI, *Ultrasonography of Echinococcal Liver Cysts* (poster form).
- A. HADIDI, *Sonographic Evaluation of Jaundiced Patients* (poster form).
- T. POWAŁOWSKI, *Real Time Automatic Transcutaneous Determination of Blood Velocity by Means of c.w. Doppler Method Eliminating Angle Dependence* (poster form).
- G. ŁYPACEWICZ, T. POWAŁOWSKI, K. ŁUKOWSKA, *Ultrasonic Examinations of Breast Tumours with Doppler Method* (poster form).
- K. ILMURZYŃSKA, J. SAŁKOWSKI, *Heart Visualization in Real Time for Diagnosis of Hypertrophic Cardiomyopathy* (poster form).
- J. ETIENNE, L. FILIPCZYŃSKI, J. GRONIEWSKI, J. KRETOWICZ, A. NOWICKI, *Three Ultrasonic Methods of Placenta Location*.
- A. M. HADIDI, *Contribution of the Echography to the Clinical Thyroidology*.
- J. GRYMIŃSKI, G. ŁYPACEWICZ, *Use of Ultrasonic Guiding Transducer for Monitoring Thoracocentesis*.
- A. M. HADIDI, *Pancreatic Sonography*.
- J. PREISOVA, *New Approach to Interpretation of A-Scan Echograms of Orbital Tumours*.
- J. CZAJKOWSKI, J. ETIENNE, Z. KRAWCZYKOWA, *Blood Flow Estimation in Carotid and Ophthalmic Arteries by Means of Doppler Technique*.
- K. IWASZKIEWICZ-GIŻYCKA, A. CHROŚCICKI, T. POWAŁOWSKI, J. GRUCHALSKI, Z. MALEC, *Role of Transcutaneous Ultrasonic Doppler Method in Diagnosis of Potency of Congenital and Surgical Shunts between Aorta and Pulmonary Artery*.
- R. KUBAK, *One- and Two-Dimensional Pulsed Doppler Echography: Signal Processing and Cardiovascular Applications*.
- M. PARDEMANN, *Ultrasonic c.w. Doppler Technique in Stomatology*.
- A. WAGNER, T. POWAŁOWSKI, Z. PAMPUCH, *Ultrasound Analysis of Peripheral Blood Flow - Vascular Resistance and Their Changes in Children*.
- A. CHROŚCICKI, T. POWAŁOWSKI, *Cardiac Flow Measurements in Right Heart by Means of Ultrasonic Pulse Doppler Technique*.

### Transducers

- C. RANZ-GUERRA, *Analysis of Sandwich Structures as Sonic Sources* (invited paper).
- K. BRENDEL, G. LUDWIG, *Vibracoax - a Pressure Sensor for Measurements in Ultrasonic Cleaning Equipments* (poster form).
- K. VAMMEN, *Revolving Transducer Real Time Ultrasonic Scanning System* (poster form).
- W. PAJEWSKI, *Method of Measurements of Electromechanical Coupling Factor for Thickness Vibrations*.
- A. MARKIEWICZ, *Transient Performance of Piezoelectric Transducers for Medical Diagnostics*.
- K. P. RICHTER, R. MILLNER, I. DANZ, *Properties of Ultrasonic-Broadband-Transducers with a Multi-layer Matching to Water*.
- T. MARUK, *Analysis of Dynamic Focusing with Ring Transducers*.
- A. LUKOSEVICIUS, R. J. KAZYS, *Wideband Ultrasound Technique: Some Different Design Approaches*.

### Geoacoustics

- A. J. BERKHOUT, *Exploration Seismology - The Use of Sound in the Search for Oil and Gas* (invited paper).
- A. JAROSZEWSKA, W. KOLTOŃSKI, I. PLEŚNIAK, B. PRZYGODZKA, *Sonic Testing of the Freezing Process in Rock Formations* (poster form).

- J. ADAMCZYK, *Determination of Solid Compactibility Index by Seismic Waves.*  
 R. KUNTZMANN, *Some Results Achieved by the Development of Ultrasonic Modular Probe USS Applied to Shallow Well Measurements.*  
 G. I. PIETKIEVITCH, *Acoustic Indexes of Heterogeneity of Geological Media.*

### Underwater Acoustics

- R. SALAMON, A. STEPNOWSKI, *Directional Properties of Broadband Acoustical Beam-former* (poster session).  
 Z. JAGODZIŃSKI, *Frequency Optimization in Sonar Systems.*  
 A. STEPNOWSKI, R. SALAMON, J. BURCZYŃSKI, *New Method of an Echo Integrator Calibration in the Acoustic System of Fish Biomass Estimation.*  
 P. A. LEWIN, O. V. OLESEN, *Evaluation of Electroacoustic Underwater Transducer.*

### Section III

#### Concert Halls and Auditoria

- H. HARAJDA, *Changes in Amplitude of Violin Sounds in a Concert Hall* (poster form).  
 E. HOJAN, *Objective Evaluation of Acoustic Field of Loudspeakers by Impulse Technique* (poster form).  
 J. MEYER, *Acoustics of Haydn's Concert Halls.*  
 H. WINKLER, *Raumakustische Massnahmen im Grossen Saal des Palastes der Republik.*  
 P. HUHN, *Festlegung der Raumproportionen Kleiner Studioteknischer Räume zur Optimierung der Eigenfrequenzverteilung bei tiefen Frequenzen.*  
 H. RYFFERT, E. OZIMEK, L. JUGOWAR, J. KONIECZNY, *Evaluation of Signal Frequency Changes during Its Decay Process.*  
 R. MAKAREWICZ, H. RYFFERT, *Phenomenological Description of the Perception of Monochromatic Signals in the Diffusion Room.*  
 H. FASTL, *Reverberation and Post-Masking.*  
 T. HOUTGAST, H. J. STEENEKEN, *Predicting Speech Intelligibility from the Modulation Transfer Function, I: General Room Acoustics.*  
 R. PLOMP, H. J. M. STEENEKEN, *Predicting Speech Intelligibility from the Modulation Transfer Function, II: Geometrical Room Acoustics.*  
 D. de VRIES, W. BEENTJES, *Behaviour of Various Speech Intelligibility Prediction Methods in Sound Fields with Double Decay Reverberation.*  
 I. JANUŠKA, *Speech Loudness - Possibilities of the Subjective Rating and Objective Prediction.*  
 J. NOVAK, *Subjective Perception and an Objective Prediction of Speech Loudness.*  
 J. BLAUERT, *Some Aspects of Three-Dimensional Hearing in Rooms.*  
 W. SCHMIDT, *Vergleich der Objektiven Kriterien zur Messung des Akustischen Raumeindrucks.*  
 E. OZIMEK, *Determination of Irregularity of Frequency Response of a Room.*  
 A. ILLENYI, *About a Comparison of Studio Monitoring Loudspeakers with Objective and Subjective Measuring Methods.*  
 A. MELKA, *Experimental Comparison of Five Methods for Subjective Evaluation of Sound-Reproduction Quality.*

#### Industrial Halls

- S. CZARNECKI, E. KOTARBIŃSKA, *How to Use Absorbing Materials in a Shallow Room for the Optimal Condition of Noise Reduction* (poster form).  
 G. GRAZZINI, R. POMPOLI, *Sound Propagation inside Industrial Halls.*

O. BSCHORR, *Computation of Noise Distribution in Industrial Environment.*

A. COCCHI, R. POMPOLI, *On the Evaluation of Noise Level Reduction Obtainable with Absorbing Acoustic Materials.*

P. DOČKAL, *Noise Control by Means of Room Acoustics in Large Industry Halls with Many Sound Sources.*

Ch. PRITZKOW, *Sound Screens in Rooms.*

J. P. NAGY, A. J. KORONKAI, *Noise Reduction by Barriers in a Small Compressor Building.*

R. BOTROS, *Design Considerations in a Large-Group Telephone.*

#### Urban Areas

R. JOSSE, *Traffic Noise in Urban Areas* (invited paper).

A. STAN, *Pollution Acoustique* (invited paper).

B. RUDNO-RUDZIŃSKA, J. ZALEWSKI, *Prediction of Community Noise Using the Digital Simulation Method* (poster form).

M. WOJCIECHOWSKA, R. KUCHARSKI, *Prognostical Acoustic Map of the Areas around the Projected Fast Railway City Line* (poster form).

J. GRABEK, R. KUCHARSKI, *Rules of Predicting the Acoustic Protecting Zones around Noisy Railway Objects* (poster form).

R. KUCHARSKI, *Motorway Noise Propagation from Elevated Roads and Two-Level Crossings, Empirical Investigation* (poster form).

S. CZARNECKI, J. SZUBA, *Local Means of Traffic Noise Control inside Residence Interiors* (poster form).

U. LEHMANN, *Planungsunterlagen und Verfahren zum Lärmschutz beim Städtebau.*

M. STAWICKA-WAŁKOWSKA, *Acoustic Characteristics of the Areas Adjacent to Express Routes.*

B. BUNA, L. VEREB, *Effect of Vehicle Categories and Speeds on Noise Level of Urban Expressways.*

M. BITE, *Design of Highway Noise Shielding Establishments Using Computers.*

E. BUCHTA, J. KASTKA, *Annoyance from Highway Road and Factory Noise.*

J. CECHURA, *Sound Levels in Building Exposed to External Noise.*

A. J. KORONKAI, J. P. NAGY, *Method for Designing of Sound Insulation of Façades.*

B. SZUDROWICZ, J. RUTKOWSKI, *Influence of Built-in Trafo Stations on Acoustical Climate of Dwelling.*

K. D. GÖBEL, *Beispiele der Anwendung Künstlicher Hindernisse unter Berücksichtigung örtlicher Gegebenheiten zur Verringerung der Lärmbelastigung für Anlieger.*

#### Methods of Measurements and Subjective Evaluation

S. CZARNECKI, Z. ENGEL, A. MIELNICKA, *Paths of Sound Propagation through the Barriers* (poster form).

M. RABIEGA, J. ZALEWSKI, *Echo Parameters Evaluation in the Tone-Burst Technique of Sound Absorption Measurements* (poster form).

M. KIERZKOWSKI, M. MADEJSKI, *Automatic Computer System for Measuring Acoustic Properties of Building Partitions* (poster form).

A. RUDIK, *Proposal for Extremal Noise Limitation Inside the Cabin of Various Types of Aircraft* (poster form).

T. WALASIAK, J. MIAZGA, *Audibility of Warning Signals by Truck Drivers* (poster form).

V. MELLERT R. WEBER, *Artificial Head with Corrected Frequency Response for Frontal Sound Incidence.*



R. WEBER, V. MELLERT, *Comparative Study of Transportation Noise: Correlation of Subjective Evaluation with Physical Parameters.*

Z. DUKIEWICZ, *Application of the Coherence Function to Random Structure-Born Sound Measurements.*

W. ZIPPE, *Bildung von Räumlichen Mittelwerten des Schallpegels mit Hilfe eines integrierenden Schallpegelmessers.*

A. BALDACCONI, G. SPADA, *Quantification of Industrial Halls-Generated Noise Exposure According to Italian Legislation of Insurance.*

I. BARDUCCI, M. COSA, *Problems Concerning the Evaluation of Occupational Noise Exposure.*

The papers of particular sections were presented in three forms: as invited papers given by relevant personalities in the field of acoustics — the papers dealt with subjects suggested by the Organizing Committee of FASE (45 minutes); as contributed papers submitted by the participants and accepted by the Organizing Committee (15 minutes and 5 minutes' discussion); as poster form papers (5 minutes) to present the basic thesis and results and two sessions of one hour duration to present the papers in details and to discuss them in boxes with the help of posters prepared by the authors.

The poster form was highly appreciated by the participants of the Congress. Dr. Paul François, in his letter from France sent after the Congress, wrote: "The poster form session which was for the first time introduced to scientific conferences of FASE is very effective and makes a perfect complement to the papers presented in a traditional way".

The plenary meeting chaired by dr. F. Kolmer took place after the end of section debates. The results of the Congress were summed up by the FASE president dr. Paul François. The debates were closed by the president of the Organizing Committee prof. dr. Stefan Czarnecki.

After the official part the participants met in rooms of Palace of Science and Culture to have a glass of wine, exchanged their opinions for the last time and sum up their talks on future cooperation.

The Congress was accompanied by an exhibition of acoustical research equipment and materials. The following firms presented their products: Brüel and Kjaer from Denmark, Medata AB from Sweden, INCO from Poland, TECHPAN from Poland, and UNIPAN from Poland.

In addition to the scientific programme the Congress participants took part in social events. The events included reception at National Museum, which was preceded by visiting some of the most valuable Museum displays. They also saw the performance of Verdi's "Mask Ball" in the Warsaw Opera.

S. Czarnecki (Warszawa)

## REPORT ON PROCEEDINGS OF THE 25TH OPEN SEMINAR ON ACOUSTICS

**Błażejewko, near Kórnik, 14-16 September, 1978**

The 25th Open Seminar on Acoustics which has annually gathered Polish acousticians and foreign guests on many years, was organized by the Poznań Division of the Polish Acoustical Society, Committee on Acoustics of the Polish Academy of Sciences, and the Department of Acoustics of the Adam Mickiewicz University, Poznań.

More than 200 participants, research workers from higher educational institutions and ministerial institutes currently engaged in acoustics, took part in the seminar. There were also 15 foreign guests representing centres of acoustics in France, Great Britain, Holland, Denmark and Czechoslovakia.

It is worth noting the participation of the chairman of the Federation of European Acoustical Societies, Dr. Paul FRANÇOIS from France and Dr. E. F. EVANS from England (Keele), a well-known specialist in the field of psychophysiological acoustics, who came to Poland for the first time, invited by the organizers of the seminar.

The seminar was opened by the chairman of the Organizing Committee and the chairman of the Polish Acoustical Society, Prof. dr.hab. Halina RYFFERT who presented a general outline of the history of the seminars, of the way in which their form and range of subjects had developed.

Next, during the official opening of the seminar, Dr. Paul François took the floor, on behalf of GALF, Groupement des Acousticiens de Langue Française, to present in a systematized way the development of contacts between acousticians from Poland and France, which led to the signing in 1975 of the agreement on scientific co-operation between GALF and Polish Acoustical Society. This year it was included in the governmental agreement on cultural co-operation between Poland and France.

Despite the shortened duration of the seminar, the Organizing Committee decided to change in some way the form of the sessions and include the issues part of the seminar within the framework of round-table meetings which took place in the mornings. The reviewing part consisted of short papers and communiqués from different branches of acoustics in three parallel sections in the afternoon sessions. The content of the discussion at the round-table meetings was closely connected with the directions of the investigations of the Poznań centre, comprising the following issues:

- modern methods of analysis and processing of acoustic signals,
- current directions of investigations in psychoacoustics,
- elements of physiology in psychoacoustics.

The 25th Open Seminar on Acoustics included three roundtable meetings.

The 1st meeting took place on September 13, opening with a paper by prof. B. ESCUDIÉ (France) entitled "Etat actuel du traitement des signaux acoustiques propa gés dans l'atmosphère et des applications à l'imagérie spatiofréquentielle des bruiteurs".

The 2nd meeting took place on September 15, opening with an introductory paper by prof. L. PIMONOV (France) entitled "Le Facteur Temps en Audition".

The 3rd meeting took place on September 16, opening with an introductory paper by prof. E. F. Evans entitled "Studies of Peripheral Physiological Mechanisms Underlying Analysis of Complex Sounds".

The meetings enjoyed considerable interest as shown not only by very large audiences, but also by unexpectedly lively discussions, despite the specialist character of the subjects. Nevertheless, it was here that the interdisciplinary character of this branch of knowledge — acoustics — became conspicuous, since many persons engaged in other branches found certain aspects of the subjects discussed also of interest to them.

The meetings were in turn chaired by doc. dr.hab. Edward Ozimek — in place of prof. B. Escudié from France, who sent in his paper, being unable to take part in the seminar, the next by prof. Leonid Pimonov from France, and the third in turn by prof. E. F. Evans from England.

The afternoon sessions were generally connected with subjects from several branches of acoustics, including mainly:

- acoustics of speech, music and psychoacoustics,
- physical and ultrasonic acoustics,
- technical and community acoustics.

Of the 94 papers and communiqués contributed and published in Proceedings of the 25th Open Seminar on Acoustics, 87 were presented during the sessions.

### Section I. Acoustics of speech, music and psychoacoustics

- M. T. ROTH, *Etude des variations acoustiques de la voyelle dans les monosyllabes en français.*
- G. MERCIER, P. QUINTON, R. VIVES, *Dialogue homme-machine avec Kéal.*
- J. JARYCKI, A. PAWLAK, Z. WOROBIEC, *Measurement of a Power Density Spectrum Based on the "Speech Chorus" Method for Continuous Speech and Language Tests.*
- R. SIWANOWICZ, J. SOBKOWSKI, *Spectrum Analysis of Voice Signals in Terms of Walsh Functions.*
- B. W. KULESZA, B. ROGALA, J. SOBOLEWSKI, *Investigations of the Statistical Properties of Sound.*
- A. PAWLAK, J. JARYCKI, Z. WOROBIEC, *Application of Simulating Methods to the Automatic Classification of Larynx Transducers.*
- P. BIEŃKOWSKI, W. MYŚLECKI, Z. WOROBIEC, *Method of Synthetic Speech Quality Evaluation.*
- K. MUSIALIK, *Grammars Generating a Fixed Set of Messages by Means of a Computer Voice Response System (CVRS).*
- J. ZIELIŃSKI, W. MYŚLECKI, *Parametrical Generation of Basic Intonation Functions for the Synthesis of Polish Speech Phrases.*
- H. HARAJDA, J. FRYK, *Zonality of Melodic Intervals as Reproduced by an Average Gifted Child.*
- A. PREIS, *Timbre of Complex Tones and their Spectral Envelopes.*
- A. PODRES, *Comparison of a Human Observer with an Energy Detector in the Signal Detection Process.*
- S. PRUS, *Does Psychometric Function Behaviour Confirm the Classical Detection Theory?*
- K. MLIČKA, *Detection Probability Determination of a Continuous Signal Parameter Change Evoking a Blurred Change of Loudness.*
- K. MLIČKA, S. PRUS, *Detection Probability Determination of a Continuous Signal Parameter Change Evoking a Blurred Change of Pitch.*
- J. FLORKOWSKI, *Utilization of Headphone Listening in the Investigation of Sound Source Localization by the Minimum Audible Angle Method.*
- Cz. PUZYNA, *Results of the Investigation of the Obstacle Perception by the Blind.*
- K. RUDNO-RUDZIŃSKI, *Perception of Distortions that Result from Different Distances to Woofer and Tweeter.*

### Section II. Physical and ultrasonic acoustics

- A. BERGASSOLI, *Interaction des acoustiques dans un guide.*
- W. RDZANEK, *Mutual Acoustic Impedance of Circular Panels with the Bessel Distribution of Vibration Velocity.*
- M. CZECHOWICZ, T. SOBOL, S. CZARNECKI, *Acoustical Feedback in the Process of Edgetone Generation.*
- A. JAROCH, H. IDCZAK, *Scattering of the Sound Wave on the Rigid Surface with Pseudo-Random Irregularities.*
- R. DYBA, B. ŻÓŁTOGÓRSKI, *Acoustic Noise Nonlinear Transformation Caused by Moving Boundary Condition Effect.*
- T. ZAMORSKI, R. WYRZYKOWSKI, *Hyperbolic Horns of Annular Cross-Section.*
- W. BANDERA, *Determination of the Complex Young's Modulus for Some Viscoelastic Materials.*
- S. NUCKOWSKI, J. SZYMBOR, *On the Accuracy of a Nonlinear System Multidimensional Transfer Function.*
- J. ANTONOWICZ, M. GAŁAŻEWSKA, J. TABIN, *Field of a Partially Deteriorated Ultrasonic Focusing Head.*

J. TABIN, B. SIKORA, *Influence of Power Dissipation in the Transducer on Ultrasonic Attenuation Measurements with the Diverging Beam.*

E. KOZACZKA, J. MORAWIEC, *Investigation of the Sensitivity of Cylindrical Piezoelectric Transducers.*

J. GOLANOWSKI, T. GUDRA, *Ultrasonic "Planar" Type Transducer.*

B. J. KIBORT, *Method of Measurement of Transmission Loss in Ultrasonic Communication in Structural Elements.*

A. DYKA, *Digital Underwater Echo Integrator.*

L. KILIAN, *Side Scan Sonar Equation for the Detection of Bottom Targets.*

E. KOZACZKA, *Investigation of Sound Generated by Cavitating Ship Propellers.*

S. WEYNA, *Designation of Vibration and Acoustic Parameters of Ship Accommodation Bulkhead Properties.*

A. KOWALSKI, *Measurement of the Target Strength of a Skin Diver.*

Z. KLUSEK, *Dependence of the Spectral Level of the Ambient Sea Noise in the South Baltic on Wind Speed.*

M. HOLEC, J. RATOWSKI, *Vertical Sound Speed Distribution and Gradients in the Baltic Sea and their Seasonal Variation.*

J. RATOWSKI, M. HOLEC, *Influence of Sound Speech Changes in the Baltic Sea on Hydrographic Measurement Accuracy.*

J. BERDOWSKI, M. STROZIK, *Arrangements for the Investigation and Visualization of Surface Acoustic Wave Fields.*

J. FINAK, A. KRZESIŃSKI, M. TOMASZEWSKI, *Capabilities of the Application of Piezoelectric ZnO Films to Present-Day Acoustooptic Devices.*

Z. KLESZCZEWSKI, A. MLECZKO, M. STROZIK, H. DELEWICZ, *Practical Application of the Acousto-optic Modulation of the Laser Light.*

Z. TYLCZYŃSKI, *Propagation of a Quasi-Longitudinal Ultrasonic Wave into the b Plane of TGS Crystals.*

J. MIZERA, *Influence of Ultrasonic Field on the Electrochemical Oxidation Process of Phenol Solutions.*

J. BEDNAREK, T. CISZEWSKI, Z. TALARCZYK, *On Some Problems in the Ultrasonic Measurement of the Level of Loose Materials.*

L. F. LIPIŃSKA, *Effect of Ultrasound on Internal Friction in Polycrystals.*

M. KONARSKA, *Criteria for Industrial Exposure to Airborne Ultrasound.*

D. LEWANDOWSKA, C. LEWA, S. ŁĘTOWSKI, *Influence of Gas Admixtures on Shear Viscosity in Liquids.*

### Section III. Technical and community acoustics

K. BEREZOWSKA-APOLINARSKA, *Acoustic Field in Some Urban Structures of Different Geometry.*

K. BEREZOWSKA-APOLINARSKA, W. KOLASKI, *Influence of Central Quarter Development on Noise Propagation.*

R. MAKAREWICZ, *Intensity of the Sound Field Generated by a Moving Source in a Semispace Filled by a Stratified Medium.*

L. JUGOWAR, *Method of Analysis of Dynamic Changes of Phase and Sound Frequency under Non-Steady State Conditions.*

A. RUDIUK, *Acoustic Field in an Aircraft Cabin.*

B. SZULC, J. SZCZEPAŃSKI, B. PLEBAŃSKI, *Methods for Investigating Vibrations and Noise in Trams and the Criteria for their Estimation.*

R. J. KUCHARSKI, *Problem of Choosing a Road Traffic Noise Index Suitable for the Wide Recognition of the Acoustic Climate.*

M. WOJCIECHOWSKA, R. J. KUCHARSKI, *Method of Predicting Railway Noise.*

- B. SZULC, J. SZCZEPAŃSKI, B. PLEBAŃSKI, *Estimation of Noise in Railway Vehicles.*  
 W. RYBARCZYK, *Statistical Distribution of the Mean Noise Intensity at Work Stands in Working Rooms.*
- D. TRYNKOWSKA, R. MICHALSKI, *Classification and Matching of Ear Hearing Protectors.*  
 W. TYRCHAN, *Substitution Acoustic Mass of the Nozzle and Diffusor System.*  
 W. TYRCHAN, *Aerodynamic Noise in the Free Inlet Stream to the Nozzle and Diffusor System.*
- L. RUTKOWSKI, *Acoustic Analysis of the System with Several Degrees of Freedom under Non-Steady State Conditions.*
- W. BARTELMUS, A. STUDZIŃSKI, *Comparison of States in Acoustic and Vibratory Methods of Diagnosing Machines.*
- E. HOJAN, J. FLORKOWSKI, G. KIENITZ, *Testing Device for Vibrating Systems Using the R. F. S. Method.*
- J. MORAŃSKI, *Computer Simulation of Frequency Response and Electrical Impedance for some Loudspeaker Systems.*
- J. KORALEWSKI, *Influence of the Magnetic Field of Voice Coil on the Parameters of Loudspeakers.*
- M. NIEWIAROWICZ, *Influence of the Acoustical Loading of a Membrane on the Value of its Mechano-acoustical Parameters.*
- Z. DOBRUCKI, *Impulse Response of an Electromechanical Moving Coil Transducer.*
- E. HOJAN, M. NIEWIAROWICZ, J. FLORKOWSKI, *Method of Optical Enlargement in Testing the Vibrations of Electroacoustic Transducers.*
- P. ŻARNECKI, *Multi-channel Signal Processing System Applied to the Time-Frequency Analysis of Acoustical Data.*
- A. PUCH, *Method for Transfer Matrix Measurements on Acoustic Filters.*
- J. FRENKIEL, *New Polish Standard for Tape Recorders for Domestic Use.*
- J. KAMIŃSKI, J. JURKIEWICZ, K. BAŚCIUK, *Synchronous Extraction of Identification Signals.*
- Z. ENGEL, W. STANEK, *Acoustical Characteristics of a Multilayer Beam.*
- D. NITECKI, J. SMURZYŃSKI, *Investigation of the Application of Vibro-Dampers of the "Powar" Type as Elements for Decreasing the Noise Level in Accomodation.*

The participants of the seminar expressed satisfaction with the proceedings of the 25th Open Seminar on Acoustics and appreciatively accepted its new character which is the expression of the search by our acoustic community for still better forms of creating an adequate plane for presenting the latest accomplishments and investigation results and for deep and inquisitive scientific discussion. The foreign guests also, in warm words, expressed their appreciation of both the academic aspect of the session, the pleasant atmosphere and the organizational efficiency.

14 papers were entered during the seminar for the M. Kwiek competition for the best paper, the academic and formal aspects of which had been estimated by relevant reviewers.

The participants of the seminar had the opportunity of seeing exhibitions of measuring devices manufactured by Brüel & Kjaer and of electroacoustic equipment from the Loudspeaker Factory "Tonsil" at Września.

It should be added that the jubilee 25th Open Seminar on Acoustics coincided with the 15th anniversary of the Polish Acoustical Society and, in this connection, on Wednesday, September 13, there was a solemn gathering of member-founders of the Society, which proceeded in an atmosphere of many interesting reminiscences and reflections.

On the eve of the seminar, on September 13, there was the 16th Congress of the Polish Acoustical Society Delegates, which elected the Society leadership.

E. Ozimek (Poznań)