

*Facta non solum verba*

ESTONIAN  
ACADEMY OF SCIENCES  
YEAR BOOK

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## FOREWORD

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The year of 2008 was a good year for the Academy and research in Estonia. The amount allocated to the Academy from the state budget increased noticeably (as compared to 0.5% average annual raise in the period 2002–2007). In the process of celebrating the 70th anniversary Members of Academy had an opportunity to analyse in peace the previous development and to specify their plans for the future, in particular in connection with the global crisis clearly shaping out by 2009. Financing of the Estonian research, too grew in 2008 at a higher rate than in the majority of other European countries, the successive competition of centres of excellence of Estonian research was carried out, elaboration of the new version of the “Research and Development Organisation Act” was started, whereas nobody anticipated the amount of minor problems related to management and assessment of research piling up by the end of the year.

Involvement of two Members of Academy in the work of the European Academies’ Science Advisory Council (EASAC) that started years ago has taken root in Estonia. Besides the above, the number of Estonian researchers participating as experts in the work of EASAC support network already has reached six (further growth is inhibited by scarcity of monetary support by the Academy). The support network is needed to secure the scientific content of the analyses-reports and to harmonise it with the actual positions and situation in every European Union country – for instance the preparatory report “Drug resistant TB”. Worth mentioning is the EASAC support to the analysis of environment condition in the Baltic Sea, and to the study of factors potentially influencing it. In particular, the study of environmental impacts of the Nord Stream project – the respective international committee is headed by an Estonian researcher. In the European Federation of National Academies of Sciences and Humanities (ALLEA) the representation of Estonia is also perceptible. Upon initiative of President of ALLEA success has been achieved in analysis of several science policy problems – for instance development of career of young scientists, creation of network of research integrity, strengthening of links between academies and society.

Experience obtained by cooperating with EASAC, amplified by elaboration of plans for creating the centre of analysis and the advanced study institute at the Academy is a factor, which strengthened the need for a new Academy Act –

rejuvenating the composition of the Academy is essential to improve its capability to carry out exhaustive scientific analysis of the problems faced by the state.

The desired future of the Academy was remarkably clarified in 2008. As usually, the devil lives in the details – and some of those details have been discussed in the Yearbook. For instance, regardless of the consensus reached at the joint meeting of the Academy and the Cultural Affairs Committee of the Riigikogu, the draft Academy Act got stalled in the Ministry of Education and Research for 2008. The effect of that incident, negligible by itself gets amplified supported by other, a little less negligible science policy incidents – for instance procedural inaccuracies and technical incompetence at carrying out the competition for centres of excellence in research, the clearly noticeable attempt to increase the share of officials in several amendment proposals of Research and Development Organisation Act, excessive use of formal assessment of research directions and researchers (often dismissing the internal logic of science and its need for self-organisation), and its use as a pretext to eliminate the need for substantial analysis of research results. The above may lead to the conclusion that we observe devolution of the rather reasonable and successful research management system in Estonia today into a less progressive system with over-centralised funding decisions, reduced autonomy of research teams, and increased dependence on will and decisions of civil servants.

In normal situation the noted worries could be rejected as unworthy of serious consideration, certainly they are not generators of global crisis. Nevertheless continuation of the named trends may have negative influence on competitiveness of Estonian research. The texts of papers published in the Year Book as well as opinions of Members of Academy accord much attention to the above mentioned, almost not perceivable trends, which may have a strongly negative and long-term effect on the research climate – this is what cannot be outsourced for money.

Let's be guided by sanity in the coming year.

*Leo Mõtus*

## CHRONICLE

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January 22 – the Board at its meeting approved the activity plan of the Academy for 2008. Overviews from President Richard Villems and Vice-President Jüri Engelbrecht concerning preparations for a festive meeting to celebrate the jubilee year of the Academy and for publication of a corresponding special issue of the journal “Academy” were heard. The Board decided to conclude an association agreement with the Estonian Association of Engineers and discussed matters related to an application for association by the B. G. Forselius Society.

January 22 – a roundtable discourse with members of the Cultural Affairs Committee of the Riigikogu was held within the framework of an extended Board Meeting (see p. 26).

January 25 – Assistant Secretary General for International Relations Anne Pöitel participated as an expert nominated by the Ministry of Education and Research at a Programme Committee meeting of the EU FP7 Specific Programme “People”.

January 28 – Vice-President Jüri Engelbrecht participated at a Round Table Conference on the advisory role of the academies organised in Amsterdam by the Royal Netherlands Academy of Arts and Sciences.

January 31 – Vice-President Jüri Engelbrecht attended a symposium “Promoting Science in the Service of Society: National Academies of Sciences and Humanities as Scientific Policy Advisers”, organised in Berlin by the Berlin-Brandenburg Academy of Sciences and Humanities.

February 4 – Vice-President Jüri Engelbrecht signed a renewed annex to the framework agreement with the Spanish National Research Council (CSIC). Results of a joint call for Estonian-Spanish cooperation projects were approved and conditions for bilateral exchanges in 2008–2009 specified by this document.

February 8 – Secretary General Leo Mõtus, Vice-President Jüri Engelbrecht and Assistant Secretary General for International Relations Anne Pöitel participated in a partners’ meeting in Rome (Italy) of the project “Complexity-NET” belonging to the coordination activities domain of the EU 6th R&D Framework Programme (FP6). Results of prior mapping of complexity landscape and the conclusions for planning common activities were analysed at the meeting. The Academy is acting in that project as representative of the Ministry of Education and Research.

February 14–15 – Head of the Division of the Humanities and Social Sciences Peeter Tulviste participated in a meeting of the Union Académique Interna-

tionale Bureau in Paris (P. Tulviste has been a member of the UAI Bureau since June 2007).

February 19 – a Festive Meeting of the Academy “Role of the Academy in the State” (see p. 42).

March 7 – Vice-President Jüri Engelbrecht participated in a high-level workshop “Strengthening the Role of the Academies in the ESF” held in Brussels by the European Science Foundation (ESF) and the European Federation of National Academies of Sciences and Humanities “ALL European Academies” (ALLEA).

March 10–11 – Head of the Division of Informatics and Engineering Rein Küttner represented the Academy at a workshop of the ESF Member Organisation Forum on Peer Review in the Hague. Peer review standards across borders and cultures, their peculiarities regarding specific types of projects, cooperation and joint use of experts at the European level were discussed.

March 11 – the Academy House hosted a seminar “Dynamics of Climate and Power Industry” (see p. 36).

March 12 – Assistant Secretary General for International Relations Anne Pöitel participated at a Bridgeheads Meeting of the European Network of Mobility Centres ERA-MORE in Brussels. Presentations introduced a recent EU initiative in promotion of free movement of researchers “European Partnership for Researchers”, cooperation projects of the Mobility Centres in progress, the working scheme for 2009, incl. a forthcoming rebranding of the Network along with the change of name and logo (the new name – EURAXESS – is integrating several directions of activity, which have hitherto been separated).

March 26 – the Academy Hall hosted a public academic lecture by Member of Academy Ain-Elmar Kaasik “International Reflections on Estonian Neurology and Neurosurgery”.

March 27 – four Estonian researchers nominated by the Academy: Aadu Paist and Ülo Kask (Tallinn University of Technology), Katrin Heinsoo and Peeter Muiste (Estonian University of Life Sciences) attended as experts EASAC Scoping Workshop on Biofuels in Amsterdam, organised by the European Academies Science Advisory Council (EASAC) and the Royal Netherlands Academy of Arts and Sciences. Reports and discussions were dealing with various issues of biofuel production, incl. its social and economic aspects as well as real political options.

April 8 – the Board at its meeting decided to conclude an association agreement with the Jõgeva Plant Breeding Institute. The application for association by B. G. Forselius Society was declined. Regulations for 2008 concerning research scholarships of the Academy as well as the Student Research Paper Competition and the composition of its Selection Panel were approved. The

Board heard information on execution of the 2007 budget and regarding the 2008 budget presented by Secretary General Leo Mõtus and decided to submit it to the General Assembly for approval. The Board discussed and decided to recommend amendments to the Academy Act and the Research and Development Organisation Act.

April 8 – Vice-President Ain-Elmar Kaasik participated at an annual conference of the European member organisations of the International Council for Science (ICSU) organised by the Finnish Academy of Science and Letters in Helsinki. The first part of the conference was focused on the role of the social sciences and humanities in the activities of the ICSU, further discussions dealt with cooperation among European academies belonging to the ICSU and possible harmonisation of positions at the ICSU General Assembly to be held in October.

April 9 – Vice-President Jüri Engelbrecht and Secretary General Leo Mõtus attended events to celebrate the 100th anniversary of the Finnish Academy of Science and Letters in Helsinki.

April 16–19 – Vice-President Jüri Engelbrecht as President of ALLEA chaired sessions of the General Assembly of that organisation.

April 23 – Ilse Lehiste, Grigori Mints, Jaak Peetre and Matti Saarnisto were elected Foreign Members of the Academy at the Annual Meeting of the General Assembly. 2007 Annual Report of the Academy was delivered by President Richard Villems, budgets of the Academy for 2007 and 2008 were presented by Secretary General Leo Mõtus. A paper “Opportunities and Perspectives of Estonian Power Industry” was delivered by Member of Academy Endel Lippmaa.

April 25 – Vice-President Jüri Engelbrecht participated at the General Assembly Meeting of the Academy of Sciences of the Czech Republic and delivered a paper “The Role of ALLEA in Uniting the European Academies”.

April 25 – the Academy was visited by Paul Evans, Vice-President of the leading publisher of science and health information Elsevier. The guest had a meeting with Secretary General Leo Mõtus, which was attended by Members of Academy Jaak Järv (Chairman of the Publishing Council), Hillar Aben and Dimitri Kaljo, Chairman of the Council of the Estonian Science Foundation Jüri Allik and Professor of Tallinn University Jaan-Mati Punning. The future plans of Elsevier as a scholarly publisher were presented by Mr. Evans and possibilities for cooperation were considered.

April 29 – Director General for the Research DG of the European Commission José Manuel Silva Rodriguez visited the Academy, had a meeting with President Richard Villems and other members of the Board.

April 30 – Member of Academy Valdur Saks delivered a public academic lecture “Systems Biology: Molecular Systems Bioenergetics”.



May 7 – as an expert nominated by the Academy, Professor Alan Altraja (Head, Department of Pulmonology, University of Tartu) participated in the opening meeting of the EASAC WG on Drug-resistant TB in Frankfurt (Germany).

May 8 – Vice-President Jüri Engelbrecht participated in the events to celebrate the 200th anniversary of the Royal Netherlands Academy of Arts and Sciences in Amsterdam.

May 8–9 – the Academy Science Day was held in Hiiu County (see p. 40).

May 13–14 – Chairman of the Marine Commission Tarmo Soomere represented the Academy at a plenary session of the European Science Foundation Marine Board and its annual forum “Marine Data Challenges: from Observation to Information” in Oostende (Belgium).

May 13–14 – Vice-President Jüri Engelbrecht participated in a solemn session of the Austrian Academy of Sciences in Vienna.

May 16 – the Academy hosted a Complexity-NET partners’ meeting in Tallinn. The attendants took a retrospective view of prior activities, planned further involvement of new partners (incl. from industry) and initiated a discussion on a joint action plan. For more information on the project see [www.complexitynet.eu](http://www.complexitynet.eu).

May 17 – the Academy Hall was the venue for a follow-up to the previous event – a lecture “Chaos and Order in Multidimensional Hamiltonian Systems” delivered by Professor Tassos Bountis of Patras University (Greece).

May 20 – Vice-President Jüri Engelbrecht participated in the Abel Prize Award Ceremony in Oslo. This international prize in the field of mathematics is annually conferred by the Norwegian Academy of Science and Letters.

May 22 – the Academy Hall hosted a seminar dedicated to the 90th anniversary of the Republic of Estonia under the title “On Limestone in Nature and Buildings of Tallinn”. The seminar was organised by the Estonian Geographical Society and the Society of Estonian Regional Studies.

May 26 – the Academy Hall was the venue for a lecture “The DFG Research Centre MATHEON, its Mission and Activities” by Professor Peter Deuffhard, President of the Zuse Institute (Berlin), and co-founder of MATHEON (Mathematics for Key Technologies).

May 27 – the Academy Hall was the venue for presentation of the journal “Proceedings of the Estonian Academy of Sciences”.

May 27–June 1 – Head of the Division of the Humanities and Social Sciences Peeter Tulviste represented the Academy at the 82nd General Assembly of the Union Académique Internationale (UAI). Delegates attending the General

Assembly listened and approved the activities reports presented by the UAI committees and working groups.

May 28 – the Academy Hall was the venue for a public academic lecture by Member of Academy Agu Laisk “On Science, Religion and Photosynthesis as well”.

June 6 – a Board Meeting was followed by presentation of the book “National Science Prizes 2008”. The Board discussed a draft amendment to the Academy Act and assigned the 2008 Academy scholarships for completion of monographic research works and popular science books. A review on the status of the Academy of Sciences sub-foundation within the Estonian National Culture Foundation was given. The Board heard comments concerning amendment motions to the Research and Development Organisation Act, information relating to the UNESCO-I’OREAL grant and the Aadu Luukas Foundation Mission Award. Various organisational aspects issues related to the jubilee events of the Academy were considered.

June 16 – the Estonian Academy of Sciences and the Academy of Sciences of the Czech Republic renewed in Prague their cooperation agreement for the following three years. On part of Estonia the document was signed by Vice-President Jüri Engelbrecht.

June 16–17 – Secretary General Leo Mõtus and Vice-President Jüri Engelbrecht participated in a session of the European Academies Science Advisory Council (EASAC) in Prague. As an invited speaker, Chairman of the Marine Commission Tarmo Soomere presented a paper “Environmental Aspects of NordStream: Developments and Challenges”.

June 29–July 4 – a meeting of Nobel Laureates and outstanding young scientists held in Lindau (Germany) was attended by Heli Lukner, a doctoral student of the Institute of Physics, University of Tartu. Heli Lukner was selected on competitive basis and nominated to the organisers by the Academy. The Academy also covered travelling costs.

July 1–3 – Vice-President Jüri Engelbrecht delivered a speech at the opening session and headed a parallel session at the international round table conference “Science, Higher Education and Innovation Policy Forum” in Budva (Montenegro), primarily addressing the problems of academies in the SEE (South East Europe) countries.

July 13–14 – Vice-President Jüri Engelbrecht participated in a festive meeting of the German Academy of Natural Sciences Leopoldina in Halle. The session was arranged to mark the granting of the German National Academy of Sciences status to Leopoldina.

July 17 – on invitation of the European Science Foundation the heads of science communication units of its member organisations convened at an

annual conference in Barcelona (Spain). The Academy was represented by Assistant Secretary General Galina Varlamova.

July 18–22 – Vice-President Jüri Engelbrecht attended a scientific event aimed at wide audience “EuroScience Open Forum (ESOF) 2008: Science for a Better Life” in Barcelona. The Forum – already the third of its kind – brought together top scientists, science funders and politicians from the whole Europe. Vice-President Jüri Engelbrecht participated in the session “Politics and Science – How Could we Bridge the Gap?” In his speech he emphasised the consequential role members of academies were fulfilling in advising politicians as well as the corresponding activities of ALLEA, EASAC and IAP.

August 15 – Analyst Marek Tiits examined the working principles of R&D core and experimental laboratories in the Technical Research Centre of Finland (VTT).

September 3 – the Academy was visited by Ambassador of the Republic of South Africa Lyttelton Mncedisi Sobizana Mngqikana. The guest met with President Richard Villems and Head of the Division of the Humanities and Social Sciences Peeter Tulviste.

September 10 – The Academy Hall was the venue for a public academic lecture by Member of Academy Tarmo Soomere “A Raving Sea”.

September 12 – Secretary General Leo Mõtus and Vice-President Jüri Engelbrecht attended a partners’ meeting of the EU FP6 “Complexity-NET” project in Dublin. The attending parties continued discussion on a proposed joint programme for complexity research.

September 17 – the Academy Hall hosted a seminar “Where is the Synergy?” (see p. 37).

September 18–20 – Vice-President Jüri Engelbrecht participated in an Academia Europaea meeting and a conference “Promoting a Global Science Culture” held in Liverpool to celebrate the 20th anniversary of that organisation.

September 18–21 – President Richard Villems visited Yerevan as a guest of the Armenian Academy of Sciences and participated in events dedicated to the 100th anniversary of V. A. Ambartsumian, a long time President of the Armenian Academy of Sciences.

September 23 – the Board at its meeting decided to confer the Karl Schlossmann Memorial Medal to Lembit Allikmets, M.D., Professor Emeritus of the University of Tartu. The agenda of the Festive General Assembly Meeting on October 22, 2008 and the composition of a Selection Panel for appraisal of Research Professor Candidates were approved. The Board heard and took notice of information on global climate changes presented by Member of Academy Endel Lippmaa and relating to the current status of the

Research and Development Organisation Act amendments presented by Heads of Divisions Peeter Saari, Ilmar Koppel and Rein Küttner.

September 23–25 – Head of the Division of the Humanities and Social Sciences Peeter Tulviste represented the Academy at a scoping workshop “Understanding and Misunderstanding: Cognition, Mind and Culture” organised by the ERA-NET “Humanities in the European Research Area” (HERA) in Uppsala (Sweden).

September 26 – as partner in the Researchers’ Night 2008 project, the Academy coordinated events held for popularisation of scientists and science in Tallinn (see p. 47).

September 26–28 – Vice-President Jüri Engelbrecht attended sessions “Managing Science for a Better World” and “The Role of Frontier Science in Shaping Society” in Tianjin (China), initiated for young scientists within the framework of the World Economic Forum by the InterAcademy Panel on International Issues (IAP). J. Engelbrecht had previously headed the Programme Committee for those sessions. In Tianjin he delivered a paper “Importance of Science in Smaller Countries”.

September 29 – delegation of the Academy visited AS Silmet within the framework of field-day discussion series (see p. 41).

October 8–10 – Head of the Division of Physics and Astronomy Peeter Saari represented the Academy at a conference organised by the InterAcademy Panel on International Issues (IAP) in Grenoble (France), the main topic of which was improvement of inquiry-based science education programmes at schools.

October 9–12 – Vice-Presidents Ain-Elmar Kaasik and Jüri Engelbrecht participated at a conference “Role of National Science Academies in the 21st Century” organised by the Montenegrin Academy of Sciences and Arts in Podgorica (Montenegro). Several sub-topics were interpreted under the common title, e.g. relations between the Academy and the society, science integrity issues, securing the emergence of a new generation of young scientists, etc. Quite a few country-specific problems were tackled as the majority of participants were from SEE countries, incl. the dual role of national academies (learned societies and umbrellas for science institutions). J. Engelbrecht discussed the science and society themes, A.-E. Kaasik spoke on the topic “The Role of Publishers, Funders and Research Institutions in Research Integrity”.

October 15 – opening of the exhibition “Estonian Academy of Sciences 70” and presentation of books “History. Developments and Conclusions”, “Of Years in the Academy”, “Bibliography 1919–2007” and a special issue of the journal “Academy” at the Estonian National Library (see p. 42).

October 16–17 – the Academy hosted an ALLEA Steering Committee Meeting in Tallinn.

October 17 – a memorial plaque was opened at birthplace of the first President of the Academy Karl Schlossmann (see p. 42), followed by a visit to the Estonian Naturalists' Society in Tartu (see p. 41).

October 20–24 – Chairman of the Marine Commission Tarmo Soomere represented the Academy at a Plenary Session of the ESF Marine Board in Toulon (France) and the World Marine and Maritime Forum “BioMarine 2008”. He delivered a paper “Environmental Concerns about Building Large-Scale Pipelines in the Baltic Sea” at a closed meeting of the Executive Committee of the ESF Marine Board on October 21.

October 22 – the Jubilee Meeting of the General Assembly with speeches delivered by President of the Republic Toomas Hendrik Ilves, Foreign Member of the Academy Endel Tulving and President of the Academy Richard Villems. Foreign Member Diplomas of the Academy were conferred to Ilse Lehiste and Matti Saarnisto, the Karl Schlossmann Memorial Medal was awarded to Prof. Emer. Lembit Allikmets. The Assembly was saluted by Minister of Education and Research Tõnis Lukas, Chairman of the Estonian National Culture Foundation Eri Klas and Chairman of the Chamber of Commerce and Industry Toomas Luman. The Academy Letter of Appreciation was conferred to Member of Academy Mart Ustav.

October 29 – the Academy Hall was the venue for a public academic lecture by Member of Academy Enn Tõugu “Mischief in Cyberspace”.

October 30–31 – the Lithuanian Academy of Sciences convened a workshop in Vilnius for preparing the 12th Baltic Conference on Intellectual Co-operation. The Academy was represented by Assistant Secretary General Galina Varlamova and Assistant Secretary General for International Relations Anne Põitel. G. Varlamova delivered a paper on relations between science and media in Estonia in a broader sense and the activities of the Academy in particular.

November 6 – the Academy hosted a seminar “Molecular Recognition in Chemistry and Biology” (see p. 38).

November 11 – the Board heard an overview by Chairman of the Selection Panel for the Academy's Student Research Paper Competition Georg Liidja of the results of the 2008 competition. The Board approved the agenda for the General Assembly Meeting of December 10, 2008. The Board formed a commission to elaborate the principles for establishing and operation of the Fundamental Research Institute. The Board heard information on the environmental problems related to Nord Stream presented by Member of Acade-

my Tarmo Soomere and with regard to transforming the K. E. v. Baer Prize into the K. E. v. Baer Memorial Award presented by Member of Academy Ilmar Koppel.

November 11 – the Academy House hosted the Conference of the Student Research Paper Competition Winners, wherein diplomas were conferred and prize-winning papers were delivered by laureates (see p. 36).

November 12 – a recently established EASAC Environment Steering Panel gathered for the first time in London. Chairman of the Marine Commission Tarmo Soomere was nominated by the Academy to represent Estonia. T. Soomere delivered an overview of environmental concerns in relation to the intended gas pipeline in the Baltic Sea and current developments in environmental impact assessment.

November 13–14 – Vice-President Jüri Engelbrecht, Secretary General Leo Mõtus and Assistant Secretary General for International Relations Anne Põitel attended a partners' meeting of the EU FP6 "Complexity-NET" project in Lisbon. A joint seminar with scholars in Social Sciences scheduled for January and pilot joint call principles for cooperation projects were discussed.

November 14–15 – Chairman of the Publishing Council Jaak Järv represented the Academy at an international seminar "Copyright Regulation in Europe – an Enabling or Disabling Factor for Science Communication" in Berlin.

November 14–23 – Head of the Division of the Humanities and Social Sciences Peeter Tulviste attended a field session of the UAI Bureau in Bamako and Timbuktu (Republic of Mali), the goal of which was presenting the activities of the UAI to African Academies.

November 19 – the Academy Hall was the venue for a public academic lecture by Member of Academy Jaan Undusk "Oxymoron as a Figure of Thought in the European Intellectual History".

November 23–29 – Head of the Division of the Humanities and Social Sciences Peeter Tulviste participated at the 27th General Assembly and follow-up meetings of the International Social Science Council (ISSC) in Cape Town (Republic of South Africa).

November 26–28 – Vice-President Jüri Engelbrecht participated at an ESF Annual Meeting and a conference on science policy issues "Global Challenges and the Need for Cooperation. Lessons Learnt from Global Change" in Stockholm.

December 1 – Vice-President Jüri Engelbrecht participated at a conference in Kiev to celebrate the 90th anniversary of the National Academy of Sciences of the Ukraine as well as the 90th anniversary of its long-time president B. Paton.

December 6 – Vice-President Jüri Engelbrecht participated at an Annual Meeting of the General Assembly of the Bavarian Academy of Sciences in Munich.

December 10 – draft legislation on curricula was discussed at a General Assembly Meeting by Minister of Education and Research Tõnis Lukas and President of the Academy Richard Villems. An appeal to the Riigikogu and Government of the Republic was adopted. Foreign Member of Academy Grigori Mints delivered a paper on the topic “New Trends in Foundations of Mathematics”.

December 11 – as an expert nominated by the Academy, Professor Alan Altraja (Head, Department of Pulmonology, University of Tartu) participated in a meeting of the EASAC WG on drug-resistant TB in Frankfurt (Germany).

December 11 – Vice-President Jüri Engelbrecht participated in Brussels in the Advisory Group Meeting of the EU FP7 Specific Programme “People” and at a conference “Scientific Research as a Global Challenge” organised by the Netherlands Organisation for Scientific Research (NWO) in Hague.

December 15 – Secretary General Leo Mõtus and Vice-President Jüri Engelbrecht participated in an EASAC session in Stockholm. The hearing of working group reports and policy papers was followed by discussion of the EASAC strategy paper for the following two year period.

December 16 – the Board at its meeting approved reports on the 3rd year of Research Professors Malle Krunks, Ilmar Koppel and Ülo Niinemets and elected three new Research Professors for the years 2009–2011: Tiina Nõges (Senior Researcher of the Estonian University of Life Sciences), Pärt Peterson (Professor of the University of Tartu) and Martti Raidal (Senior Researcher of the National Institute of Chemical Physics and Biophysics). An overview of the issues discussed at the Research Policy Committee of the Ministry of Education and Research was presented by Head of the Division of Biology, Geology and Chemistry Ilmar Koppel. Composition of the editorial board of the journal “Proceedings of the Estonian Academy of Sciences” was approved. A review on the need for securing cyber safety in Estonia and suggestions for cyber protection improvement measures presented by Member of Academy Enn Tõugu were heard. The Board discussed an appeal to the Riigikogu by the Estonian Naturalists’ Society, the Nature Protection Commission of the Academy and the Estonian Council of Environmental NGOs and amendment of the agreement between the Estonian National Culture Foundation and the Academy.

## **MEMBERSHIP OF THE ACADEMY**

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On April 23 the General Assembly elected four new Foreign Members of Academy: Ilse Lehiste (linguistics), Grigori Mints (philosophy and computer science), Jaak Peetre (mathematics) and Matti Saarnisto (geology and palaeontology) see also “Members of the Academy”, p. 91.



*Ilse Lehiste*



*Grigori Mints*



*Jaak Peetre*



*Matti Saarnisto*



As of 31 December 2008, the Estonian Academy of Sciences included 58 Members of Academy and 19 Foreign Members of Academy. Their affiliation with the Divisions was the following:

DIVISION OF ASTRONOMY AND PHYSICS

(14 Members of Academy, 5 Foreign Members of Academy)

Members of Academy: Jaak Aaviksoo, Jaan Einasto, Ene Ergma, Vladimir Hizhnyakov, Harald Keres, Georg Liidja, Endel Lippmaa, Ülo Lumiste, Cheslav Lushchik, Peeter Saari (Head of the Division), Mart Saarma, Arved-Ervin Sapar, Gennadi Vainikko, Richard Villems.

Foreign Members of Academy: Richard R. Ernst, Charles Gabriel Kurland, Jaan Laane, Indrek Martinson, Jaak Peetre.

DIVISION OF INFORMATICS AND ENGINEERING

(14 Members of Academy, 4 Foreign Members of Academy)

Members of Academy: Olav Aarna, Hillar Aben, Jüri Engelbrecht, Ülo Jaaksoo, Lembit Krumm, Valdek Kulbach, Rein Küttner (Head of the Division), Ülo Lepik, Enn Mellikov, Leo Mõtus, Arvo Ots, Tarmo Soomere, Enn Tõugu, Raimund-Johannes Ubar.

Foreign Members of Academy: Antero Jahkola, Gérard A. Maugin, Michael Godfrey Rodd, Grigori Mints.

DIVISION OF BIOLOGY, GEOLOGY AND CHEMISTRY

(19 Members of Academy, 5 Foreign Members of Academy)

Members of Academy: Jaak Järv, Ain-Elmar Kaasik, Dimitri Kaljo, Mati Karelson, Ilmar Koppel (Head of the Division), Hans Küüts, Agu Laisk, Ülo Lille, Udo Margna, Jüri Martin, Viktor Palm, Erast Parmasto, Anto Raukas, Loit Reintam, Valdur Saks, Hans-Voldemar Trass, Raivo Uibo, Mart Ustav, Mihkel Veiderma.

Foreign Members of Academy: Carl-Olof Jacobson, Johannes Piiper, Matti Saarnisto, Helmut Schwarz, Jānis Stradiņš.

DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES

(11 Members of Academy, 5 Foreign Members of Academy)

Members of Academy: Mihhail Bronshtein, Raimund Hagelberg, Arvo Krikmann, Arno Kõörna, Uno Mereste, Jaan Ross, Huno Rätsep, Karl Siilivask, Peeter Tulviste (Head of the Division), Jaan Undusk, Haldur Õim.

Foreign Members of Academy: Ilse Lehiste, Els Oksaar, Päiviö Tommila, Endel Tulving, Henn-Jüri Uibopuu.

During 2008 Members of Academy in majority carried on their research and academic activities as leading experts.

Member of Academy Ene Ergma continued as Speaker of the Riigikogu and Member of Academy Jaak Aaviksoo as Minister of Defence.

Many Members of Academy were acting as experts and advisers, complementary to their principal job. The following Members of Academy sat on expert panels and councils of national significance:

Riigikogu – Peeter Tulviste;

Academic Council of the President of the Republic – Jüri Engelbrecht, Mati Karelson, Jaan Ross, Mart Saarma, Richard Villems;

Research and Development Council – Mart Saarma, Richard Villems;

Estonian Research Council – Enn Mellikov (Vice Chairman), Rein Küttner;

Council of the Estonian Science Foundation – Leo Mõtus;

National Science Prize Committee – Richard Villems (Chairman), Rein Küttner, Enn Mellikov, Jaan Ross, Peeter Saari, Mart Saarma, Raimund-Johannes Ubar, Raivo Uibo;

Estonian Co-operation Forum – Ain-Elmar Kaasik (Chairman).

Members of Academy Richard Villems and Ain-Elmar Kaasik sat on the Commission on Sustainable Development, reporting to the Government.

Member of Academy Mati Karelson was Adviser to the Government for Research.

Members of Academy Mati Karelson, Ilmar Koppel, Rein Küttner, Peeter Saari and Peeter Tulviste were members of the Research Policy Advisory Committee of Ministry of Education and Research. Member of Academy Enn Tõugu was member of the Higher Education Evaluation Council.

Members of Academy Ülo Jaaksoo, Mart Ustav and Richard Villems were members of the Innovation Policy Committee at the Ministry of Economic Affairs and Communications; Member of Academy Ülo Jaaksoo was a member of the Informatics Council; Members of Academy Endel Lippmaa, Arvo Ots and Mihkel Veiderma were members of the Energy Council.

Member of Academy Leo Mõtus was a member of the Research Council for the Ministry of Defence.

Member of Academy Raivo Uibo was a member of the Gene Technology Committee at the Ministry of the Environment.

Member of Academy Dimitri Kaljo was Chairman of the Estonian National Committee for Geology, Chairman of the Commission of Estonian Mineral Resources and Chairman of the Steering Committee for the National Programme “Collections of Humanities and Natural Sciences”. Member of Academy Jaan Ross was Chairman of the Steering Committee for the National Programme “Estonian Language and National Memory”. Member of Academy Ain-Elmar Kaasik was a member of the Steering Committee for the National Programme “Compilation and Publishing of University Textbooks in Estonian”. Member of Academy Peeter Saari was a member of the Terminology Committee.

Member of Academy Ülo Jaaksoo was Chairman of the Enterprise Estonia (EAS) Assessment Panel for Technology and Innovation.

Member of Academy Peeter Saari was Council Member of the Estonian Union of Scientists.

Member of Academy Rein Küttner was Board Member of the Federation of Estonian Engineering Industry.

Member of Academy Haldur Õim was Member of the Estonian Language Council. Member of Academy Olav Aarna was Board Member of the NGO Estonian Education Forum.

Centre for Integrated Electronic Systems and Biomedical Engineering (Estonian centre of excellence in research) was headed by Member of Academy Raimund-Johannes Ubar.

Many Members of Academy continued their activities on editorial boards of international scientific organisations and scholarly journals.

Member of Academy Valdek Kulbach was awarded the National Science Prize for long-term achievements in research and development (see p. 60).

Member of Academy Valdur Saks (as head of the team) and Jüri Engelbrecht (together with M. Vendelin and E. Seppet) were awarded the National Science Prize in Geological and Biological Sciences.

Member of Academy Ene Ergma was awarded the 2nd Class Order of the National Coat of Arms.

Member of Academy Jüri Engelbrecht was awarded the Medal of the Finnish Academy of Science and Letters and the *Commandeur de l'ordre de Leopold II* of Belgium.

Member of Academy Hillar Aben was awarded the Murray Medal of the U.S. Scientific Society for Experimental Mechanics.

Member of Academy Mihkel Veiderma was recognised by the *Mente et Manu* Medal of the Tallinn University of Technology.

Member of Academy Mati Karelson was elected Honorary Citizen of the city of Tartu. Member of Academy Ilmar Koppel was elected Doctor Honoris Causa of Tallinn University of Technology. Member of Academy Jüri Martin was elected Professor Honoris Causa of the International University Vienna.

Foreign Members of Academy proceeded to participate in the activities of the Academy and research institutions of Estonia in compliance with time-honoured relations and research alliances.

## RESEARCH PROFESSORS OF THE ACADEMY

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The three-year term of three Research Professors, elected by the Academy on a competitive basis for the second time, was successfully concluded in 2008. (The first competition was held in 2002). Short annotations concerning the results of their work as well as major achievements of the teams under their supervision are provided below.

Professor Extraordinary of the University of Tartu  
Member of Academy *Ilmar Koppel*

A large group of materials of novel properties was designed as a result of research – very strong acids and alkalis, which have potentially significant application in chemical industry (possible catalysts (incl. stereo-selective, “water-friendly” and regenerable) for pharmaceutical, petrochemical and bio-fuel industry), in the design of highly efficient fuel elements, Li-ion batteries and supercondensers, for organic synthesis and activation of biomolecules. The research involved the study of the electronic structure and reactivity of specified compounds as well as the environmental/solvent dependence of their acidic and alkaline properties. Substantial information regarding the construction and characteristics of these chemical compounds with extreme properties was obtained.

Leading Researcher of Tallinn University of Technology  
*Malle Krunks*

Establishment of the formation chemism of metal oxides and sulphides in the salt-gel and spray pyrolysis processes laid a foundation for scientific developments in materials processing technologies. Chemical liquid sediment technologies for processing thin films and nano-structural layers with physical-chemical properties viable for opto-electronic applications were optimised. A technology for producing zinc oxide nanorods by spray pyrolysis method and a novel nanorods based structural solution for a solar cell of a super-thin inorganic absorber material were developed.

Professor of the Estonian University of Life Sciences  
*Ülo Niinemets*

The physical-chemical emission model of volatile organic compounds was significantly improved and a new mathematical model was composed, which would enable to simultaneously forecast the influence of physical-chemical and biological factors on emission. Novel methods were developed for measuring emission of stress-induced volatile compounds and thereby estimating the stress of a plant. The studies revealed that species with higher stress tole-

rance had a longer lifespan of leaves, their photosynthesis however was to a larger extent limited by intraleaf diffusion of the photosynthetic substrate CO<sub>2</sub>. This is the inevitable “cost”, which the plants of higher stress tolerance “pay” for their stress tolerance (greater mechanical strength and longer life of leaves).

In 2008 a competition was held for the next three year period and the following three Research Professors were elected for 2009–2011:

Senior Researcher of the Estonian University of Life Sciences *Tiina Nõges*,

Professor of the University of Tartu *Pärt Peterson*,

Senior Researcher of the National Institute of Chemical Physics and Biophysics *Martti Raidal*.

# **GENERAL ASSEMBLY, BOARD, DIVISIONS, COUNCILS, COMMISSIONS**

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## **GENERAL ASSEMBLY**

The General Assembly of the Academy convened thrice in 2008:

- April 23          Annual Meeting
- Reports by Heads of Divisions Ilmar Koppel, Rein Küttner, Peeter Saari and Peeter Tulviste “Academy in 2007”
  - Report by Secretary General Leo Mõtus “Budgets of the Academy for 2007 and 2008”
  - Election of Foreign Members of Academy
  - Paper by Member of Academy Endel Lippmaa “Opportunities and Perspectives of Estonian Power Industry”
- October 22      Jubilee Meeting of the General Assembly
- Address to the Academy by President Toomas Hendrik Ilves
  - Paper “Memory and Recollection” by Foreign Member of Academy Endel Tulving
  - Paper by President Richard Villems “Academic Deliberations about the Future”
- December 10
- Papers by Minister of Education and Research Tõnis Lukas and President Richard Villems “Draft Legislation on Curricula”
  - Scientific paper by Foreign Member of Academy Grigori Mints “New Trends in Foundations of Mathematics”

The first General Assembly Meeting was held as an annual meeting of the Academy. The agenda of the meeting was customarily dedicated to summing up the activities of the Academy over the previous year. Detailed data on the activities of the Academy in 2007 had been publicised in the “Estonian Academy of Sciences Year Book” XIII (40), which had been dispatched to all Members of Academy prior to the meeting.

The opening address was delivered by President Richard Villems.

The President subsequently handed over Member Diplomas of the Academy to new members Tarmo Soomere and Jaan Undusk, elected in December 2007.

The activities of the Academy in 2007 were reflected in the reviews, which on the basis of their respective Divisions were given by Heads of the Divisions Ilmar Koppel, Rein Küttner, Peeter Saari and Peeter Tulviste. The General

Assembly on the motion of Secretary General approved the report of the Academy for 2007 according to the reviews by Heads of the Divisions and materials presented in the Year Book.

Secretary General Leo Mõtus delivered a report on execution of the budget of the Academy for 2007 and introduced the budget for 2008, which was approved by the General Assembly.

During the following discussion comments were made by Members of Academy Mihkel Veiderma, Jaak Järv, Viktor Palm, Jüri Engelbrecht, Peeter Saari, Dimitri Kaljo and Agu Laisk.

Secretary General Leo Mõtus introduced to the General Assembly the candidates nominated for the election of Foreign Members and the voting procedure. Pursuant to the result of a secret ballot Ilse Lehiste, Grigori Mints, Jaak Peetre and Matti Saarnisto were elected as Foreign Members.

Member of Academy Endel Lippmaa delivered a paper under the title “Opportunities and Perspectives of Estonian Power Industry”.

The General Assembly Meeting to celebrate the 70th jubilee of the Academy was held on October 22.

The festive Jubilee Meeting was attended by President of the Republic Toomas Hendrik Ilves, who made a speech.

A paper on the topic “Memory and Recollection” was delivered by Foreign Member of Academy Endel Tulving.

President of the Academy Richard Villems delivered a speech “Academic Deliberations about the Future”.

President Richard Villems handed over the Karl Schlossmann Memorial Medal to Lembit Allikmets, M.D., *Professor Emeritus*, University of Tartu. Foreign Member Diplomas of the Academy were handed over to Ilse Lehiste and Matti Saarnisto, elected in April.

Addresses on the occasion of the jubilee of the Academy were delivered by Minister of Education and Research Tõnis Lukas, Chairman of the Estonian National Culture Foundation Eri Klas and Chairman of the Board of the Chamber of Commerce and Industry Toomas Luman.

The third General Assembly Meeting was held on December 10.

The topical issues on the agenda of the meeting were related to draft legislation concerning the national curricula for basic schools and upper secondary schools. Papers on that subject were delivered by Minister of Education and Research Tõnis Lukas and President Richard Villems.

Questions to the speakers were posed by Members of Academy Anto Raukas, Endel Lippmaa, Agu Laisk, Udo Margna, Peeter Saari, Mihkel Veiderma,

Mart Ustav, Ain-Elmar Kaasik and Arved-Ervin Sapar and Arvi Hamburg, Elsa Pajumaa and Margus Niitsoo.

In the course of discussion comments were made by Members of Academy Enn Tõugu, Endel Lippmaa, Olav Aarna, Agu Laisk, Dimitri Kaljo and Peeter Saari.

President Richard Villems made a motion that the General Assembly took a decision on an appeal of the Academy to the Riigikogu and Government regarding the upcoming school reform, upon vote the motion carried.

A paper under the title “New Trends in Foundations of Mathematics” was delivered by Foreign Member of Academy Grigori Mints. Questions to the speaker were posed by Members of Academy Enn Tõugu and Arved-Ervin Sapar and Margus Niitsoo. President Richard Villems handed over a Foreign Member Diploma of the Academy to Grigori Mints.

## **BOARD**

The Board of the Academy worked in 2008 in the following composition:

President	<i>Richard Villems</i>
Vice-President	<i>Ain-Elmar Kaasik</i>
Vice-President	<i>Jüri Engelbrecht</i>
Secretary General	<i>Leo Mõtus</i>
Head of the Division of Astronomy and Physics	<i>Peeter Saari</i>
Head of the Division of Informatics and Engineering	<i>Rein Küttner</i>
Head of the Division of Biology, Geology and Chemistry	<i>Ilmar Koppel</i>
Head of the Division of the Humanities and Social Sciences	<i>Peeter Tulviste</i>
Non-Executive Members	<i>Ene Ergma</i>
	<i>Endel Lippmaa</i>
	<i>Enn Mellikov</i>
	<i>Jaan Ross</i>
	<i>Enn Tõugu</i>
	<i>Mart Ustav</i>
	<i>Mihkel Veiderma</i>
	<i>Haldur Õim</i>

During the year the Board held 7 working meetings. Decisions were twice passed under the procedure of electronic questioning.

The calendar schedule of events of the Academy for 2008 was discussed and approved at the first meeting, whereat proposals of the Divisions were taken



into consideration. The major part of the schedule was carried into effect by the end of the year.

As it was the year of celebrating the 70th anniversary of the Academy, various issues related to the jubilee events were under consideration on several occasions. Agenda for festive meetings were discussed and approved and information concerning preparation of jubilee publications was heard.

On 22 January an extended meeting of the Board with members of the Cultural Affairs Committee of Riigikogu was held. The Board requested of the Cultural Affairs Committee to take into consideration the proposals of the Academy regarding the Academy Act amendments. The proposals included the right of the Academy to establish institutions on its own, to constitute an Institute for Advanced Study operating under the auspices of the Academy and to open an additional Member of Academy vacancy when a member of the Academy reaches age 75.

Science policy issues were repeatedly discussed throughout the year and information provided by Board Members belonging to the Research Policy Committee of the Ministry of Education and Research was heard.

The Board decided to approve the agreement conditions with regard to association with the Estonian Association of Engineers and the Jõgeva Plant Breeding Institute. An application for association by the B. G. Forselius Society was discussed twice, yet declined as the recent activities, policy papers and intended future targets of the society did not conform to the guidelines and policies of the Academy.

Pursuant to proposals of the Divisions the Board approved to submit to the General Assembly a candidate list for the election of Foreign Members of Academy (Ilse Lehiste, Grigori Mints, Jaak Peetre, Matti Saarnisto).

Reports for the 3rd working year of three Research Professors: Ilmar Koppel, Malle Krunks and Ülo Niinemets were heard at the end of the year. As the term of these Research Professors was concluded, the Board at its autumn meeting started to prepare for the election of new Research Professors and approved the composition of a respective Selection Panel (with Vice-President Ain-Elmar Kaasik as Chairman). At its meeting on 16 December the Board approved the protocol of the panel and considered Senior Researcher of the University of Life Sciences Tiina Nõges, Professor of the University of Tartu Pärt Peterson and Senior Researcher of the National Institute of Chemical Physics and Biophysics Martti Raidal elected as Research Professors.

As for memorial medals of the Academy, the Board decided to award the Karl Schlossmann Medal to Lembit Allikmets, M.D., Professor Emeritus of the University of Tartu.

At its spring meeting on April 8 the Board decided to announce the Student Research Paper Competition for 2008, approved respective regulations and

the composition of a Selection Panel (with Member of Academy Georg Liidja as Chairman). On 11 November the Board heard information concerning the results of the competition presented by Chairman of the Selection Panel Georg Liidja. Four prize-winning papers were delivered and laureates of the competition were presented with diplomas at a conference following the meeting (see p. 36). The Board decided to award scholarships for completion of monographic research works and popular science books, their layout and editing on competitive basis. A respective Selection Panel was formed for appraisal of applications (with Member of Academy Hillar Aben as Chairman), on whose proposal scholarships were assigned.

The composition of the Editorial Board of the journal "Proceedings of the Estonian Academy of Sciences" (with Member of Academy Jaak Järv as Editor-in-Chief), which had been repeatedly under consideration in 2007, was conclusively approved by the Board.

Discussion and decision making on issues related to current commitments constituted a considerable part of the Board's work. Execution of the 2007 Consolidated Budget and the Budget of the Academy for 2008 were examined and presented to the General Assembly for approval. The Board determined the amount of salary for Director of the Under and Tuglas Literature Centre and Director of the Academy Publishers. The Board discussed and approved a new structure of the Academy Office with a partial change of job titles. A conclusion was made of the Academy Science Day in Hiiumaa, whereby the interest of the receiving party towards holding follow-up lectures to the Science Day at the same place in the future was found worth reckoning with. The Board discussed and approved agendas for festive meetings of the jubilee year and agendas for General Assembly Meetings. An overview of problems following from the use of targeted financing allocated under Cooperation Agreement No. 10-10/488 (December 17, 2007) between the Ministry of Education and Research and the Academy, presented by Analyst Marek Tiits, was heard and a decision was taken to submit to the Ministry of Education and Research a plan drawn for solution of the project task by the Academy. The Board set up a six-member panel to elaborate the formation and operation principles of the Institute for Advanced Research. It heard and took notice of information presented by Member of Academy Endel Lippmaa in reference to the results of physical measurements obtained from climate change studies and regarded requesting the speaker to prepare a corresponding scientific article for delivery to members of the InterAcademy Panel on International Issues (IAP) as necessary. It was decided to support the proposal of Mart Ustav in relation to granting scholarships of the Estonian Academy of Sciences Subfoundation at the Estonian National Culture Foundation and accept making respective amendments to the agreement between the Foundation and the Academy. The Board at its meetings heard information on environmental hazards in relation to Nordstream presented by Member of Academy Tarmo Soomere, discussed

cyber-security issues and matters pertaining to nature protection administration reform.

## **DIVISIONS\***

### **DIVISION OF ASTRONOMY AND PHYSICS**

The Division of Astronomy and Physics held one Extended Assembly Meeting in 2008.

At the Extended Assembly Meeting of the Division on 23 October results of a competition organised within the framework of the measure “Centres of Excellence Development Programme”, which had evoked widespread resonance was analysed from the viewpoint of exact sciences. The meeting was also attended by Heads and representatives of the Division of Informatics and Engineering and the Division of Biology, Geology and Chemistry, Directors of relevant institutes and Vice Rector for Research of the University of Tartu Kristjan Haller. The Assembly decided to adopt a document drawn by Head of the Division “On Competition for Centres of Excellence from the Viewpoint of Exact Sciences” and to submit it for examination to the Ministry of Education and Research, Archimedes Foundation, the Research and Development Council, Estonian Rectors’ Conference and the Board of the Academy.

Several times during the year minor issues were pronounced upon and/or voted by the Division via e-mail.

The Hall of the Museum of Tartu University History was the venue for celebrating Cheslav Lushchik’s 80th anniversary on 15 February. Gennadi Vainikko’s 70th anniversary was marked by a seminar in Kääriku, organised by the Department of Mathematics and Informatics of the University of Tartu.

Members of the Division represented the Academy and the Division in several decision-making bodies of science administration (see “Membership”).

### **DIVISION OF INFORMATICS AND ENGINEERING**

Two Assembly Meetings of the Division were held in 2008.

Fulfilment of the 2007 Working Plan, the Working Plan for 2008 and co-operation with the Estonian Association of Engineers in relation to its association with the Academy were among discussed issues at the meeting of the Division in February. The schedule of events to celebrate the 70th anniversary of the Academy was presented. At its meeting in November the Assembly of the Division discussed issues involved with realisation of the Development

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\* Composed according to materials submitted by Heads of Divisions Peeter Saari, Rein Küttner, Ilmar Koppel and Peeter Tulviste.

Plan of the Academy and the results of election for Centres of Excellence in Research (an analysis by Member of Academy P. Saari was introduced).

Member of Academy Tarmo Soomere, elected Chairman of the Marine Commission of the Academy by Decision of the Board of 25 September 2007, launched the activities of the Commission in January 2008.

Several specialist conferences and seminars were held by arrangement and participation of members of the Division: jointly with the Division of Geology, Geology and Chemistry a seminar “Dynamics and Energy of Climate” (E. Mellikov), a seminar “Study of Complex Systems by Us and Elsewhere” (J. Engelbrecht, L. Mõtus), the DAAAM Baltic International Conference “Industrial Engineering – Adding Innovation Capacity of Labour Force and Entrepreneurs” (R. Küttner). Members of the Division were engaged in holding the Eighth Summer School on Stresses in Glass (H. Aben), the Conference of the Nordic Countries NordDesign 2008 (R. Küttner) and four electronics and informatics related conferences (R. Ubar and others). Several events, like a discussion “The State and Developments in Engineering Education”, a roundtable for employers/training providers/researchers “Researcher, Innovator, Entrepreneur” and a conference “Engineer and Innovation” were organised by members of the Division together with the Estonian Association of Engineers.

The Division participated in the work of editorial boards of several journals – “Estonian Journal of Engineering”, “Applied Mechanics Reviews”, “Oil Shale”, “Thermal Science”, “Thermal Engineering”, “Applied Mechanics”, “Academy”, etc.

Members of the Division represented the Academy and the Division in several decision-making bodies of science administration (see “Membership”).

#### DIVISION OF BIOLOGY, GEOLOGY AND CHEMISTRY

An Extended Meeting of the Council of the Division, an Assembly Meeting of the Division and two e-meetings/polls of the Division were held in 2008.

January 7 – activities of the Division in 2007, the Working Plan for 2008, Foreign Member candidates corresponding to the profile of the Division, preparation of the Assembly Meeting of the Division and other issues were discussed at the Extended Meeting of the Council of the Division.

January 15 – the 2007 Report and Working Plan for 2008 were discussed and approved by the Assembly of the Division and positions of the Division relating to filling one corresponding Foreign Member vacancy were explained at the Assembly Meeting. According to voting results M. Saarnisto was nominated as the candidate recommended to that vacancy. The Division supported Tõnu Viik, D.Sc. as a candidate for the position of President of the Estonian Naturalists’ Society.

March 11 – a seminar “Dynamics and Energy of Climate”, which attracted wide attention, was held upon the initiative of the Division (A. Raukas, Ü. Lille, E. Mellikov) and with its energetic attendance. Members of the Division took part in the Science Day in Hiiumaa, visited A/S Silmet, the Stenbock House, K. Schlossmann’s birthplace and the Estonian Naturalists’ Society (see “Events of the Academy”).

On occasion of anniversaries of Members of Academy D. Kaljo, J. Järve, R. Uibo and A. Laisk seminars of extensive attendance were held with speakers from the USA, Australia, Finland and Sweden. Upon proposal of the Division the K. Schlossmann Memorial Medal was awarded to Lembit Allikmets, Professor Emeritus of the University of Tartu.

Members of the Division represented the Academy and the Division in several decision-making bodies of science administration (see “Membership”).

The Commission for Nature Conservation and the Commission of Meteoritics proceeded with their activities under the auspices of the Division.

COMMISSION FOR NATURE CONSERVATION (chaired by Urmas Tartes) continued to work at the University of Life Sciences on the premises of the Baer House at Veski St. 4.

Among the most influential results for the past year was completion of the Estonian Red List (Book) in June. The work was financed by the Environmental Investment Centre. Preparatory work for making the database of the Red List available to the public through the Internet was carried out in cooperation with the Natural History Museum of the University of Tartu.

The 47th Day of Speeches on the topic of “Science and Law in the Forest” was organised in the Botanical Gardens of the University of Tartu. Speeches were made by Urmas Tartes, Ülo Tamm, Kalev Jõgiste, Enn Pärt, Kaili Viilma, Meelis Teder, Lembit Maamets, Rainer Kuuba and Marku Lamp. A memorandum was submitted to Minister of the Environment as a conclusion of discussions held on the Day of Speeches.

Issues relating to a reform of the nature conservation management system planned by the Ministry of the Environment were enthusiastically tackled by the Commission. The present activities of the State Nature Conservation Centre, general paradigms of nature conservation and risk factors of the reform were discussed at the General Meeting held on 25 September.

In cooperation with the Estonian Naturalists’ Society and the Estonian Council of Environmental NGOs, a discussion was held on 3 November, analysing the problems of the Draft Act to Reform Nature Conservation.

Member of Academy Erast Parmasto was elected as the laureate of the Kumari Nature Conservation Prize 2008. An exhibition presenting the hero of the day was available to view at the handing-over ceremony of the Prize.

During the year members of the Commission participated at anniversary events of several figures of nature conservation (Jaan Eilart 75, Ülo Heinsalu 80) and organised respective overview exhibitions to reflect their activities.

THE COMMISSION OF METEORITICS (headed by Member of Academy Anto Raukas) proceeded in cooperation with Professor F. Marini with analysis of the meteoritic material atomised at the Kaali meteorite explosion. Geological description and pedologic analysis of the cross-section were published in the "Estonian Journal of Earth Sciences" (2008, 57, 4, 231-240). A detailed analysis of the the Kaali main crater sediments was likewise published in the volume "Prehistoric Science 17. Nature, Man and Technology 2" and a booklet presenting the Kaali meteorite field in Finnish.

The Commission organised conservation of a presumable meteorite track at Lasnamäe and exceptional landscape varieties near Palupera in Valga County in order to preserve those objects as natural monuments.

A research course "Small Quaternary Meteorite Craters – Their Geophysical and Ecological Aspects" was organised to doctoral students of the Nordic and Baltic countries under supervision of a member of the Commission Jüri Plado, Doctor in Geology. The course was attended by 15 doctoral students and six supervisors. The programme included field works in meteorite craters of Ilumetsa, Tsõõrikmäe and Kaali performed using a geo-radar and other geophysical methods.

A Study Day of Meteoritics was organised to attendants of the Meteoritics School and interested inhabitants of Saaremaa upon the initiative of the Kaali Visiting Centre and the Commission of Meteoritics. The Kaali meteorite craters were presented to tourists during the whole tourist season by R. Tiirmaa, who also provided additional information regarding meteorite falls and large meteorite craters of the world.

#### DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES

A number of events were held in March/April in the framework of follow-up events to the Science Days in Lääne-Viru County. A Language Day was carried through on 13 March in Tapa together with the Mother Tongue Society. On 16–17 April the Wiedemanni Day Conference was conducted at Väike-Maarja, with Members of Academy Arvo Krikmann and Huno Rätsep attending and speaking. On 30 May the Division together with the Mother Tongue Society contributed to holding an Estonian Literary Standard Day in Tapa.

March 28–29 – members of the Division attended the Conference "Marie Under and Estonian Poetry 100", organised by the Estonian Literary Museum and Under and Tuglas Literature Centre.

April 2 – a discussion on the topic of the journal “Trames” was held upon the initiative of Member of Academy Jaan Ross, with Members of Academy Peeter Tulviste, Arvo Krikmann and Jaak Järv attending.

A Science Day in Hiiu County was held upon organisation of the Division (see p. 40).

May 17 – Member of Academy Raimund Hagelberg presented in the Literary Museum within the framework of the “Estonian Biographies” series his autobiography “About Life and Myself”.

August 31 – Member of Academy Peeter Tulviste attended a solemn reburial ceremony of the remains of Jüri Uluots, Member of the first composition of the Academy and Prime Minister of the Republic of Estonia at Kirbla in Lääne County.

November 21 – the 125th anniversary of Gustav Suits, Member of the first composition of the Academy was marked in Helsinki on organisation of the Finnish Literary Society and the Estonian Literary Museum.

Members of the Division represented the Academy and the Division in several decision-making bodies of science administration (see “Membership”).

## **COUNCILS, COMMISSIONS**

### **ENERGY COUNCIL**

In 2008 the Energy Council held three meetings: on 7 March, 13 June and 5 December.

March 7 – the future development of Estonian power industry was discussed at the meeting. Participants spoke about ongoing climatic processes over the globe and the CO<sub>2</sub> quota trade against their background. The expedience of shale oil production as well as the vigorously rapid expansion of export was under deliberation (explanations were given by Jüri Soone, Director of the Institute of Oil Shale Research at Tallinn University of Technology). Participants considered resource tax issues. Sceptic attitude was expressed towards adoption of biofuels. Among the topics under debate were: establishment of wind parks (Einari Kisel – Head of the Energy Department of the Ministry of Economic Affairs and Communications), supply of Estonia with natural gas (Arvi Hamburg – Executive Board Adviser of AS Eesti Gaas) and difficulties in setting up new mines. The Council decided that the oil shale power industry were preserved at least in the existing capacity with further enhancement; shale oil were produced by means of the most advanced technologies; the matters in connection with building a nuclear power station should be examined; the usage of Russian gas should be retained in its present volume.

June 13 – the main topic of the meeting was further development of Estonian oil shale power industry and shale oil industry, keeping in view that instead of global warming the climate is actually cooling, which in no way could not be caused by CO<sub>2</sub>. The following detailed issues were discussed: separation of energy systems from distribution systems; the possibility and economic expediency of elaborating a technology to enable excavating the entire geological reserve of oil shale; the feasibility of totally CO<sub>2</sub> free production of oil shale electricity; a gas turbine working on liquid fuel; development of the gas turbine in cooperation with turbine manufacturers; solutions for securing the cover of top load; compensation of windmills; improvement of co-production; production of diesel fuel or its components from oil shale; making producers improve technologies by means of eco-taxes; more efficient use of thermal energy generated in the process of electricity production; transportation of different gases in a common pipeline. Development Director of AS Narva Elektriamaad Mati Uus spoke about the current state and future perspectives of the power plants. The affairs of Viru Keemia Grupp were presented by Financial Director Priit Rohumaa. As a result of discussion the Energy Council decided to endorse development of oil shale industry, maintenance of the level of oil shale power industry and increase of shale oil production.

December 5 – the status of the Republic of Estonia in the energy policy of the European Union was discussed at the meeting. The need to proceed as quickly as possible with building of two fluid-bed energy blocks on the basis of oil shale was emphasised, as a large-scale import of either electricity or natural gas was not feasible due to the ever growing current account deficit. The present EU-15 and EU-12 relations were considered incompatible with basic stipulations of the Maastricht Agreement of 1992 and the following agreements as well as the accession agreements. Estonian raw materials should be used to the maximum. Development of technology and industry must not be managed through environment taxes, appearing as an impeding factor to economic growth. The lack of necessary data of expert environmental assessment regarding the nuclear technology complex of exceedingly hazardous Sosnovyi Bor, very close to Estonia was brought to notice. Commencement of preparations for utilization of nuclear energy was decided. The Energy Council decided to prepare appeals to the Estonian Government, authorities of the European Union, the Ministry of Foreign Affairs, the Ministry of Economic Affairs and Communications and the Ministry of the Environment in all the questions under consideration.

#### MARINE COMMISSION

The Marine Commission was established following from the accession of the Estonian Academy of Sciences to the Marine Board of the European Science Foundation according to the Decision of the Board of 25 September 2007



(Minutes No. 5 § 27), with Tarmo Soomere as Chairman. The Commission started activities in January 2008.

The Commission considers as marine sciences an aggregate of all branches of science related to the functioning of seas and other large reservoirs and their ecosystems. Besides classical marine science and limnology it includes coastal engineering and science, several disciplines of hydrology, geology of the sea bottom and coasts, scientific issues related to the sea bottom, management and use of sea biota resources, spatial planning of sea areas, etc. The area of responsibility of the Commission includes the knowledge and representation of the competence in the above-specified marine sciences accumulated in Estonia.

The Commission visualises as its essential role acting as an assembly of independent experts, relying on the highest competence existing in the area of marine sciences in Estonia with comprehensive awareness of the development of marine sciences on the international level, handling the issues of marine sciences as equally important both on the vertical (based on the scientific quality of a particular branch of science) as well as on the horizontal (marine sciences as object oriented competences) level.

Long term tasks of the Commission include: identification of strategic problems and domains of Estonian sea and coastal areas; advising on formation of respective databases and registers; organising advanced assessment and discussion of pivotal tasks in cooperation with specialists, researchers and politicians; forming a strategy for marine sciences; attending to elaboration of a strategy for marine education and fostering of a new generation of researchers in the marine sciences; communicating the message of marine sciences to the society and its decision-making authorities; providing counselling to the state bodies and agencies, establishments and institutions of Estonia, informing them of global marine issues of crucial impact; consolidating the competence of Estonian marine sciences through harmonisation and unification of the visions of various institutions.

The Marine Commission held two meetings in 2008. On 21 January Chairman of the Commission Tarmo Soomere spoke about the Marine Board of the European Science Foundation and about the tasks imposed on the Marine Commission. Heiki Lindpere spoke about the current status of the Estonian marine policy and perspectives of the Marine Act. The principles of the Statutes and Rules of the Commission were discussed. Participants emphasised the need for documenting the history and bibliography of Estonian marine sciences as well as mapping education programmes related to marine sciences (Master and Doctoral Studies). Explication of policies concerning the use and publicity of marine-related data with a general idea of ensuring the availability of data to the broadest range of users was considered consequential. The

need for making the activities of the Commission visible and the need for media communicate was pointed out.

The Statutes and Rules of the Commission were approved at the meeting of April 28. Silver Vahtra spoke about accession of Estonia to the HELCOM Baltic Sea Action Plan (Krakow, 15.11.2007), providing measures for improvement of the sea environment conditions. Tarmo Kõuts presented the activities of the Ministry of Defence relating to marine sciences, primarily involved with acoustics and NATO researches. Two papers were delivered: “Marine Board of the European Science Foundation: Activities and Plans” by Chairman of the Commission Tarmo Soomere and “Professional Training of Marine Scientists in the Present-day Estonia: Master and Doctoral Studies Related to Marine Sciences” by Urmas Lips.

## EVENTS OF THE ACADEMY

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### CONFERENCES

November 11 – the Academy House hosted a SCIENCE CONFERENCE OF THE STUDENT RESEARCH PAPER COMPETITION WINNERS. The Academy recognizes with monetary research prizes the students having attained outstanding results in research and encourages other capable students to pursue independent study and research in the future. The conference was opened by President of the Academy Richard Villems, diplomas were handed over to the laureates.

Four prize-winning papers were delivered by their authors:

- T. Lauri* of Tallinn University, Positive Special Treatment – a Substantiated or Unsubstantiated Intervention?;
- M. Niitsoo* of University of Tartu, Possibility of Time Template Schemes Basing on Collision Free Ragged Functions;
- O. Bondarenko* of Tallinn University of Technology, Bio-availability of Heavy Metals in Environment to Re-combine Luminescence Sensor-bacteria;
- M. Roosimaa* of University of Tartu, Expression of Genes Participating in Energetic Metabolism in Myocardium and HL-1 Cell-line.

### SEMINARS

March 11 – the Academy hosted a seminar in the series SCIENCE TO THE SOCIETY – DYNAMICS OF CLIMATE AND POWER INDUSTRY. Topics of the papers included different options in energy and various strongly rooted myths and actual facts regarding the surrounding climate. How much does human activity actually influence the global climate? Are we truly bearing witness to climate warming or have there been periods hundreds and thousands of years back, when the globe as an entity witnessed a significantly warmer average temperature? The dilemma of an egg and a hen – which of them came first: is an intensive CO<sub>2</sub> emission actuating the warming of the global climate or just the opposite? Is nuclear energy actually the most expensive and environment polluting type of energy or could it possibly be the wind energy?

Papers were delivered by:

- J.-M. Punning* Climate – Facts and Myths;
- I. Roos* Greenhouse Gases and Oil Shale Power Industry;
- R. Vaikmäe* Cryosphere and Climate;
- A. Raukas* Is Producing Alternative Electric Power the Way Out?

Papers were followed by discussion moderated by Anto Raukas.

May 15 – a seminar in the series NEW TRENDS IN RESEARCH – RESEARCH OF COMPLEX SYSTEMS BY US AND ELSEWHERE. Papers were delivered by Professor Efim Pelinovsky (Nizhni Novgorod University of Technology), Jaan Kalda and Leo Mõtus. The Academy Hall was the venue for a lecture “Chaos and Order in Multidimensional Hamiltonian Systems”, delivered by Professor Tassos Bountis (Patras University, Greece) within the framework of the event. The seminar was moderated by Jüri Engelbrecht.

September 17 – the Academy House hosted a seminar WHERE IS THE SYNERGY? Participants talked about cooperation between the Academy and associated societies and unions, among other things about their activities in a wider context.

The following papers were heard:

- L. Mõtus* Academy, Societies and Civil Society;
- T. Viik, J. Pelt* Estonian Naturalists' Society;
- J.-M. Punning* Activities of the Estonian Geographical Society in Globalising Estonia;
- E. Tammiksaar* Activities of the Estonian Union of the History and Philosophy of Science in 1967–2008. Developments and Problems;
- A. Anderson* Estonian Learned Society in Sweden – a View Back and Forward;
- K. Reivelt* Estonian Societies and the Estonian Cause;
- A. Ristkok* Motives of Regional Studies Nowadays.

A discussion followed, moderated by Leo Mõtus.

September 23 – a seminar was held in the form of an Extended Board Meeting under the title ESTONIAN ACADEMY OF SCIENCES FOUNDATION – QUO VADIS? The discussion was focussed on the balance of the Estonian Academy of Sciences Sub-foundation at the Estonian National Culture Foundation, established on 14 March 2006. It was found inadequate for granting contractual scholarships to Estonian scientists holding a doctoral degree. A highly significant problem emerged in the process of deliberations. The income of the Academy, overwhelmingly constituted of state budget funds, does not allow the Academy as an institution under public law adequate independence in resolving matters specified in its Statutes and achieving the objectives approved by the General Assembly. Quite a few European academies of science and letters are known to be considerably less dependent on state budgets, which is enabled by funds at their disposal, the yield whereof constitutes approximately half of their annual budgets. In case of applying the above example to the establishment of the budget for the Academy, a respective fund should amount to hundreds of millions of kroons. Formation and management of that kind of a fund is not feasible for the moment, however it should be kept in mind as a strategic goal.

November 6 – the Academy hosted a seminar MOLECULAR RECOGNITION IN CHEMISTRY AND BIOLOGY, the opening address was delivered by Jaak Järv.

The following papers were on the agenda:

*Ü. Langel* When the Target is Within Cell;

*P. Palumaa* Recognition of Biometals;

*A. Rinken* Receptors – Singly as well as in Company;

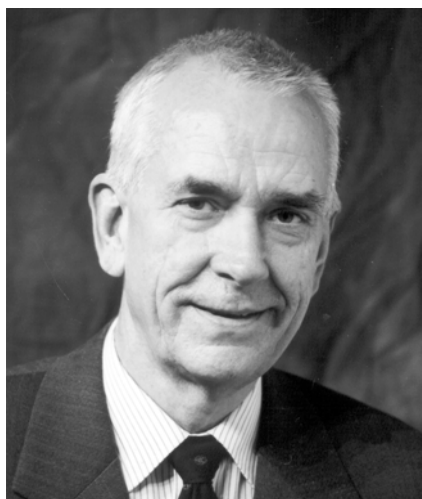
*A. Sepp* Therapeutic Antibodies – are they “Magic Balls” from a Test Tube?;

*M. Loog* Molecular Switch for Cell Division.

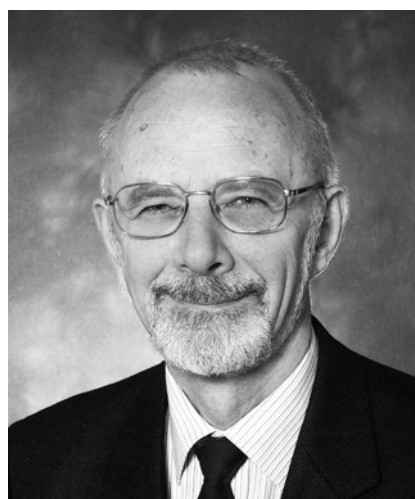
Presentation of papers was followed by discussion and comments

## PUBLIC ACADEMIC LECTURES

Six lectures were delivered in the traditional series “Estonian Academy of Sciences Public Academic Lectures” during 2008:



26 March  
“International Reflections on Estonian  
Neurology and Neurosurgery”  
Member of Academy  
*Ain-Elmar Kaasik*



30 April  
“Systems Biology: Molecular  
Systems Bioenergetics”  
Member of Academy *Valdur Saks*

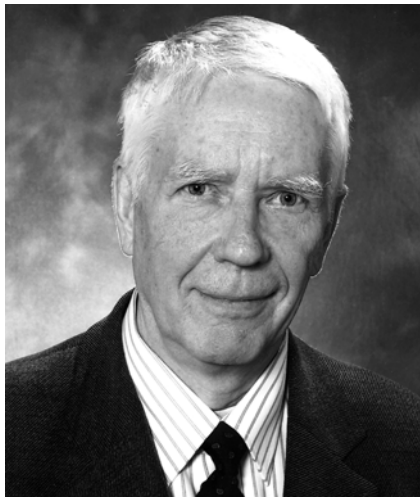


28 May  
“On Science, Religion and  
Photosynthesis as well”  
Member of Academy *Agu Laisk*



10 September  
“A Raving Sea”  
Member of Academy *Tarmo Soomere*

29 October  
“Mischief in Cyberspace”  
Member of Academy *Enn Tõugu*



19 November  
“Oxymoron as a Figure of Thought in  
the European Intellectual History”  
Member of Academy *Jaan Undusk*



## MEETINGS-DISCUSSIONS

On 8–9 May an Academy Science Day was held in Hiiu County. The Science Day tradition started as early as in 1999 and it was the ninth event of its kind. On the first day Members of Academy examined the beautiful home island of the inhabitants of Hiiu County and its sightseeing places under guidance of Helgi Põllo, Director of the Museum of Hiiumaa.

The second day started with a lecture by Member of Academy Peeter Saari “On Quasi Science” at Kärdla Gymnasium, followed by a visit to the Museum of Hiiumaa and a seminar at Tuuru Foundation. The following papers were delivered:

Hiiu County Governor *H. Maasel*, Hiiu County 2008;

President of the Academy *R. Villems*, History of this Academy and Academies over the World;

Member of Academy *T. Soomere*, Hiiumaa at the Mercy of the Sea and Waves?;

Member of Academy *J. Undusk*, Islands in Literature;

Director of the Institute of Business Administration at Mainor *A. Arrak*, *R. Villems*, *H. Maasel*, The Lisbon Strategy and Knowledge-based Estonia.

County Governor introduced the life and development of the county. Resoundingly dominant was the idea that a state’s development strategy should take into consideration the specificity and isolation of islands manifested both in the economy and the social life. President of the Academy spoke about the historical formation of the Academy. Member of Academy Tarmo Soomere delivered a mind catching paper on the power of the sea, insisting that if we knew how the sea behaved, we would cope with it. Member of Academy Jaan Undusk spoke about the island as a particular case of emergency situation, on the example of the world and Estonian literature. In the final discussion all three speakers shared their opinions and supplemented information on each other’s speech topics, focussing mainly on the following aspects: Andres Arrak – educational system and development of a knowledge-based economy; Richard Villems – a state’s contribution to science and development of a respective state; Hannes Maasel – teaching skills and the citizen mentality.

Busy days, hospitality of the Hiiu people and sunny spring days were appreciated by Members of Academy Jaan Einasto, Ain-Elmar Kaasik, Ülo Lumiste, Enn Mellikov, Leo Mõtus, Loit Reintam, Peeter Saari, Arved Sapar, Tarmo Soomere, Peeter Tulviste, Jaan Undusk and Richard Villems.

Several Estonian language related events were held in March/April within the Science Days in Lääne-Viru County. Together with the Mother Tongue Society a Language Day was arranged on 13 March in Tapa. The Wiedemann Day Conference held in Väike-Maarja on 16–17 April was attended with delivery of papers by Members of Academy Arvo Krikmann and Huno Rätsep. On 30

May the Academy contributed to the holding of the Literary Standard Day in Tapa together with the Mother Tongue Society.

On 29 September the delegation of the Academy visited the Port of Sillamäe and AS Silmet. Members of Academy examined on a round-about tour, carried out by Tõnis Seesmaa, Member of the Management Board of the Port, the easternmost deep water port of the European Union, multifunctional and open for shipping around the year. As the port is located as close as within 25 km of the EU-Russian border, it enables efficient transit of goods between the neighbouring regions – Russia and the CIS in the east, Scandinavia and the European Union in the west. The port has been equipped with infrastructures needed for handling all groups of merchandise, it provides loading of oil and bulk goods as well as container goods. The whole 600 ha of land area has been expertly planned and displays reasonable upkeep and ground maintenance solutions.

Director General of AS Silmet Anti Perkson introduced the guests with developments of the plant, production of rare metals, niobium and tantal. After conversations and numerous questions the participants looked at the work of some shops of the metallurgical plant. Members of Academy had a chance to get convinced that the achievements of both the port and Silmet Group are due to successful investments into environment, which has developed production meeting all modern requirements and safe to environment. After the official part Members of Academy visited the town of Sillamäe and viewed its well preserved and stylishly renovated architectural ensemble, built in the 40-50ies of the 20th century. A stopover with a tour was made at the Jõhvi Concert House. Members of Academy visited an exhibition of unique hand-made dolls made by a local artist and got a glimpse of the activities of the Estonian and Russian language hobby groups working at the house at the moment of their visit. The Field Day was attended by Members of Academy Ain-Elmar Kaasik, Ilmar Koppel, Ülo Lepik, Peeter Saari, Arved-Ervin Sapar, Mati Karelson, Peeter Tulviste, Dimitri Kaljo, Mihkel Veiderma, Rein Küttner and Anto Raukas.

A meeting within the framework of visits-discussions was held on 17 October at the house of the Naturalists' Society in Tartu. Members of Academy were met by President of the Society, Senior Researcher of Tartu Observatory Tõnu Viik, who provided an overview of the history and activities of the earliest consistently functioning learned society in Estonia. The previous President Marek Sammül assisted in providing exhaustive answers to all questions concerning the areas of activity of the Society. A tour under the guidance of Academic Secretary of the Society Katrin Alekand offered a joyful discovery of the charmingly cosy house accommodating the working premises and library of the Society. The meeting was attended by Members of Academy Ain-Elmar Kaasik, Ilmar Koppel, Georg Liidja, Huno Rätsep, Hans-Voldemar Trass.



## **ESTONIAN ACADEMY OF SCIENCES 70**

In 2008 the Estonian Academy of Sciences celebrated the fulfilment of 70 years from the date of its origination. A number of events, directly related to the anniversary of the Academy, were held during the year.

February 19 – the Academy Hall hosted a Festive Meeting *ROLE OF THE ACADEMY IN THE STATE*. With that event the Academy marked the promulgation of the “Estonian Academy of Sciences Act” as a Decree by State Protector Konstantin Päts on 28 January, 1938 and the 90th anniversary of the Republic of Estonia. Papers were delivered by President of the Academy Richard Villems *ESTONIAN ACADEMY OF SCIENCES IN TIME AND SPACE* and Vice-President Jüri Engelbrecht *ACADEMIES IN TIME AND SPACE* (see journal *Academy*, 2008, 10, pp. 2107-2130). Presentation of papers was followed by discussions.

October 15–29 – the 6th floor gallery of the Estonian National Library was the venue for an exhibition *ESTONIAN ACADEMY OF SCIENCES 70*, reflecting formation of the Academy through the history, from its starting years until today. A lot of historical documents and items presenting the activity and structure of the Academy were exhibited, alongside with a selection of scholarly publications by the first Members, photos, books of reminiscences, medals and keepsakes. Materials derived from the Academy archives and library of the Board, from the Museum of Tartu University History, the Estonian Film Archives, Academic Library of Tallinn University and collections of the institutions and societies associated with the Academy.

Subsequent presentation of recent publications included four titles: “History. Developments and Conclusions” – an original insight into the history of the Academy; “On Years in the Academy” – a significant contribution regarding the activities of the Academy in recent years; “Bibliography of the Estonian Academy of Sciences 1919-2007” compiled by the National Library of Estonia, and a special issue of the journal “Academy” (see “Publications of the Academy”, p. 54).

October 17 – a memorial plaque was opened at the birthplace of Karl Schlossmann, an outstanding representative of Estonian national medical science and the first President of the Academy, in the Pikknurme Village (Jõgeva County, Puurmani Parish). The memorial plaque (author of design and execution by Edgari Treier, a stonecutter) was placed in a window recess of a couple of meters wide authentic log wall, the only remaining wall of Schlossmann’s childhood home at the Veski Farmstead located by the side of the Putke Brook. The opening speech was delivered by President of the Academy Richard Villems, who recalled the path in life and science of that renowned mic-

robiologist, organiser of health care, researcher of Estonian curative mud, scholar of multifaceted interests and promoter of the formation of the Estonian national intelligentsia. The President thanked the author of the memorial plaque Edgari Treier, the present owners of the farmstead as well as Puurmani Parish for their help at commemorating the first President of the Academy. The following speeches at the ceremony were made by *Professor Emeritus* of the University of Tartu Lembit Allikmets, Governor of Puurmani Parish Rauno Kuus and Ille Palm as a representative of the descendants belonging to the only survived Estonian branch of the Schlossmann family. The event was attended by Members of Academy Ain-Elmar Kaasik, Ilmar Koppel, Georg Liidja, Huno Rätsep, Hans-Voldemar Trass and Peeter Tulviste.

October 22 – Jubilee Meeting of the General Assembly of the Academy, marking the passage of 70 years from the festive opening of the Academy on 22 October 1938 in the Hall of the Chamber of Commerce and Industry in Tallinn. Speeches were delivered by President of the Republic Toomas Hendrik Ilves and President of the Academy Richard Villems. A paper was delivered by Foreign Member of the Academy Endel Tulving. Foreign Member Diplomas and the Karl Schlossmann Memorial Medal were handed over. Salutation addresses were presented by Tõnis Lukas, Eri Klas and Toomas Luman.



#### Opening of the Jubilee Meeting

From right: President of the Republic T. H. Ilves, Members of Academy R. Villems, E. Ergma, A.-E. Kaasik, Foreign Member of Academy E. Tulving and Member of Academy L. Mõtus

April 28 – the White Hall of the Museum of Tartu University History hosted a Science Day under the title 70 YEARS FROM OPENING THE ESTONIAN ACADEMY OF SCIENCES IN TARTU to celebrate the first General Assembly Meeting of the Estonian Academy of Sciences, held in the Council Hall of the University of Tartu on 20 April 1938. Delivered papers were dedicated to establishment of the Academy and the first 12 Members of Academy. Speeches were made by: Lea Leppik, Peeter Järvelaid, Urmet Paloveer, Ott Kurs, Ergo-Hert Västriik, Ülo Leppik, Tiit Rosenberg, Toomas Asser, Toomas Pung, Ken Kalling, Akivo Lenzer, Erki Tammiksaar and Jaan Einasto. An exhibition of the works by the first Members of Academy was displayed on the basis of the Museum's holdings.

## **POPULARISATION OF SCIENCE**

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### **SCIENCE PROGRAMME “THE FALLING APPLE”**

In January 2008 a weekly science programme “The Falling Apple” was started by Radio Kuku for introduction and popularisation of science and scientists upon the initiative and until 24 August 2008 also funded by the Academy (thereafter financed pursuant to a bilateral agreement by the Ministry of Education and Research). The programme has gained popularity and recognition among the scientific community as well as an average audience, as testified by growing indicators of listening. The Editor-Programme Leader of “The Falling Apple” is a journalist Margus Maidla.

The themes of the programmes may conventionally be classified into five blocks.

ISSUES RELATED TO THE ACADEMY (events, subordinate institutions, etc.)

On the programme have appeared as guests: Member of Academy J. Undusk and Researcher of the Under and Tuglas Literature Centre at the Estonian Academy of Sciences P. Kruuspere; Member of Academy L. Mõtus and Chairman of the Cultural Affairs Committee of Riigikogu P. Kreitzberg; Member of Academy J. Engelbrecht; Member of Academy A. Raukas, Professor J.-M. Punning; Member of Academy M. Karelson; Member of Academy A.-E. Kaasik; Member of Academy E. Lippmaa; Member of Academy T. Soomere; Member of Academy P. Saari; Member of Academy E. Tõugu; Member of Academy J. Järv and Senior Researcher of the Institute of Technology at the University of Tartu M. Loog; Assistant Secretary General for International Relations A. Pöitel; Member of Academy J. Ross.

70TH ANNIVERSARY OF THE ESTONIAN ACADEMY OF SCIENCES  
AND HISTORY OF THE ACADEMY

On the programme have appeared as guests: Professor P. Järveldaid (about Member of Academy Jüri Uluots), Professor T. Rosenberg (about Member of Academy Hendrik Sepp); Project Leader of the Estonian Historical Archives U. Paloveer (about Member of Academy Julius Mark) and Head of the Estonian Folklore Archives E.-H. Västriku (about Member of Academy Oskar Loorits); Professor O. Kurs (about Member of Academy Edgar Kant) and a 12th grade student of the Hugo Treffner Gymnasium Ü. Leppik (about Member of Academy Gustav Suits); a historian K. Kalling (about Member of Academy Aleksander Paldrok) and Professor Emeritus A. Lenzner (about Member of Academy Karl Schlossmann); a museologist T. Pung (about Member of Academy Paul Kogerman), Member of Academy J. Einasto (about Member of Academy Ernst Õpik) and a historian K. Kalling (about Member of Academy Hugo Kaho); Member of Academy E. Lippmaa (about his father Member of

Academy Theodor Lippmaa); historians of science K. Kalling and E. Tamiksaar (concisely about persons and institutions of the Academy); an economic analyst H. Pajula, a science journalist T. Kändler, a media businessman H. H. Luik and Prime Minister A. Ansip (about their opinions, expectations and hopes regarding the Academy); President of the Estonian Academy of Sciences R. Villems (about the Academy at present and in the future).

#### SCIENCE POLICY AND ORGANISATION OF SCIENCE

On the programme have appeared as guests: President of the Academy of Sciences R. Villems, Minister of Education and Research T. Lukas; Deputy Permanent Secretary of the Ministry of Education and Research A. Koppel and Head of Science Department I. Reimand; Chairman of the Council of Estonian Science Foundation J. Allik and Board Member of Archimedes Foundation Ü. Must; Chairman M. Zobel and Head of Bureau M. Saluveer of the Estonian Research Council.

#### INTRODUCTION OF ESTONIAN RESEARCH INSTITUTIONS AND RESEARCHERS

On the programme have appeared as guests: Director of the National Institute of Chemical Physics and Biophysics R. Stern; Director E. Nõmmiste and Director for Research M. Kirm of the Institute of Physics at the University of Tartu; Professor of the University of Tartu T. Haldma, Professor of the University of Tartu U. Varblane; Head of the Fish Biology and Fisheries Department of the Estonian Marine Institute at the University of Tartu M. Vetemaa.

#### LAUREATES OF ESTONIAN SCIENCE PRIZES

On the programme have appeared as guests: Member of Academy V. Kulbach; Professor Emeritus of the University of Tartu T. Talvik; Head of the Plant Protection Department of the Estonian University of Life Sciences M. Mänd; Professor of the University of Tartu M. Remm; Member of Academy V. Saks, Professor of the University of Tartu E. Seppet; Head of Department of the Estonian Marine Institute at the University of Tartu T. Kutser; Professor of the University of Tartu E. Lust; Professor of Tallinn University V. Pettai; Senior Researcher of Tallinn University L. Mäll; Professor of Tallinn University of Technology T. Timmusk

The number of listeners for the radio programme “The Falling Apple” amounted to the average of 20 000 according to an extract of TNS Emor spring diary survey and an extract of TNS Emor autumn diary survey for the period 27 August – 25 November 2008 estimated the rise of the average number of listeners in combination with adding repeat time (first on air every Sunday at 3 p.m. – 4 p.m., repeated at 9 p.m. – 10 p.m.; an additional repeat programme is on air every Thursday at 8 p.m. – 9 p.m. since autumn) to 29 000.

## **RESEARCHERS' NIGHT 2008**

In 2008 Estonia celebrated for the third time the all-European Researchers' Night, communicating science and scientists to the general public (people of different age groups and educational background) in an amusing and relaxing key, also aiming to motivate young people to consider a career in science as an option. The Science Centre AHHA coordinated the project in Estonia, the Academy and the Estonian National Broadcasting Company continued as project partners. The Academy was responsible for the events in Tallinn, bringing under its umbrella several other organisers and introducing new venues. A wide scale of activities took place during a full day on the 26th September 2008.

The premises, exhibitions and technology workshops of Tallinn Science and Technology Centre (Energy Centre) were open early in the morning for anyone interested in playing out the role of an experimenting scientist, with understandable emphasis on schoolchildren.

Tallinn University started its activities with a Science Fair, followed by an event under the title "Night with Researchers". The audience could enjoy fascinating chemical experiments, take a guided tour in the pedagogical archives/museum, observe web-based teaching and study environments, test a vibro-acoustic therapy bed, etc.

In the evening, the team of the National Broadcasting Company beamed the Researchers' Night special live show from the atrium of Tallinn University – 1.5 hours of prime time – to every home in Estonia. Guest researchers represented all public universities and research institutions. The audience could watch 24 videoclips and interviews with persons selected for their research quality, leadership capacities and charisma. A science quiz was on both for spectators as well as the guests of the show and musical performances were conducted by Olav Ehala, Professor of the Estonian Academy of Music and Theatre.

Tallinn University of Technology organized an Open Lab Day. Visitors could choose between six seminars with topics varying from upsides of being a young researcher to secrets of mining industry or robotics. Specially prepared hands-on workshops were given in geology, practical chemistry and computer aided design. Interested participants were guided around the premises (incl. visits to laboratories normally closed for outsiders), could attend instrument testing, film programmess and even musical entertainment acts by academic choirs and dance groups.

An event under the title of "Kaleidoscope" was arranged in the Von Krahl Theatre (Tallinn Old Town), in order to bring science into the usual Friday night surroundings of young people. "Time and light" were the keywords. Interesting experiments were staged to explain a variety of phenomena, starting

with the Time Machine (a clever piece of equipment supported by computer aided visuals) as presented by Aare Baumer of the Energy Centre, a performance by the young researchers of the Science Bus team, a spectacular “battle” between young physicists and chemists (University of Tartu) trying to outperform one another in creating and manipulating light. The band Broken Time Orchestra and a dance act by choreography students applied specially designed light and sound effects and added new facets to the “time and light” theme of the night.

The Academy opened its doors to the town people for a concert and science café that addressed the subject of music and researchers of music in the University of Tartu during the 19th and early 20th centuries. The concept of the evening belonged to Professor Toomas Siitan (Chairman, Estonian Musicological Society), Ms. Geiu Rohtla (PhD Student of the Estonian Academy of Music and Theatre) designed and moderated the actual programme. Talks were given by G. Rohtla and Professor Jaan Ross (University of Tartu); the group “Studio Vocale” filled the hall with exquisite music composed by scientists and scholars highlighted in the presentations.

The Researchers’ Night programme allowed active involvement of the audience and direct communication with researchers. Various events were arranged by the Science Centre AHHAA in Tartu, Pärnu, Rakvere, Valga and Narva as well. All events were free of charge for visitors. Thanks are due to all partners and co-funders.

## **ACADEMY MEDALS, AWARDS, SCHOLARSHIPS**

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### **MEMORIAL MEDALS OF THE ACADEMY**

#### **KARL SCHLOSSMANN MEMORIAL MEDAL**

The Karl Schlossmann Memorial Medal for outstanding achievements in medical science and related specialties was first conferred in 2004, starting the tradition of Academy Memorial Medals.

The Board of the Academy decided to confer the Karl Schlossmann Memorial Medal in 2008 on *Professor Emeritus* of the University of Tartu

*Lembit Allikmets,*

who has conducted effectual research work and is renowned for his great merits in furthering the Department of Medicine of the University of Tartu as well as the specialty of pharmacology. The medal was handed over at the Anniversary Meeting of the General Assembly.



### **LETTER OF APPRECIATION OF THE ACADEMY**

In 2008 the Academy granted its Letter of Appreciation

to Member of Academy *Mart Ustav*

for spectacular achievements in research and development work and for contributing a donation to the Estonian Academy of Sciences Sub-foundation at the Estonian National Culture Foundation with a view to inspire and support young scientists

to *Aili Kogermann*

for long-time management of the Editorial Board of the journal “Oil Shale” and for purposeful cooperation in gaining high international standing for the journal.



## SCHOLARSHIPS OF THE ACADEMY

In 2008 the Academy assigned six scholarships by way of public competition. 27 applications were received for the competition and assessed by a Selection Panel of the Academy in the composition of Hillar Aben (Chair), Ülo Lumiste, Loit Reintam and Haldur Õim. On the proposal of the Panel the Board of the Academy assigned scholarships (Decision of 6 June 2008, Protocol No. 6 § 16) to the following scientists (á 25 000 kroons):

*Marju Torp Kõivupuu* (PhD, Senior Researcher of the Estonian Institute for the Humanities) – for publication of the monographic research work “Book of Crosses”.

*Anatoli Landõr* (Candidate in Medicine, Assistant Professor of the University of Tartu) – for publication of the book “Monitoring of Heart Beat Rate in Sport, Health Sport and Movement Treatment”.

*Pärtel Piiirimäe* (PhD, Assistant Professor of the University of Tartu) – for completion, layout and editing of the monographic research work “War and Morality in Early Modern Europe”.

*Rein Ruutsoo* (Candidate in Philosophy, Professor of Tallinn University) – for completion, layout and editing of the monographic research work “Popular Movements in the Baltic States and Restoration of Independence of Estonia in 1987-1991”.

*Anne Tamm* (PhD, Senior Researcher Extraordinary of the Institute of the Estonian Language) – for completion, layout and editing of the monographic research work “Relations between Estonian Aspect, Verbs and Case”.

*Enn-Aavo Pirrus* (Doctor in Geological and Mineralogical Sciences, Professor Emeritus of Tallinn University of Technology) – for publication of the popular science book “Large Stones of Estonia”.

## SCIENCE AWARDS TO STUDENTS

On 19 May 2008 the Board of the Academy announced a competition for the Student Research Paper Prize. 43 research papers were received within the established deadline, 26 of them were Master and Bachelor Theses, 3 articles, 1 pro-seminar work and 3 research papers. In comparison of educational institutions: the majority of works were provided by the University of Tartu (15), Tallinn University (13), Tallinn University of Technology (6), Estonian University of Life Sciences (3) and Kiel University (2). Aberdeen University, Nottingham University, Estonian Business School and Oxford Brookes University Business School were represented by a single work each.

Papers were examined by a Selection Panel of the Academy including Georg Liidja (Chair), Arvo Krikmann, Udo Margna and Enn Tõugu. Several outside experts were involved in the appraisal process as well. The Panel decided at its meeting of 31 October to award five First Prizes (á 12 000 kroons) and eleven Second Prizes (á 8000 kroons).

The First Prize of the Academy was awarded to the following students:

*Marit Alas* (Tallinn University) Master's Thesis "Change of Place Names in the Põide Parish in Saaremaa" (supervised by Marja Kallasmaa, PhD and Jüri Viikberg, Professor);

*Olesja Bondarenko* (Tallinn University of Technology) Master's Thesis "Bio-availability of Heavy Metals in Environment to Re-combine Luminescence Sensor-bacters" (supervised by Angela Ivask, PhD);

*Triin Lauri* (Tallinn University) Master's Thesis "Positive Special Treatment – Substantiated or Non-substantiated Intervention?" (supervised by Raivo Vetik, Professor);

*Margus Niitsoo* (University of Tartu) Master's Thesis "Can We Construct Unbounded Time-Stamping Scheme from Collision-Free Hash Functions?" (in English, supervised by Ahto Buldas, PhD);

*Mart Roosimaa* (University of Tartu) Competition Paper "Expression of Genes Participating in Energetic Metabolism in Myocardium and HL-1 Cell-line" (supervised by Lumme Kadaja, M.D.).

The Second Prize was conferred on:

*Kadi Jairus* (University of Tartu) Master's Thesis "Comparison of the State of Lichens on Forest Trees and Preserved Trees" (supervised by Piret Lõhmus, PhD and Asko Lõhmus, PhD);

*Kristi Jõeste* (University of Tartu) Master's Thesis "Artefact, Self-determination, Collective Body: Semiotic Analysis of Clothing on Example of the Kihnu Skirt" (supervised by Anti Randviir, PhD);

*Villu Kikas* (Tallinn University of Technology) Master's Thesis "FerryBox Measurements – Device for Research of Meso-scale Process in the Gulf of Finland" (supervised by Urmas Lips, Professor);

*Anton Kiiüinal* (Tallinn University) Master's Thesis "Dramaturgy of Libretto of an Opera: R. Wagner's "Parsifal", V. d'Indy's "Ferval" and N. Rimski-Korsakov's "The Story of Invisible Town of Kitež and Virgin Fevronia"" (in Russian, supervised by Anna Gubergrits, PhD);

*Kätlin Laos* (Tallinn University) Bachelor's Thesis "Landscapes of Puhtu-Laelatu Nature Preserve and the Changes Occurring Therein" (supervised by Kaija Käärt, Lecturer);

*Taavi Liblik* (Tallinn University of Technology) Master's Thesis "Specificities of Vertical Distribution of Temperature and Salinity in the Gulf of Finland in Summer Months" (supervised by Urmas Lips, Professor);

- Kaia Läänemets* (University of Tartu) Master's Thesis "Essence of Business Name and Copyright of the Entrepreneur to the Business Name" (supervised by Anne Kalvi, M.Sc.);
- Sergei Nikitin* (Estonian Business School) Master's Thesis "Pharmaco-economical assessment of Human Papillomavirus Vaccine" (in English, supervised by Alari Purju, Professor);
- Riin Rebane* (University of Tartu) Master's Thesis "Determination of Meta Amino-acidic Composition by HPLC Method – Elaboration of the Methods and Analysis of the Results" (supervised by Koit Herodes, Assistant Professor);
- Marek Rei* (Tallinn University of Technology) Bachelor's Thesis "Creation of Model of Audiovisual Head of Speech Synthesis in Estonian" (supervised by Einar Meister, PhD);
- Eva Roos Sildre* (University of Tartu) Master's Thesis "Surfaces of Potential Energy of Cyclobutadien and its Nitrogen Derivates" (supervised by Peeter Burk, Professor).

Research prizes with corresponding diplomas were handed over at the Conference of the Student Paper Competition Winners of on 11 November, with the papers of four winners delivered (see p. 36).

## **PRIZE FOR POPULARISATION OF ESTONIAN SCIENCE**

In 2008 the Prize for Popularisation of Estonian Science was conferred for the third time – as jointly awarded a prize of the Academy, Archimedes Foundation and the Ministry of Education and Research. The aim of the competition is to acknowledge activities for communicating science to the wider public and to give recognition to private individuals and teams for their role in popularisation of science.

The Selection Panel for assessment of candidates included Member of Academy Georg Liidja (Chair), Member of Academy Ene Ergma, Counsellor of the Ministry of Education and Research Sirje Kivi, Director of the Science School at the University of Tartu Viire Sepp, representative of the Estonian Academy of Young Scientists Dimitri Teperik, Board Member of Archimedes Foundation Ülle Must and Member of the Riigikogu, media expert Hannes Rumm.

Three First Prizes for Popularisation of Estonian Science were in 2008 conferred on:

- Meteorologist Ain Kallis, who has for years introduced the meteorology and geography, astronomy and other areas of knowledge in press and at schools;

- Stellarium NGO astronomers and Head Mare Ruusalepp, who are organising in Tartu Observatory at Tõravere tours to “heavenly things” for interested parties and is a valuable partner to teachers of physics;
- Tartu Environmental Education Centre Foundation and Project Leader Anneli Ehlvest, who composed an interactive urban nature exhibition “I am not a Guest, I am Living Here”, travelling around Estonia.

Five Second Prizes were conferred on: Aivar Kriiska as the author of the book “At the Beginning of Time. 15 Writings from a more Distant Past”, Aet Kiisla as initiator of Narva Children University, Tallinn Science and Technology Centre Foundation i.e. Energy Centre, Aid Erik Puura as initiator of the environmental blog “Keskkonnaabi”, Geoguide Baltoscandia NGO headed by Heikki Bauert as the driving engine of the project “Development of Geo-tourism in Estonia and Finland: Exploring the Past of the Country”.

The Third Prize was conferred on: Heldur Sander as long-time introducer of science, Andi Hektor as introducer of physics, Amar Annus as translator-commentator of the Middle East classical texts, the Estonian Physical Society as organiser of the family event “Tähe Perepäevad Täpe”, Kadri-Ly Trahv and Tiina Sirelpuu as representatives of the Natural Science Hobby Club at Rakvere High School of Science, Enn Kaup as introducer of the Fourth International Polar Year, the research and technology news portal “Novaator” (Editor Villu Päärt).

The Letter of Appreciation was awarded to: the journal “Akadeemia” (Editor-in-Chief Liina Kanger) and the magazine “Tarkade Klubi” (Editor-in-Chief Arko Olesk).

32 researchers and teams, who had issued books, made films and TV programmes, organised series of events and exhibitions and written articles for popularisation of science, participated in the competition.

The total prize fund of the competition in 2008 was 320 000 kroons. Winners of the First Prize were assigned 40 000 kroons. The Second Prize amounted to 26 000 kroons and the Third Prize to 10 000 kroons.

Prizes were handed over at a science media conference under the title “Science – Mute or Meaningful?” on 29 April in Tallinn.

## **PUBLICATIONS OF THE ACADEMY**

The Academy published five books in 2008:

- “Estonian Academy of Sciences Year Book XIII (40)” in Estonian\* and English\*;
- The twelfth book in the series “National Science Prizes”, providing an overview of prize-winning scientists in 2008 and their research papers;
- “Estonian Academy of Sciences. History. Developments and Conclusions”\*.

The book, authored by historians of science Ken Kalling and Erki Tamiksaar, reflects the development of Estonian science in the 20th century through multifaceted, controversial and at times even absurd situations, attempting to bring together and clarify against the background of their era divergent sub-currents in the evolution of Estonian science as well as persons acting a role in it. The authors wonder what the reason could be for establishing the Estonian Academy of Sciences, unique in the world (the first and only one of its kind existing in a country with so small population) and later the Academy of Sciences of the ESSR? Does the experience of the Estonian Academy of Sciences, acquired in hard times, characterise the Academy in a positive or negative way? Did the self-centeredness characteristic to researchers find exit from the delimited frame of the Academy’s professional interests or did the Academy rather remain a structure having difficulties with accommodation to the social order of Estonia under regained independence? Answers to those and other questions are sought up to 1997.

- “Estonian Academy of Sciences. On years in the Academy”\*. The collection complements the above study by historians of science and presents reminiscences of Presidents, Vice-Presidents, Secretaries General and Coordinator for Foreign Relations, who have headed the Estonian Academy of Sciences during various periods, highlighting the complicated problem-range regarding the reorganisation of the Academy system. The book contains a chronology of the events 1938–2007.

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\* In electronic format see <http://www.akadeemia.ee/en>

- “Bibliography of the Estonian Academy of Sciences 1917–2007”\*. The issue has been compiled by bibliographers of the Estonian National Library under supervision of Krõõt Liivak. The bibliography accumulates records of articles, books and websites related to the activities of the Estonian Academy of Sciences, its institutions as well as institutions, scientific societies and unions associated with the Academy. The collection includes numerous references to the history of science and hereby is of interest to a wider scientific community, appearing as an essential source material for future historians of science.

In 2008 a special issue of the journal “Akadeemia” dedicated to the 70th anniversary of the Estonian Academy of Sciences was released, containing papers by Members of Academy delivered at the anniversary events, summaries of research articles and a selection of opinions, expressed by Members of Academy over the years. Also presented is the speech of Honorary Member of the Academy Konstantin Päts at the opening ceremony of the Estonian Academy of Sciences on 22 October 1938 and an overview of the developments of Estonian science in the last couple of decades by Professor Ain Heinaru.

Scientific journals see p. 102.

## **INTERNATIONAL SCIENTIFIC RELATIONS**

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The Estonian Academy of Sciences (EAS) continued representation of Estonia in a number of international organisations, which bring together science community on issues that cross specialities, at the level of top researchers and science policy makers. In 2008 the Academy was actively involved with the following institutions.

Since 2006, Vice President of the EAS Jüri Engelbrecht has steered the European Federation of National Academies of Sciences and Humanities “ALL European Academies” (ALLEA) as President. Under his leadership, the ALLEA strategic plan for the impending years has been taking shape. Series of meetings and consultations have resulted in more efficient partnership connections with other European and global science organisations, like e.g. ESF (ESF-ALLEA high-level meetings have become traditional), EASAC, EUA, IAP (jointly organised sessions for young scientists in Tianjin, China held within the framework of a conference of the World Economic Forum), ICSU, etc. Through ALLEA the Academy has a better possibility to have a say in wider science strategy questions. As representative of ALLEA, J. Engelbrecht also participates in EASAC and ESF steering bodies.

The European Academies Science Advisory Council (EASAC) consists of individual members delegated by academies, by the EAS – Secretary General Leo Mõtus. In 2008 EASAC set up an environmental steering panel, with the EAS authorising its Chairman of the Marine Commission Tarmo Soomere to sit on that panel. As an expert nominated by the EAS, Professor Alan Altraja (Head, Department of Pulmonology, University of Tartu) was active in EASAC WG on drug-resistant TB. The Academy also sent Estonian experts to attend the EASAC Scoping Workshop on Biofuels organised by EASAC and the Royal Netherlands Academy of Arts and Sciences in Amsterdam.

The EAS together with the Estonian Science Foundation participates in the European Science Foundation (ESF). The membership fee is paid by the Academy, while participation in the programmes is funded through the Estonian Science Foundation. The representatives jointly appointed by the Academy and the Estonian Science Foundation are acting in the Governing Council and Standing Committees. The EAS is a member of the ESF Marine Board. Through the Marine Commission that started actual work in 2008, the Academy consolidates the competence of disciplines related to research of seas and other large reservoirs and their eco-system. In 2008, Estonian scientists participated in 17 ESF Research Networking Programmes; the Estonian Science Foundation has joined several ESF EUROCORES (“*European Collaborative Research*”) programmes in different stages of preparation, incl. two of them (EuroGRAPHENE and EuroCORECODE) in the reporting year.

The European member organisations of the International Council for Science (ICSU) hold annual conferences. The meeting of 2008, traditionally attended by Vice-President Ain-Elmar Kaasik, was held in Helsinki in April. The opening session focussed on role of the humanities and social sciences in the activities of ICSU, the participants further deliberated on mutual cooperation of ICSU European members and considered bringing in compliance their positions at the ICSU General Assembly to be held in October. The Academy empowered the Finnish delegate Kari Raivio to represent the Academy's positions at the General Assembly.

Union Académique Internationale (UAI), bringing together academies concerned with the so-called "soft" sciences and concentrating mainly on the humanities, held its 82nd General Assembly in Brussels in May. The Academy was represented by Head of the Division of the Humanities and Social Sciences Peeter Tulviste. As member of the UAI Board (elected in 2007) P. Tulviste participated in the work of this body, contributed to presenting the activity of UAI in the African continent, attending a field session of the Board of UAI in Bamako and Timbuktu (Republic of Mali) and the 27th General Assembly of the International Social Science Council (ISSC) in Cape Town (Republic of South Africa).

Membership of the EAS in international science organisations enables to take scientific aspects of problems essential to Estonia to the international discussion forum. An excellent example to the point from 2008 are the reports of Chairman of the Marine Commission Tarmo Soomere in the ESF Marine Board as well as in EASAC (at the sessions of both the Council and the Environmental Steering Panel) on the environmental concerns about building large-scale pipelines in the Baltic Sea (NordStream).

The Academy continued supporting contacts of the Estonian scientific community with international scientific unions, giving preference to contacts with ICSU member organisations. The Academy organised payment of membership fees with the help of a targeted allocation from the Ministry of Education and Research and reported to the Ministry on the activities of respective national committees (List, see Annex 1 p. 178). National committees disseminated information materials obtained from original sources, attended scientific forums of scientific unions and organised them in Estonia within international series of events, participated in working groups, networks, research projects, recommended and nominated Estonian researchers to the steering bodies of scientific unions (as well as expert panels, as candidates for prizes etc.).

In common with many European academies, the Estonian Academy of Sciences supports and finances international mobility of researchers through a bilateral exchange programme. Bilateral cooperation agreements (full list of partners is presented in Annex 2 p. 181) serve as the formal basis for exchange of scientists. In 2008 a cooperation agreement was made with the Austrian Academy of Sciences for another five year period, agreements were renewed



(i.e. a new annex was signed) with the Spanish Council for Scientific Research (CSIC) and the Academy of Sciences of the Czech Republic, the agreement with the Academy of Finland was prolonged. The programme is supervised by the Council for International Exchanges of the EAS consisting of representatives of the Divisions and four main public universities – University of Tartu, Tallinn University of Technology, Estonian University of Life Sciences and Tallinn University.

The Academy acts upon the traditional cost-sharing principle (the receiving party covers the living costs in the host country) and gives preference over individual research to reciprocal visits within the bilaterally accepted joint projects. As a rule, the sending Academy selects the scientists, who are to be nominated to the receiving Academy for funding. The Estonian-Finnish exchange of scientists is an exception from that rule: a Finnish scientist has to apply to his Academy for the reception costs of his Estonian colleague (and contrariwise). In 2008 Estonian scientists made 97 study and conference visits, using in total 755 days, which is almost one fifth less than in previous year. At the same time 98 visiting researchers working in Estonian universities and research institutions in the total of 808 days were hosted by the Academy (11% less than in 2007). To cover the living costs of the visiting scientists 610.8 thousand kroons was expended. As ever, the University of Tartu is the most active inviting party of the guests and also the most active applicant for trips (share over 40%). Exchange of scientists is more vigorous with Central and Eastern European academies of sciences. Opportunities for cooperation of Estonian scientists have enlarged – funding can be applied for from various sources (incl. FP7, structural funds, national mobility schemes), which surely influences exchange of scientists between academies.

The Academy was traditionally visited by several delegations and science policy makers in 2008, for instance Director General in DG Research of the European Commission Jose Manuel Silva Rodriguez, Vice-President of “Elsevier” Science Publishers Paul Evans and many others. Representatives of the Academy in their turn visited partner academies and delivered, as invited speakers, papers at international science forums. For greater detail see “Chronicle” pp. 7-16. The Academy supports direct contacts of young scientists with the top figures in the world of science – in 2008 the Academy sent a doctoral student in physics of the University of Tartu Heli Lukner to participate at a joint conference of the Nobel Prize laureates and outstanding young researchers in Lindau (Germany).

Estonia is an integral part of the European Research Area. In these conditions the accent inevitably transmits to cooperation with scientific institutions of the European Union and active participation in the EU structures, programmes, projects. Vice-President Jüri Engelbrecht, for instance, belonged to the Council of the EU FP7 R&D project NETWATCH. NETWATCH aims at providing information on national programmes linked through ERA-NETs, analy-

sing development paths of the ERA-NET scheme, in particular the issue of transnational cooperation, and generalisation of experience. J. Engelbrecht also belongs to the Advisory Group of the FP7 Specific Programme “People”.

Upon authorisation of the Ministry of Education and Research the EAS participates as partner in the FP6 project “Complexity-NET” (“Coordination of National Complexity Research and Training Activities”) initiated for coordination of complexity research and respective training programmes and their reciprocal cross-border opening. The project belongs to the ERA-NET scheme, it started in September 2006 and will be going on for three and a half years. Eleven countries are involved: Great Britain (coordinator), Belgium, Estonia, Spain, Holland, Ireland, Italy, Greece, Denmark, Portugal and Hungary. The EAS is represented by J. Engelbrecht and L. Mõtus. Estonian scientific interest groups have gathered mainly around the Centre for Nonlinear Studies (CENS) at the Institute of Cybernetics of Tallinn University of Technology. On May 16 the Academy hosted a project consortium meeting in Tallinn. As a preliminary event, a scientific seminar was held at CENS on May 15 and as a follow-up event Professor Tassos Bountis (Greece) delivered a lecture “Chaos and Order in Multidimensional Hamiltonian Systems” at the Academy on May 17. For greater detail of the project see [www.complexitynet.eu](http://www.complexitynet.eu). By now, the partners have made it to the elaboration of a joint action plan.

The Estonian Academy of Sciences participated for the third year as partner in the FP7 project “Researchers’ Night 2008”, oriented at popularisation of the profession of scientist (see p. 47).

Estonia considers as important concrete support measures to enhance better job-related opportunities and mobility for scientists as well as favourable conditions for movement to another country for work. Since 2004 the Academy has been acting together with the Foundation Archimedes (intra-Estonia coordinator), University of Tartu, Tallinn University of Technology, Estonian University of Life Sciences and Tallinn University, in a Europe-wide Network of EURAXESS Services (formerly named ERA-MORE). EURAXESS has been set up by the European Commission with the aim to advise researchers and their families moving to work or to embark on a doctoral programme in another country on administrative and practical issues. The Network includes about 200 organisations from 35 countries; the circle of topics covered by service centres is wide, embracing areas like visas, residence and work permits, recognition of qualifications, research job vacancies, taxation, social security, medical care, everyday matters, etc. The European Commission organises European level trainings and conferences as well as the activity of working groups, attended among others by the staff of the International Relations Unit of the Academy.

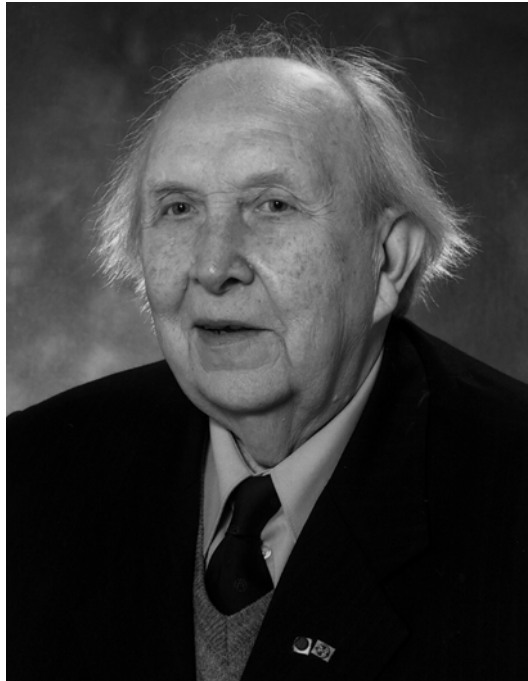
# **NATIONAL AWARDS TO MEMBERS OF THE ACADEMY**

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## **NATIONAL SCIENCE PRIZE**

According to Regulation No. 67 of the Government of the Republic of Estonia of 7 February 2008, upon proposal from the National Science Prize Committee,

THE SCIENCE PRIZE FOR LONG-TERM ACHIEVEMENTS IN RESEARCH AND  
DEVELOPMENT



was awarded to Member of Academy *Valdek Kulbach*

Presentation of the candidature of Valdek Kulbach to the competition of long-term achievements in research and development was motivated by the Council of Tallinn University of Technology as follows: enhanced computational methods for dissimilar cable structures have been created in the period of 1960–2000; an efficient tool for solving complicated engineering problems has been obtained as a result of combining fundamental and applied research, development and continuous/discrete models of computation; a significant contribution has been made to solving the problems of non-linear engineering mecha-

tics; ongoing involvement in educating civil engineers and preparing research professionals; outstanding publishing activities. A number of sophisticated tasks concerning practical building have been solved in the process of development activities initiated on the basis of research results obtained by the author.

Science Prizes of the Republic of Estonia, 2008.

## **NATIONAL DECORATIONS TO MEMBERS OF THE ACADEMY**

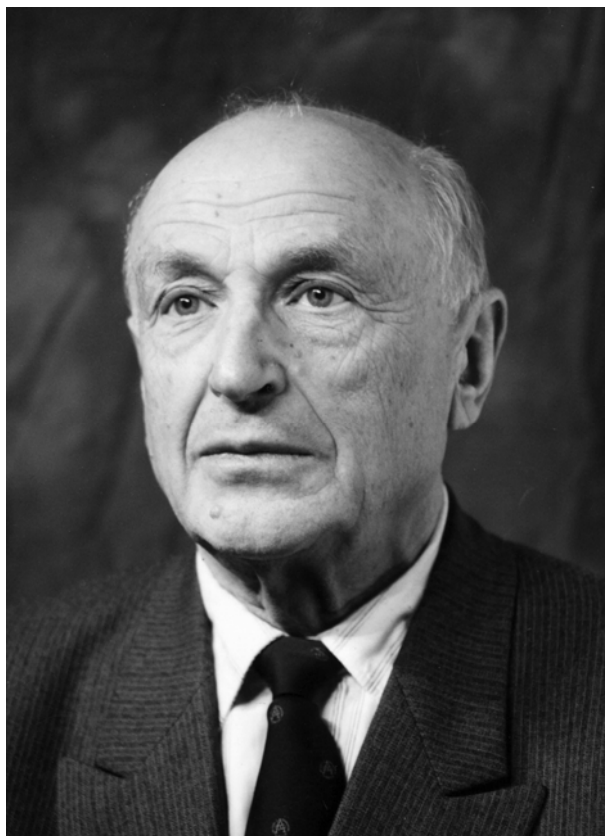
Awarded by Resolution No. 249 of the President of the Republic of 6 February 2008

Order of the National Coat of Arms, 2nd Class  
Member of Academy *Ene Ergma*.

## ANNIVERSARIES

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Member of Academy *Mihhail Bronshtein*

Mihhail Bronshtein was born on January 23, 1923 in St. Petersburg. In 1940 he graduated from Leningrad Secondary School No. 11 and in the same year enrolled in the Leningrad Institute of Chemistry and Technology. His studies were interrupted by war. After demobilisation in 1946 he pursued his studies at the Department of Economics of Leningrad State University. He graduated in political economy in 1949.

After completing the studies in Leningrad, Mihhail Bronshtein started his academic career at the University of Tartu. He served at the university through the period of 1949–1993 – for nearly half a century, holding positions from Assistant Faculty Member to Professor and Head of the Department of Political Economy. He defended his Candidate's Thesis at Leningrad State

University in 1954 and Doctoral Thesis at the same university in 1965. He was awarded Professorship in 1966. Mihhail Bronshtein was elected Member of the Estonian Academy of Sciences in the specialty of economy of agriculture in 1975. In 1993 he became Professor Emeritus of the University of Tartu.

Mihhail Bronshtein's main directions in research have been macro-economy and agricultural economics, commercial relations between states and ecology. He has published (as author or editor) 12 monographic works on the above topics as well as over 330 scientific articles. Numerous economic analytical articles by Mihhail Bronshtein have appeared in the press until recently. On top of multiple Master's and Bachelor's Theses he has supervised over 30 Candidate's and Doctoral Theses.

Mihhail Bronshtein has great merits in the preparation and realization of the first economic reforms during the restoration process of Estonian statehood as well as in the formation of the concept regarding the Baltic Economic Bridge. He is a member of the International Association of Agricultural Economists. In 2006 he was awarded the 3rd class Order of the White Star.

Among his favourite pastimes Mihhail Bronshtein names reading, visiting of theatre performances and concerts, fitness walking and skiing.



Member of Academy *Dimitri Kaljo*

Dimitri Kaljo was born on 12 October 1928 in Haapsalu. In 1948 he graduated from Tallinn Secondary School No. 1 and in 1953 from the University of Tartu, the Department of Geology. Postgraduate studies with defending of his Candidate's Degree followed in 1956. In 1978 he obtained a Doctor's Degree in geology and mineralogy for ecostratigraphic analysis of the Baltic Silurian. Dimitri Kaljo was elected Member of the Estonian Academy of Sciences in 1983 and he was awarded Professorship in 1986. In 1987 he became Honorary Member of the Geological Society of London.

Since 1956 Dimitri Kaljo has worked as an expert researcher-palaeontologist and a competent science organiser at the Institute of Geology of the Academy of Sciences (since 1997 the Institute of Geology of Tallinn University of Technology). In the years 1959–1965 he was Head of Sector, in 1965–1969 Director for Research, in 1969–1989 Director and in 1990–2006 Head of the Bedrock Division. In the years 1990–1999 Dimitri Kaljo was Head of the Division of Biology, Geology and Chemistry of the Academy and in 1991–

2004 Coordinator for International Relations. At present he is working at the Institute of Geology of Tallinn University of Technology as Senior Researcher Extraordinary.

Dimitri Kaljo has been and still is involved in the work of many expert committees. Since 1969 he has been member of the Estonian National Commission for Stratigraphy (since 1981 Chairman), since 1991 Chairman of the Commission of Mineral Resources of Estonian and since 1992 Chairman of the Estonian National Committee for Geology. Being a scientist of international renown Dimitri Kaljo has been a member of the Subcommission on Silurian Stratigraphy of the International Commission on Stratigraphy (1984–1992 Chairman) and the Stratigraphic Committee of the USSR as well as its Ordovician-Silurian Commission (1983–1991 Chairman). He was Vice-President of the International Association for the Study of Fossil Cnidaria and Porifera in 1983–1988 and Vice-President of the International Paleontological Union in 1989–1996. Since 2006 he has been a member of the Graptolite Working Group of the International Paleontological Association.

The main fields of research of Dimitri Kaljo have been taxonomy and biogeography of the Ordovician and Silurian tetracorals of Estonia, biostratigraphy of graptolites, stratigraphic partition of their deposits, the facial development history of the Baltic Basin, paleosystems and isotope geology. In those domains he has published over 300 scientific publications as a team leader, he has twice been awarded the National Science Prize: in 1972 for research work series on studies of the Silurian of Estonia and in 2001 for isotope studies of the Paleozoic evolutionary history.

In 2002 Dimitri Kaljo was awarded the 4th class Order of the White Star.

In the meantime of research commitments, when having a moment of leisure, Dimitri Kaljo takes interest in politics and travelling. He has a fancy for fiction and theatre as well.





Member of Academy *Lembit Krumm*

Lembit Krumm was born on 20 July 1928 in Kuressaare to a family of farmers. In 1947 he graduated from Saaremaa Secondary School and in 1952 from Tallinn University of Technology. During 1953–1955 he passed a post-graduate study course at Tomsk Polytechnic Institute and obtained in 1956 a Candidate's Degree in technology. In 1979 he defended his Thesis for a Doctor of Technology Degree. Lembit Krumm was elected Member of the Estonian Academy of Sciences in 1987.

In the years 1952–1959 he lead his research career at Tallinn Polytechnic Institute, Tomsk Polytechnic Institute and the Electrotechnical Institute of the National Economy Council of the ESSR, where he made it to the position of acting Assistant Professor and Head of Laboratory. In 1959–1962 Lembit Krumm worked in Novosibirsk at the Transportation Energy Institute of the Siberian Division of the Academy of Sciences of the USSR and in 1962–1976 in Irkutsk as Head of Laboratory of the Siberian Energy Institute of the Siberian Division of the Academy of Sciences of the USSR. Thereafter until 1990 he was Head of the Siberian Division of the Academy of Sciences of the

USSR, working since 1981 also as Head of the Division of the Institute of Thermophysics and Electrophysics of the Estonian Academy of Sciences (later Institute of Energy of the Estonian Academy of Sciences), involved with transferring the potential accumulated in Siberia to the Baltic States and Estonia in particular.

The most significant aspect in the research work of Lembit Krumm has been laying foundations to the theory and methods of complex optimal management of electrical energy systems, establishing a respective school, supervision and co-ordination of the direction of research in the former USSR through local academies of sciences. He has studied the functioning of large energy systems and matters related to international scientific-engineering cooperation. After the Baltic States regained their independence Lembit Krumm promoted the theory in the conditions of market economy. Since 1996 he has been President of the Association of Systems Research of the Baltic Energy and the results of his research have been implemented in optimal management of the Association of Baltic Electrical Systems "Baltija" in the conditions of large disturbances, as well as in organising cooperation of the Baltic energy system with energy systems of Russia and Belarus.

Lembit Krumm is the author of more than 200 scientific publications, incl. 15 monographic works and has supervised over 20 Candidate's Theses.

He was awarded the Prize G. M. Krzhizhanovski of the Academy of Sciences of the USSR in 1966 and the USSR State Prize in 1986.

In his spare time Lembit Krumm enjoys getting a good workout in a pool by swimming laps and practicing strokes.



Member of Academy *Cheslav Lushchik*

Cheslav Lushchik was born on 15 February 1928 in St. Petersburg to the family of Polish descent. In 1946, after graduating from Secondary School No. 289 he continued his studies at St. Petersburg State University. He started into research of thin films and ionic monocrystals as a fourth year student in the laboratory headed by F. Klement, who belonged to the School of Member of Academy A. N. Terenin. In 1951 Cheslav Lushchik graduated *cum laude* from the Department of Physics and took a postgraduate programme at the same university. He defended his Candidate's Degree in physics and mathematics in 1954, obtained a Doctor's Degree in physics and mathematics at the State Institute of Optics of St. Petersburg in 1964 and Professorship in the specialty of experimental physics and physics of solids in 1968.

Upon invitation from his scientific supervisor F. Klement, Rector of the University of Tartu of that time, Cheslav Lushchik from 1954 proceeded with research as Senior Researcher at the Institute of Physics and Astronomy of the Academy of Sciences (1973–1995 the Institute of Physics of the Academy of Sciences, now the Institute of Physics of the University of Tartu). He later

worked as Head of Laboratory and Sector (1960–1993), Head of Division (1974–1990), Senior Researcher and Leading Researcher on a research grant based contract (1994–2004). Since 2005 he has been involved as Senior Researcher Extraordinary in research projects lead by the Laboratory of Physics of Ionic Crystals.

Cheslav Lushchik is above all an experimental physicist. His main areas of research have been physics of solids, optics and spectroscopy of materials of wide band zone and radiation physics of dielectrics and high temperature superconductors. Among his research results achieved in collaboration with students in the area of solids, he highlights the ones focussing on elementary processes, which cause irreversible radiation damage in crystals. He has developed and enhanced several methods in thermo-activation and vacuum ultraviolet spectroscopy, discovered and examined the phenomena of photon multiplication and disintegration into pairs of structural defects of electron excitations, finding practical applications as well. Cheslav Lushchik has established the Tartu School of Isolator Crystal Physics, which has gained international recognition. He has influenced the formation of research teams of the same domain in Latvia, Kazakhstan, Russia and Kyrgyzstan. The basic research topics of his current projects are radiation phenomena in functional materials with a wide band zone and non-impact mechanisms for generation of defect in metal oxides and fluorides.

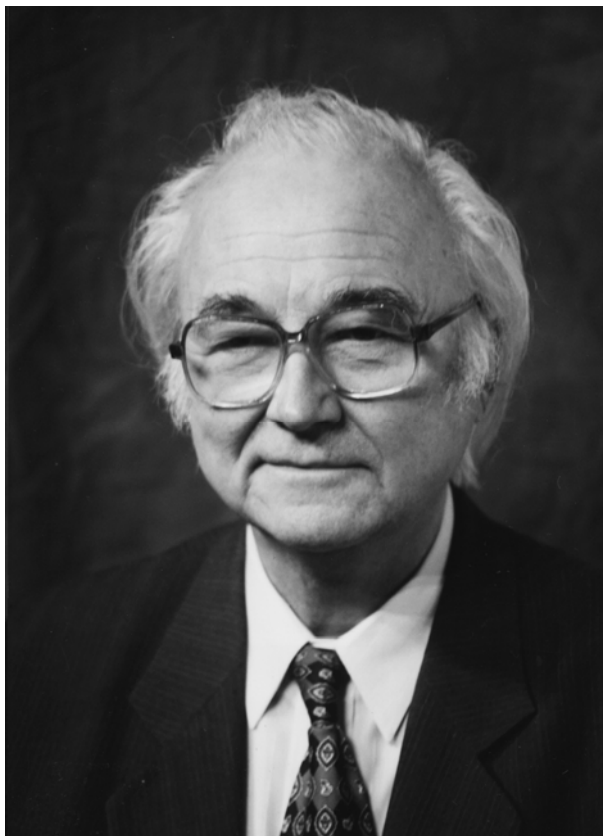
Cheslav Lushchik has authored or co-authored over 350 scientific publications, published 3 monographic works and 3 comprehensive chapters in works of collective authorship. He has delivered lecture courses on luminescence and physics of ionic crystals to students of physics. Since 1957 he has supervised 50 Candidate's Theses in physics/mathematics and chemistry. Nearly 60 Candidates of Sciences or Doctors of Philosophy have been prepared at the Institute of Physics and the University of Tartu already by his students.

In 1964 he became Member of the Estonian Academy of Sciences.

He has been Chairman of the Section of Scientific Council of Radiation Physics of the Academy of Sciences of the USSR (1970–1991), Vice-Chairman, a member (1960–1973) and Head of Section (1973–1991) of the Scientific Council "Luminescence and its Applications in National Economy" for the Academy of Sciences of the USSR (1986–1991), a member and Chairman of the Editorial Board of journals "Proceedings of the Institute of Physics" (1973–1990).

Cheslav Lushchik was awarded the Estonian National Prize as a research team member in 1959 and the Medal of the Academy in 1988. In 2004 he was awarded the National Science Prize for long-term achievements in research and development and in 2006 the 3rd class Order of the White Star.

He likes to spend his spare moments reading and walking in the nature.



Member of Academy *Uno Mereste*

Uno Mereste was born on 27 May 1928 in Tallinn. In 1946 he graduated from Tallinn Boys' School of Trade and Commerce and in 1950 Tallinn University of Technology in the specialty of finance. After graduation from the University he worked as a teacher at Tallinn Technical High School of Finance, at the same time attending a distant education course in physical geography of the University of Tartu. In the years 1954–1964 Uno Mereste was Senior Lecturer and Assistant Professor at the University of Tartu, in the Department of Trade Economy. Starting from 1964 he worked for 28 years as Assistant Professor, Professor and Head in the Chair of Statistics and Accounting (later Statistics) at Tallinn University of Technology. In 1992–1997 he was simultaneously with Parliamentary work engaged as Professor of Social Statistics at the Institute of Theoretical Economy and Methodology. Uno Mereste became Professor Emeritus of Tallinn University of Technology in 1997.

In 1960 Uno Mereste defended his Candidate's Thesis on the topic "Problem concerning Absolute Increment Distribution of the Phenomenon between Factors and its Solution in Economic Statistics". In 1965–1975 he primarily

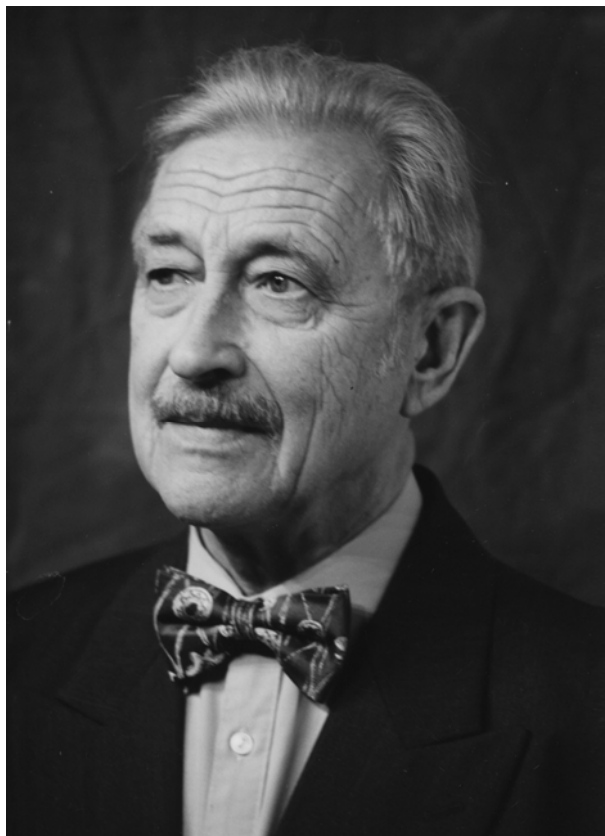
focussed on the methodology of economic analysis, seeking to tie it by mediation of semiotics and applications of model and systems theory with mathematical methods. Formation of the theory of efficiency field and matrix treatment of economical efficiency, which has beside economy been implemented in the area of mathematics, engineering and agronomy as well, is rated among his most significant results in that domain. In 1970 Uno Mereste defended his Doctoral Thesis on the topic “Application of the Index Method in Economic Analysis: Theoretical and Methodological Study”. In 1972 he obtained his Doctor’s Degree in economics and in 1973 Professorship. Uno Mereste has corroborated to treatment of statistics as an integration science between the society and natural sciences. He has elaborated and implemented several original economical-theoretical concepts, for instance the double-concentric multi-level science model, systemic population model. He has among others created the dual interpretation of factor indexes, theories of super-indexes, efficiency field, scientific indicators, scientific self-financing and has generalised them. Uno Mereste has also published research works in the area of demography, theoretical and mathematical geography and the theory of terminology. He is the author of over 300 research and popular science works, among them about 60 books and booklets. A comprehensive economic dictionary “Majandusleksikon” by Uno Mereste appeared in print in 2003.

In 1994 he was elected Member of the Estonian Academy of Sciences.

At the time of preparing and launching economic reforms Uno Mereste held the office of Counsellor for the Planning Committee and the Ministry of Economic Affairs. He participated in the re-establishment process of the Estonian monetary system and formation of the monetary policy as well as preparation of the draft Bank of Estonia Act. He was Chairman of the Supervisory Board of the Bank of Estonia in 1992–1997 and belonged to the composition of the Riigikogu in 1992–2003.

Uno Mereste has created his own School in economic research and has belonged to many learned societies and scientific unions. His achievements have been acknowledged with various awards and honours, incl. the State Prize of ESSR (as a research team leader), the 3rd class Order of the White Star, the Medal of the Academy, the Wiedemann Estonian Language Prize.

Yachting has been the favourite attraction for Uno Mereste from his undergraduate years to a more advanced age .



Member of Academy *Erast Parmasto*

Erast Parmasto was born on 23 October 1928 at Nõmme in Tallinn. In 1947 he graduated from Nõmme Gymnasium and in 1952 from the University of Tartu, Department of Biology. In the years 1952–1955 he was a postgraduate student at the Institute of Zoology and Botany of the Academy of Sciences of the ESSR, followed by defending of his Candidate's Degree in biology in the area of mycology in 1955. Erast Parmasto defended a Doctor's Degree in biology in 1969 and was awarded Professorship in the area of botany in 1980. He was elected Member of the Estonian Academy of Sciences in 1972.

The whole range of Erast Parmasto's activities in research has through decades been related with the Institute of Zoology and Botany of the Academy (the present Institute of Agriculture and Environment at the Estonian University of Life Sciences), where he has worked in the office of Senior Researcher, Scientific Secretary, Head of Sector, Head of Laboratory and Head Researcher. In 1985–1990 he was Director of that institute. At present he works as Senior Researcher in the Department of Mycology.

Simultaneously with his main occupation Erast Parmasto was Academician-Secretary of the Division of Biology, Geology and Chemistry of the Estonian Academy of Sciences in the years 1973–1982 and Professor of the Department of Botany and Ecology of the University of Tartu in the years 1987–1995.

Erast Parmasto's main directions of research have been phylogenesis and systematics of higher Basidiomycetes, entity problems of species and family as well as general regularities of morphological variability in relation to sporogeneous layer fungi. He has published over 170 scientific works, incl. several monographic works. Erast Parmasto has enthusiastically participated in the development of databases covering Estonian fungi species and he is the author of the first textbook of biosystematics in Estonia. The herbarium of fungi, which currently comprises over 160 000 species, was established at the Institute of Zoology and Botany of the Academy of Sciences in 1950 upon his initiative.

In the years 1990–2005 Erast Parmasto was a member of the Committee for Fungi of the International Association for Plant Taxonomy (1944–1999 Chairman), he was elected an Honorary Member of the Mycological Society of America in 1993, the Polish Botanical Society in 1995 and the German Mycological Society in 2004.

Erast Parmasto has been a communicator of nature conservation issues to the wider public for years. He is the author of over 200 generally understandable pieces of writing on topical nature conservation matters. When "Eesti Loodus" (Estonian Nature), an in-depth magazine for people aware of and interested in nature, was re-started after shutdown, Erast Parmasto was its Editor-in-Chief during 1958–1960.

In 1998 Erast Parmasto was awarded the 3rd class Order of the White Star. He has twice received the National Science Prize – in 1994 and 2002, was elected Honorary Citizen of the City of Tartu in 2003 and was awarded the Erik Kumari Nature Conservation Prize in 2008.

His main area of interest has unchangingly been biology and he enjoys going on related exploration tours. Another favourite pastime of Erast Parmasto is reading – the range of topics areas of interest methodology of science, folkloristics, history of religion and Indology).





Member of Academy *Hans-Voldemar Trass*

Hans-Voldemar Trass was born on 2 May 1928 at Nõmme. In 1947 he graduated from Nõmme Gymnasium, in the years 1947–1952 he studied at the University of Tartu, majoring in biology. After completing the programme of postgraduate studies at the University he defended his Candidate's Thesis in 1955. After that he worked as Lecturer at the University of Tartu. He was Head of the Department of Plant Taxonomy and Geobotany (later Institute of Botany and Ecology) for thirty five year. From 1991, until becoming Professor Emeritus in 1994 he was in the office of Professor Extraordinary at the same Department. The majority of Estonian biologists consider themselves as students of Hans-Voldemar Trass thanks to his over 40 years long pedagogical career. In 1975 he was elected Member of the Estonian Academy of Sciences.

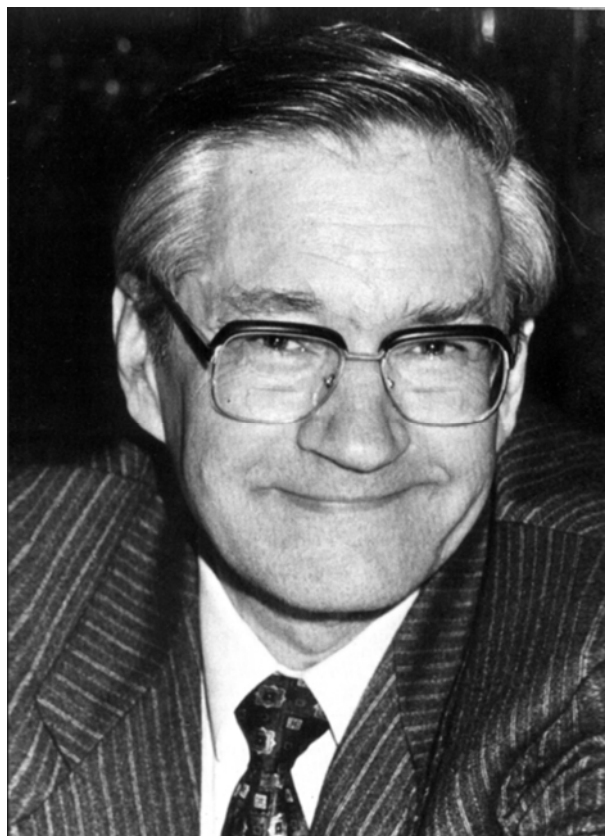
In his scientific research Hans-Voldemar Trass has treated general botany, geo-botany, plant ecology, plant geography, lichenology and history of biology. He has composed a unique identifier of lichens, the only one of its kind in Estonian. He has participated in many field works and expeditions to vari-

ous regions of the world, is the author of seven monographic research works and about two hundred scientific articles on top of over four hundred popular science articles and generally understandable pieces of writing. In 1996 Hans-Voldemar Trass was awarded the National Science Prize for long term achievements in the area of lichenology. In 1997 he was elected Foreign Member of the Russian Academy of Natural Sciences.

Hans-Voldemar Trass has been enthusiastic and persistent in calling attention to problems relating to nature and environment preservation in Estonia as well as seeking solutions to them, he has proven the need to establish new ecological reserves in various parts of Estonia. In 1968 he created the lichen-indicational method for assessment of the level of pollution of the air environment and in 1999 the method for determination of the state of primeval forests. In the years 1964–1973 and 1985–1991 he was President of the Estonian Naturalists' Society, since 1991 Honorary President.

The 3rd class Order of the White Star was awarded Hans-Voldemar Trass in 1998 and in 2006 he became an Honorary Citizen of the City of Tartu and a holder of the Tartu Great Star.

Music, literature and poetry have been the hobbies of Hans-Voldemar Trass through lifetime. As a versatile person, he has published over 30 pieces of theatre critique, several pieces of generally understandable writings in press and travelogues. A selection of poems composed by Hans-Voldemar Trass in different life periods have been included in his book of memoirs “Üksi ja ühes” (Singly and jointly) published in Tartu, 2002.



Foreign Member of Academy *Richard R. Ernst*

Richard R. Ernst was born on 14 August 1933 in Switzerland near Zürich in the small town of Winterthur to an architect's family. In 1956 he graduated from Zürich University of Technology (ETH-Z) as MSc in chemical engineering, where he also defended a Doctor's Degree in engineering on apparatus building in 1962. He was then Researcher at the Laboratory of Physical Chemistry for a year. In the years 1963–1968 Richard R. Ernst worked in the Palo Alto apparatus building company Varian Associates belonging to the USA Silicon Valley district primarily in the area of automating spectroscopic experiments. In 1968 he returned to Zürich and continued his research activities at the University of Technology, where he passed the stages of academic career from Private Assistant Professor to Professor (1976). He has been Professor Emeritus since 1998.

Research achievements of Richard R. Ernst in chemical physics, primarily in the area of stochastic resonance methods, Fourier' multidimensional spectrometry and Fourier' tomography, are ground-breaking. He has conclusively developed innovative physical theories and methods, combining them with all

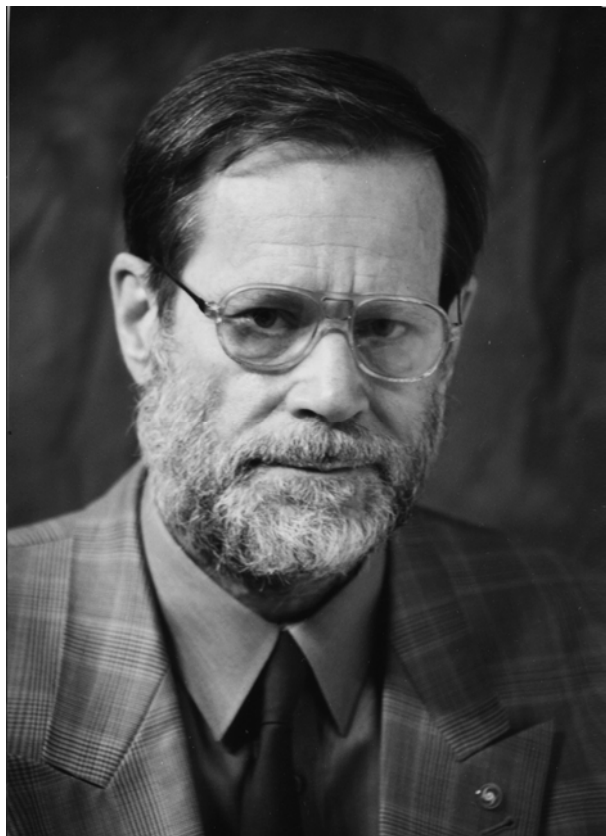
possibilities of up-to-date experiment and computational technology. His physics-centred theoretical and applied researches have in the past score of years been complemented by numerous applications in molecular biology and at research of solids. Richard R. Ernst has worked as Visiting Professor at Harvard University. He has delivered guest lectures at various universities of the USA, Canada and Germany. Beside research and pedagogical work he has participated for a long-term period in the activities of the Swiss Science Foundation and the Swiss Science Council. In the years 1990–1995 he was President of the Science Council of Zürich University of Technology.

Richard R. Ernst, who has published over 350 scientific publications, is also the author of quite a few inventions and co-owner of several patents. The most significant part of his research is contained in a monographic work on physical bases of multidimensional spectrometry, published in 1987. For the results described in that book he was awarded the Nobel Prize in 1991. The works of Richard R. Ernst have materially influenced the science – he belongs among the ten most highly cited physicists and chemists of the world.

Richard R. Ernst is a member of the Royal Society of London, the US National Academy of Sciences, the Swiss Academy of Engineering, the German Academy *Leopoldina*, the Russian Academy of Sciences, the Indian Academy of Sciences, the American Physical Society and many other learned societies as well as an Honorary Doctor of several universities. In 2003 he was elected Foreign Member of the Estonian Academy of Sciences in physical chemistry.

Additionally to the Nobel Prize Richard R. Ernst has been awarded other prestigious science prizes as well, incl. the Benoist' Prize in 1986, the Ampere Prize in 1990, the Louisa Gross Horwitz Prize in 1991, etc.

Tibetan art and music are at the forefront among his other hobbies.



Member of Academy *Georg Liidja*

Georg Liidja was born on 4 August 1933 in Tallinn to a military officer's family. In 1952 he graduated from Tallinn Working Youth Secondary School No. 1 and in 1957 from the University of Tartu. In the years of studies, he majored in optics and was subsequently included in Rector Feodor Klement's School of Luminescence. Georg Liidja defended his Candidate's Theses in physics and mathematics in 1962 at the University of Tartu and obtained a Doctoral Degree in physics and mathematics in 1980 at the Institute of Physics of the Academy of Sciences of the ESSR. In 1987 he was elected Member of the Estonian Academy of Sciences.

After completing his studies at the University Georg Liidja proceeded with research work at the Institute of Physics and Astronomy of the Academy of Sciences (now Institute of Physics at the University of Tartu), where he started researching exciton states and related phenomena in alkali halogen crystals. In 1967 he was elected Head of the Sector of Low Temperatures. Since 1982 Georg Liidja has been working as Senior Researcher at the National Institute of Chemical Physics and Biophysics.

The leading keywords for Georg Liidja in his research activities are: physics of luminescent crystal, cryogen technology in optical spectroscopy and radio spectroscopy of radiated bioapatites. In physics of solid he has elucidated the impact of radiation on crystals, its micro-processes and mechanisms. He participated at discovery of multiplication phenomena of photons in photo-luminescence of crystal phosphors. Georg Liidja has developed vacuum ultraviolet spectroscopy at temperatures of liquid helium and he has, for the first time performed luminescence research with crystals cooled to very low temperature (below 1 Kelvin).

Georg Liidja is the author of over 150 scientific publications. Six Candidate's Theses and one PhD Thesis in the field of physics have been defended under his supervision. For many years he has fulfilled the functions of the Chairman of the Selection Board of the Student Research Paper Competition. He is a member of the British Physical Society.

In 1975 Georg Liidja received the National Science Prize, in 1994 the Annual Prize of the Estonian Physical Society. In 2001 he was awarded the 5th class Order of the White Star.

Orientation sport and highway running have remained the habitual ongoing athletic activities of Georg Liidja for decades. He feels deep attraction towards piano music, with Bach and Chopin as the favourite composers.



Member of Academy *Arved-Ervin Sapar*

Arved Sapar was born on 7 February 1933 in the village of Paatna in Rakvere Parish. In 1952 he graduated from Rakvere Secondary School No. 1 (Rakvere Gymnasium) and in 1957 from the University of Tartu, Department of Physics. In 1965 Arved Sapar defended his Candidate's Thesis in cosmology at the University of Tartu, in 1989 he obtained the Doctor's Degree in physics and mathematics at Leningrad State University for results in generalising kinetics equations and research of extra-atmospheric spectra of hot stars. Arved Sapar was awarded Professorship in 1990.

Since graduating from the University Arved Sapar has worked in the specialty of astrophysics at the Institute of Physics and Astronomy of the Academy of Sciences (1957–1973), its successor Institute of Astrophysics and Atmospheric Physics (1973–1996) and at Tartu Observatory (since 1995), where he also completed his postgraduate programme (1960–1963). In the years 1968–1986 he led the work of the Sector of Theoretical Astrophysics (laboratory) of the above institute. After a shorter interim period in the position of Chief Re-

searcher he worked for ten years (1993–2003) as Head of the Department of Astrophysics and since 2003 as Senior Researcher.

In the starting years of his research work Arved Sapar was involved with cosmology. He studied the construction of extra-atmospheric star spectra and star atmospheres, the processes taking place therein and movement of lunoids. Generalisation of equations underlying astrophysics became one of the favourite directions of his research activities. In his research work he has treated the issues related to physics of elementary particles and semiconductors, photometric multicolour systems of stars, universal constants of physics as values adjoining micro-world of the Universe, physics of atmosphere of rotating and twin stars.

Arved Sapar is a member of the International Astronomical Union (IAU) (1967) and a founding member of the European Astronomical Union (1990). In the years 1976–1991 he was Head of the All-Union Task Force “Physics of Star Atmospheres” and in 1976–1994 a member of the organising committee of the Commission of International Astronomical Union “Theory of Star Atmospheres”, in 1989–1993 Co-Chairman of the Astronomical Union of the USSR and a Bureau and Board Member of the Eurasian Astronomical Union evolved on its basis. He has participated, evidently as the only Estonian astronomer, in extra-atmospheric observations of star spectra at the observation station of IUE (International Ultraviolet Explorer) satellite telescope situated in the US Goddard Centre of Cosmic Flights.

In 1990 Arved Sapar was elected Member of the Estonian Academy of Sciences.

Arved Sapar has published about 150 scientific articles. He is the author or co-author of five monographic works and has been a long-time editor and Editor-in-Chief of the Tartu Astrophysics Observatory Publications. 9 Doctoral and 2 Master’s Theses and 10 Diploma Works in the rights of Master’s Theses have been defended under his supervision.

In 1986 Arved Sapar was awarded the Medal of the Academy and in 2006 the 4th class Order of the White Star.

On top of astrophysics his sphere of interest includes the theory and practice of political landscape organisation, languages (among them artificial languages) and humour.





Foreign Member of Academy *Jānis Stradiņš*

Jānis Stradiņš was born on 10 December 1933 in Riga. In 1956 he graduated from the Latvian University, Department of Chemistry, in 1960 he defended his Candidate's Degree in chemistry at Moscow University and in 1968 a Doctor's Degree of in chemistry at the Latvian Academy of Sciences. In 1989 Jānis Stradiņš was awarded the Doctor Honoris Causa Degree in chemistry of the Latvian University and in 1992 the Doctor Honoris Causa Degree in history of the Latvian Academy of Sciences.

After graduation from the university the researcher's path of Jānis Stradiņš has for over half a century been connected with the Latvian Institute of Organic Synthesis, where he has worked as Researcher (1957–1961), Head of the Laboratory of Physical-Organic Chemistry (1961–2006) and since 1993 as Leading Researcher of the laboratory. Simultaneously with his research activities Jānis Stradiņš has for a long time communicated his ample knowledge at the Latvian University, in 1972–1976 as Professor of physical chemistry and since 1990 as Professor of history of science of the Latvian Institute of History at the University. Since 1992 he has also been working as Leading Re-

searcher of the Institute of History of Medicine of the Riga Stradiņš University (the Medical Academy of Latvia). Jānis Stradiņš was Vice-President of the Latvian Academy of Sciences in 1992–1998, President of the Academy in 1998–2004, since 2004 Chairman of the Academy Senate.

Jānis Stradiņš is a meritorious Latvian scientist, recognized at the international level as a prolific researcher in chemistry and a historian of science. He has studied the Estonian-Latvian scientific ties and has promoted scientific cooperation between the Baltic States and the Nordic countries. He has helped to revive the Conferences of the Baltic Intellectual Co-operation. He is the author of 7 monographic works and over 300 scientific articles on electrochemistry and 20 monographic works and over 250 scientific articles in the area of science history.

Jānis Stradiņš was elected Member of the Latvian Academy of Sciences in 1973. He is a member of the European Academy of Sciences and Arts and the German Academy of Natural Sciences Leopoldina, a corresponding member of the Saxonian Academy of Sciences and the Commission of Baltic History (Göttingen), a foreign honorary member of numerous research institutions, societies and unions. In 1998 Jānis Stradiņš was elected Foreign Member of the Estonian Academy of Sciences in physical chemistry and science history.

Jānis Stradiņš has been awarded prestigious science prizes as well as national medals and orders, incl. the Latvian Order of the Three Stars (1995), the French National Order of the Legion of Honour (2001), the Order of Merit of the Republic of Italy (2004) and several others. In 2004, on the eve of the 86th anniversary of the Republic of Estonia, he was awarded the 3rd class Cross of Terra Mariana.

Jānis Stradiņš has a spectacularly wide range of interests – history of culture in the broadest sense, literature and music in particular.



Member of Academy *Vladimir Hizhnyakov*

Vladimir Hizhnyakov was born on 25 May 1938 in the Rostov Region in Russia to a family descending from the native Don and Kuban Cossacks. After the Second World War he settled together with his family in Estonia. He graduated with Silver Medal from Tapa Railway Secondary School in 1955 and started his studies, majoring in theoretical physics, at the University of Tartu, Department of Mathematics and Natural Sciences. He graduated from the University *cum laude* in 1960, and proceeded with postgraduate studies at the Sector of Theoretical Physics at the Institute of Physics and Astronomy of the Estonian Academy of Sciences. In his Candidate's Thesis he dealt with the theory of quasi-linear spectra and laid a foundation to the theory of phonon-free i.e. purely electronic line theory, which he later complemented.

Vladimir Hizhnyakov has worked at the above institute since 1963 as Junior Researcher, Senior Researcher, Chief Researcher and Head of Laboratory. The old Tartu Observatory was his working place until the building in Riga Street of the Institute of Physics, which had separated from the former institute, was completed in 1975. In 1966 Vladimir Hizhnyakov defended his

Candidate's Theses in physics and mathematics on the theory of multi-photon transfers at the University of Tartu. While having working relations with practically all experimental laboratories of the Institute, he contributed to the formation of the Tartu School in the theory of solids. In 1972 Vladimir Hizhnyakov defended his Doctoral Thesis on the theory of resonance secondary radiation at the University of Tartu. After approval of his Doctoral Degree, he went on a longer foreign mission at the University of California in 1973, at the Institute of Physics of Solids in Tokyo in 1977 and the University of Arizona in 1983. After being appointed Chief Researcher of the Institute of Physics in 1987, Vladimir Hizhnyakov became engaged in collaborative research with his German and Swiss colleagues (from Stuttgart, Bonn, Ulm and Zürich Universities), taking high temperature superconductivity as their main topic of research. As a result of cooperation, scores of publications were published, among others two were a joint work with a laureate of the Nobel Prize K. Müller, the discoverer of high temperature superconductivity.

In 1976 Vladimir Hizhnyakov started his pedagogical career as Lecturer at the University of Tartu, he was awarded Professorship in 1982 and in 1993–2003 he worked as Professor of the Institute of Theoretical Physics of the Tartu University. His lectures were dealing with the radiation theory, group theory, non-linear optics and functions in solids and he taught electrodynamics and quantum mechanics as main courses. Beside his pedagogical activities, Professor Hizhnyakov maintained collaborative relations with colleagues at the Institute of Physics. He has published over 300 scientific articles, 10 Doctoral and 3 Master's Theses have been defended under his supervision.

Main directions of his research have been: optical features and spectrography of solids, theory of impurity centres of crystal, hot luminescence, non-linear optics, high temperature superconductivity, quantum optics.

Vladimir Hizhnyakov became Member of the Estonian Academy of Sciences in 1977. He was elected Meritorious Scientist of Estonia in 1986 and has been awarded the Annual Prize of the Estonian Physical Society (1995), the 3rd class Order of the White Star (2001) and the National Science Prize (2003).

Vladimir Hizhnyakov thinks much of physical training: he practiced apparatus gymnastics as a young man, his present favourite hobbies include skiing, swimming, bicycling and hiking, especially mountain hiking and cross country skiing.



Member of Academy *Agu Laisk*

Agu Laisk was born on 3 May 1938 in Tartu. In 1956 he graduated with Silver Medal from Hugo Treffner Gymnasium. He enrolled in the Department of Physics of the University of Tartu and completed his studies in 1961 with the Diploma of a physicist/teacher of physics. In the years 1961–1964 Agu Laisk was a postgraduate student at the Institute of Physics and Astronomy. He defended his Candidate's Thesis on the topic "Propagation of Solar Radiation in Plant Canopy in Relation to Photosynthetic Production" at the University of Tartu in 1965. The former physicist was transformed into a biologist with that work, hence Agu Laisk already defended his Doctoral Thesis in 1975 on the topic "Kinetics of Leaf Photosynthesis and Photo-breathing" at the Timirjazez Institute of Plant Physiology of the Academy of Sciences of the USSR.

In the years 1964–1992 Agu Laisk worked as Junior Researcher, Senior Researcher and Head of the Laboratory of Biophysics at the Institute of Physics and Astronomy (later Institute of Astrophysics and Atmospheric Physics). In 1992, when the Laboratory of Biophysics was transferred into the compo-

sition of the Institute of Molecular and Cell Biology of the University of Tartu, Agu Laisk became Professor Ordinary and Head of the Department of Plant Physiology. In the years 2002–2005 he was Research Professor of the Estonian Academy of Sciences at the University of Tartu. Since 2005 he has been Professor Extraordinary of the University of Tartu.

Agu Laisk was elected Member of the Estonian Academy of Sciences in 1994.

His main research topics have been radiation conditions of plant canopy, photosynthesis and breathing of plants and mathematical modelling of photosynthesis. Since 1967 Agu Laisk has been involved with developing required equipment for the study of plant leaf photosynthesis. A unique in the world technology for photosynthesis research has been developed in his laboratory. The works of the Member of Academy have twice been merited with the National Science Prize (1985, 1999).

In 2001 Agu Laisk was awarded the 4th class Order of the White Star.

The undisputed favourite of Agu Laisk is jazz music. He used to play the saxophone in a once popular band “Harvlek”, participating at the first Tartu Jazz Festivals and at present he is a member of the Tartu Senior Swing Band. He finds that science and jazz have quite a few touching points – moderate improvisation within fixed rules is typical of both simultaneously with the high role of the teamwork.



Member of Academy *Gennadi Vainikko*

Gennadi Vainikko was born on 31 May 1938 in the town of Kontupohja in Karelia. The family originating from the Finnish villages of Ingermanland moved to Estonia in 1942. In 1956 Gennadi Vainikko graduated from Kehra Secondary School with Golden Medal and proceeded with his studies at the University of Tartu. He graduated from the university in 1961 *cum laude* with a Diploma of a teacher of mathematics. After a postgraduate programme at the Department of Mathematical Analysis of the same university he defended his Candidate's Thesis in physics and mathematics on the topic "On Accuracy of the Galjorkin Method" in 1964.

Gennadi Vainikko worked one year at the University of Tartu and moved thereafter to Voronezh University, where he was Assistant Professor at the Department of Mathematical Analysis in 1965–1967 and in 1969 obtained at the same university a Doctoral Degree in physics and mathematics on the topic "On Approximation of Linear and Non-linear Operators and Approximate Solution of Operator Equation". In the years 1967–1994 he worked at the University of Tartu as Assistant Professor, Head of Department and Pro-

fessor and was awarded Professorship in 1971. In 1995–2003 he continued his pedagogical career at Helsinki University of Technology as Professor and in 2003–2004 as Senior Researcher at the Department of Mathematics of Tallinn Pedagogical University. Since 2004 Gennadi Vainikko has been Project Leader at the Institute of Applied Mathematics at the University of Tartu and since 2005 he has simultaneously worked in the position of Senior Researcher at the above institute. In 2005 he became Professor Emeritus of the University of Tartu.

The research activities of Gennadi Vainikko have been involved with functional analysis, incl. theory of approximate methods (first and foremost those related to discretisation of tasks), projection methods, non-correct tasks, reverse tasks, qualitative theory of integral and pseudo-differential equations and numerical methods, and tasks of mathematical physics (in the first place radiation propagation). His main courses at the University of Tartu were differential equations and equations of mathematical physics and a great number of special courses in addition to that. Gennadi Vainikko has delivered longer lecture cycles outside Estonia as well: in the former Soviet Union, Germany, the USA, Finland and South Korea, he has supervised 27 Candidate's/Doctoral Theses, has written 16 monographic works and 4 textbooks and has been the author or co-author of more than 200 scientific publications.

In 1986 he was elected Member of the Estonian Academy of Sciences and he was Vice-President of the Academy in 1990–1994.

Gennadi Vainikko was awarded the honorary title of Merited Scientist of Estonia in 1989; in 1998 he was awarded the 3rd class Order of the White Star and Medal of the Academy.

He has enjoyed choir singing through decades – in the mixed choir of the University of Tartu during his undergraduate years and later in the “Gaudeamus” male choir of Tartu. Gennadi Vainikko also has a fancy for concerts, theatre and sports.



Other anniversaries in 2008:

65th birthday

Member of Academy *Valdur Saks*

Foreign Member of Academy *Helmut Schwarz*

60th birthday

Member of Academy *Jaak Järv*

Member of Academy *Mati Karelson*

Member of Academy *Raivo Uibo*

50th birthday

Member of Academy *Jaan Undusk*

## MEMBERS OF THE ACADEMY

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As of February, 2009\*

**Olav AARNA**, born 4.11.1942, elected 1990, informatics. Tallinn University of Technology 1965. Member of the Board, Estonian Qualification Authority (2008); Mustamäe tee 16, 10617 Tallinn ESTONIA, Tel: +372 679 1750, E-mail: olav.arna@kutsekoda.ee. HOME ADDRESS Nooruse 1-45, 76901 Tabasalu, Harku vald, Harju maakond ESTONIA, Tel: +372 603 2060. Cohabitant, three sons and a daughter.

**Jaak AAVIKSOO**, born 11.01.1954, elected 1994, exact sciences. University of Tartu 1976. Minister, Ministry of Defence (2007); Sakala 1, 15094 Tallinn ESTONIA, Tel: +372 717 0010, Fax: +372 717 0001, jaak.aaviksoo@kmin.ee. HOME ADDRESS Tähe 91a-7, 50107 Tartu ESTONIA, Tel: +372 734 9000. Married, two sons and a daughter.

**Hillar ABEN**, born 3.12.1929, elected 1977, mechanics. Tallinn University of Technology 1953. Head of the Laboratory of Photoelasticity, Institute of Cybernetics at Tallinn University of Technology (1987); Akadeemia 21, 12618 Tallinn ESTONIA, Tel: +372 620 4180, Fax: +372 620 4151, E-mail: aben@cs.ioc.ee. HOME ADDRESS Hiiu-Maleva 30-2, 11619 Tallinn ESTONIA, Tel: +372 657 2407. Married, two sons.

**Mihhail BRONSHTEIN**, born 23.01.1923, elected 1975, agricultural economics. St. Petersburg State University 1949. Professor emeritus, University of Tartu (1993). HOME ADDRESS Kolde pst 104-44, 10316 Tallinn ESTONIA, Tel: +372 5662 9275. Widower, a son and a daughter.

**Jaak EINASTO**, born 23.02.1929, elected 1981, astrophysics. University of Tartu 1952. Senior Researcher, Department of Cosmology, Tartu Observatory (2004); 61602 Tõravere, Tartu maakond ESTONIA, Tel: +372 741 0110, Fax: +372 7 410 205, E-mail: einasto@aai.ee. HOME ADDRESS Observatooriumi 6-3, 61602 Tõravere, Tartu maakond ESTONIA, Tel: +372 741 0151. Widower, a son and two daughters.

**Jüri ENGELBRECHT**, born 1.08.1939, elected 1990, mechanics. Tallinn University of Technology 1962. Vice-President, Estonian Academy of Sciences (2004); Kohtu 6, 10130 Tallinn ESTONIA, Tel: +372 644 2013, Fax: +372 645 1805, E-mail: J.Engelbrecht@akadeemia.ee. HOME ADDRESS Trummi 34J, 12617 Tallinn ESTONIA, Tel: +372 672 6045. Married, a son and a daughter.

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\* Organisations are presented according to their current names.

**Ene ERGMA**, born 29.02.1944, elected 1997, exact sciences. Moscow University 1969. President, Riigikogu (Parliament) (2003), Lossi plats 1a, 15165 Tallinn ESTONIA, Tel: +372 631 6301, Fax: +372 631 6304, E-mail: ene.ergma@riigikogu.ee. HOME ADDRESS Aleksandri 35-14, 51004 Tartu ESTONIA, Tel: +372 738 1874. Single.

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**Els OKSAAR** (Germany), born 1.10.1926, elected 1998, linguistics. Professor, University of Hamburg (1967); Institut für Allgemeine und Angewandte Sprachwissenschaft, Universität Hamburg, Bogenalle 11, D-20144, Hamburg GERMANY, Tel: +49 40 42838 4761, Fax: +49 40 42838 3595, HOME ADDRESS Parkberg 20, D-22397 Hamburg, GERMANY, Tel: +49 40 607 0803, Fax: +49 40 607 1795, E-mail: oksaar@oksaar.com. Married, a son.

**Jaak PEETRE** (Sweden), born 29.07.1935, elected 2008, mathematics. Professor emeritus, University of Lund (2000). E-mail: jaak.peetre@math.lu.se. HOME ADDRESS Stora Södergatan 56 C, SE-223 23 Lund, SWEDEN, Tel: +46 46 123 677. Widower, cohabiter, two sons and a daughter.

**Johannes PIIPER** (Germany), born 11.11.1924, elected 1991, physiology. Professor emeritus, Max Planck Institute of Experimental Medicine (1992); Max-Planck-Institut für Experimentelle Medizin, Hermann-Rein-Strasse 3, D-37075 Göttingen, GERMANY, Tel: +49 551 389 9314, Fax: +49 551 389 9302, E-mail: piiper@em.mpg.de. HOME ADDRESS Heinz-Hilpert-Str. 4, D-37085 Göttingen, GERMANY, Tel: +49 551 56 786. Married, a son and two daughters.

**Michael Godfrey RODD** (Great Britain), born 21.06.1946, elected 1995, process control and infotechnology. HOME ADDRESS 16 The Garlings, Aldbourne, Marlborough, Wiltshire, SN8 2DT, UNITED KINGDOM, Tel: +44 1672 541 571, +44 783 186 0199, E-mail: mrodd@btinternet.com. Married, a son and a daughter.

**Matti SAARNISTO** (Finland), born 11.11.1942, elected 2008, geology. Secretary General, Finnish Academy of Science and Letters (1995). Finnish Academy of Science and Letters, Mariankatu 5, FI-00170 Helsinki, FINLAND, Tel: +358 9 636 806, Fax: +358 9 660 117, E-mail: matti.saarnisto@acadsci.fi. HOME ADDRESS Mikonkatu 22 D 46, FI-00100 Helsinki, FINLAND, Tel: +358 400 209 351. Married, a son and a daughter.

**Helmut SCHWARZ** (Germany), born 06.08.1943, elected 2002, chemistry. President, Humboldt Foundation (2008); Professor, Technical University of Berlin (1978). Institut für Chemie, Sekr. C 4, Technische Universität Berlin, Strasse des 17. Juni 135, D-10623 Berlin, GERMANY, Tel: +49 30 3142 3483,

Fax: +49 30 3142 1102, E-mail: Helmut.Schwarz@mail.chem.tu-berlin.de.  
HOME ADDRESS Patschkauer Weg 15, D-14195 Berlin, GERMANY, Tel: +49 30  
832 5246. Married, a son.

**Janis STRADIŅŠ** (Latvia), born 10.12.1933, elected 1998, physical chemistry and history of science. Chairman of Senate (2004), Latvian Academy of Sciences; Latvian Academy of Sciences, Akadēmijas laukums 1, LV-1050 Riga, LATVIA, Tel: +371 67 213 663, Fax: +371 67 821 153, E-mail: stradins@lza.lv. HOME ADDRESS K. Valdemara 99-7, Riga, LV-1013 LATVIA. Married, two sons.

**Päiviö TOMMILA** (Finland), born 4.08.1931, elected 1991, history. Professor emeritus, University of Helsinki (1994), Fellow of the Academy of Finland (2004). HOME ADDRESS Kylätie 8 A, FI-02700 Kauniainen, FINLAND, Tel/Fax: +358 9 505 1523, E-mail: paivio.tommila@aka.fi. Married, three sons and two daughters.

**Endel TULVING** (Canada), born 26.05.1927, elected 2002, psychology. Professor emeritus, University of Toronto (1992), Tanenbaum Chair in Cognitive Neuroscience, Rotman Research Institute of Baycrest Centre (1992). Rotman Research Institute, Baycrest Centre, 3560 Bathurst St., Toronto, Ontario M6A 2E1, CANADA, Tel: +1 416 785 2500 Ext. 3510, Fax: +1 416 785 2862, E-mail: tulving@psych.utoronto.ca. HOME ADDRESS 45 Baby Point Crescent, Toronto, Ontario M6S 2B7, CANADA, Tel: +1 416 762 3736. Married, two daughters.

**Henn-Jüri UIBOPUU** (Austria), born 11.10.1929, elected 1995, jurisprudence. Honorary Professor, University of Salzburg (1995); Institut für Völkerrecht, Churfürstenstr. 2, A-5020 Salzburg, AUSTRIA, Tel: +43 662 8044 3656, Fax: +43 662 8044 135, E-mail: Henn-Jueri.Uibopuu@sbg.ac.at. HOME ADDRESS W.Hauthalerstr. 17, A-5020 Salzburg, AUSTRIA, Tel: +43 662 848 4962, Fax: +43 662 848 4964. Married, a son and a daughter.

## **ESTONIAN ACADEMY PUBLISHERS**

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Established in 1994  
Address: Kohtu 6, 10130 Tallinn, ESTONIA  
<http://www.eap.ee>  
Director: Ülo Niine, Tel: 645 4504, Fax 646 6026,  
[niine@kirj.ee](mailto:niine@kirj.ee)



Estonian Academy Publishers continued in 2008 issuing nine scientific journals, peer-reviewed and indexed and abstracted in international review publications and databases. The Publishers' main mission has been to maintain a high standard as regards the contents of journals, their typographic performance, timely release and electronic version of all journals, besides hard copy.

Subject to decision of the session of Board of the Estonian Academy of Sciences of 3 April 2007 (Minutes no. 3 § 20) the series of the Proceedings of the Estonian Academy of Sciences appeared under new titles in 2008 as follows:

Proceedings of the Estonian Academy of Sciences, series Engineering – Estonian Journal of Engineering;

Proceedings of the Estonian Academy of Sciences, series Biology. Ecology – Estonian Journal of Ecology;

Proceedings of the Estonian Academy of Sciences, combining two former series – Physics. Mathematics and Chemistry – started to appear in larger format (A4) and with new design.

In 2008 the journals were issued in the following volume:

Title	Number of issues per year	Total volume in printed sheet
<i>Acta Historica Tallinnensia</i>	2	18.0
Estonian Journal of Archaeology	2	10.5
Estonian Journal of Earth Sciences	4	32.5
Estonian Journal of Ecology	4	18.75
Estonian Journal of Engineering	4	21.6
<i>Linguistica Uralica</i>	4	20.0
Oil Shale	5	30.4
Proceedings of the Estonian Academy of Sciences	4	33.5
<i>Trames</i>	4	29.5
Total	33	214.75

Journals are internationally peer-reviewed and have international editorial boards. They are recognised as such by Estonian Science Foundation and Science Competence Council.

Journals are electronically available at website of the Estonian Academy Publishers and through mediation of well known electronic publishers EBSCO and C.E.E.O.L. Starting from 2006, the website of the Publishers offers free access to full texts of all articles of all journals. The Estonian Academy Publishers have made an agreement with Google for placing in Internet full texts of articles of earlier volumes of the journals. Starting from 2008 all scientific articles of the journals have been supplied with the doi-indexes (Digital Object Identifier), creating better opportunities for availability of articles, increasing readership and rate of citation.

The articles published in journals are reflected in scores of international review journals, scientific websites and databases. The latter are replenished by the day. In what follows are some examples to the point.

As of now, 7 journals out of 9 released by the Publishers have been reflected in databases of ISI Web of Science. Since 2008 that database has been reviewing the journals *Trames*, *Linguistica Uralica*, Estonian Journal of Archaeology and *Acta Historica Tallinnensia*. Since past year that list has included Proceedings of the Estonian Academy of Sciences, series Physics. Mathematics, which merged, at the beginning of this year with the series Chemistry and bears now the common title Proceedings of the Estonian Academy of Sciences. Instead of the series Geology, already for the second year there has appeared the journal Estonian Journal of Earth Sciences, whose articles have been since 2007 also in the ISI database. Since 1994 that database (incl. in Current Contents®) has included the journal Oil Shale.

Three journals have been reflected in the database ERIH, incl. two journals *Linguistica Uralica* and Estonian Journal of Archaeology in category B and *Acta Historica Tallinnensia* in category C. The latter is being evaluated and there is hope for it to also obtain category B.

In 2007, as usual several special issues of journals were released. It is an internationally recognised way to publish the materials of international conferences, providing an opportunity to document in a compacted way the results of research in certain problems related to Estonia. Interest in special issues is large both on part of authors and readers. There were the following special issues released:

- Estonian Journal of Earth Sciences 57/2: Special issue on georesources and public policy. Edited by D. Kaljo.
- Estonian Journal of Engineering 14/2: Special issue on biomedical engineering. Guest editor H. Hinrikus, Tallinn University of Technology.

- Estonian Journal of Engineering 14/3: Special issue on oceanography, meteorology and coastal engineering. Guest editors T. Soomere, Institute of Cybernetics of Tallinn University of Technology and S. Keevallik, Marine Systems Institute of Tallinn University of Technology.
- Oil Shale 25/2s: Special issue on the 70th anniversary of mining engineering in Estonia. Guest editor E. Reinsalu.
- Proceedings of the Estonian Academy of Sciences 57/3: Special issue on continuum physics and engineering applications. Guest editors J. Engelbrecht, Estonian Academy of Sciences, H. Herrmann, Tallinn University of Technology and P. Ván, Hungary/Norway.
- *Trames* 12/2: Special issue “Memory between disciplines: inter- and transdisciplinary perspectives in current memory studies”. Guest editors E. Võsu, E. Kõresaar, K. Kuutma and E. Lauk, University of Tartu.

In 2008 there appeared altogether 231 pieces of writing in 33 issues of nine journals, of which 192 scientific articles, the remaining 39 were prefaces and other science information. Altogether 485 authors and co-authors were involved. The share of Estonian authors constituted 57%, showing the growth of share of foreign authors. In the reporting year all journals appeared under schedule.

Besides journals, there appeared in 2008 as commissioned works five more works. As a result of several years of work, completed was the voluminous photo album of electrical engineer H. Pitsner dedicated to the history of engineering “The first hundred years of electricity in Estonia” (hard cover, 296 pp.). A. Valmas authored the bibliography “Books of reminiscences of expatriate Estonians” (paperback, 86 pp.). Besides the earlier released sixteen volumes of the series “Natural Heritage of Estonia” two more appeared in 2008: “Natural Heritage of Estonia. Part 17. Läänemaa. Noarootsi, Nõva, Osmussaar” and “Natural Heritage of Estonia. Part 18. Harjumaa. Kiili, Rae, Saku and Saue parishes”, compiled by H. Kink.

# **UNDER AND TUGLAS LITERATURE CENTRE OF THE ESTONIAN ACADEMY OF SCIENCES**

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Established in 1993 (affiliate museum in Nõmme, the former Friedebert Tuglas Museum, established in 1971)

Personnel: 16, including 10 researchers

Address: Roosikrantsi 6, 10119 Tallinn, ESTONIA, [utkk@utkk.ee](mailto:utkk@utkk.ee)

Museum: Väikese Illimari 12, 11623 Tallinn, ESTONIA, [tuglas@utkk.ee](mailto:tuglas@utkk.ee)

<http://www.utkk.ee>

Director: Jaan Undusk, Tel: +372 644 3147, Fax +372 644 0177,

[jaan@utkk.ee](mailto:jaan@utkk.ee),

Academic Secretary: Eneken Laanes, Tel: +372 644 3147, [eneken@utkk.ee](mailto:eneken@utkk.ee)

Head of the Museum Department: Eha Rand, Tel: +372 672 2847,

[eharand@utkk.ee](mailto:eharand@utkk.ee)

Under and Tuglas Literature Centre of the Estonian Academy of Sciences is an institution of research and development of the Estonian Academy of Sciences. Its mission is to study Estonian literature and the local written culture in general, both in historical and theoretical perspectives, within the context of historically multilingual Baltic space as well as world literature. It promotes literary and cultural thought in line with contemporary trends in textual research (discourse analysis, rhetorico-narratological models of culture, post-colonial theory and the theory of cultural transfer, memory and gender studies). Under scrutiny beside fiction and theatrical texts are various historiographical, philosophical, publicist and scientific modes of self-expression in Estonian and German, insofar as they have played a decisive role in the Baltic literary space, as well as relevant texts of European history of ideas, which have influenced the course of thinking both in the universal embrace and in the Baltic. In this context, the history of certain basic concepts and models of thought of the whole of Europe is considered (e.g. tradition of antithetic thinking, the concept of infinity).

In the course of its developmental activities, Literature Centre publishes original researches and source materials of Estonian written culture, maintains the book and art collection of historical value, organises conferences, exhibitions and cultural events of general importance (the ceremony of F. Tuglas' prize for the best Estonian short story of the year, events of the Scientists' House etc.). The Museum Department of the Literature Centre in Nõmme administers the legacy of the writer Friedebert Tuglas, Member of Academy, and



other collections, e.g. the library and art collection of Artur Adson and Marie Under (which arrived in Estonia in 1996) and the art collection of the Foundation for Estonian Arts and Letters in the U.S.A. (donated to the Literature Centre in 2007), totalling 51 676 holdings, as well as the house and garden attached to it, carries out lecture-excursions and serves individual researchers and visitors.

The major areas of research of the Literature Centre are:

- Estonian literature and culture in the 20th C. (including works of F. Tuglas, M. Under and A. Adson),
- Older Estonian and Baltic German written culture in the 13th--19th C., German legacy in the development of modern Estonian culture,
- Mechanisms of creation of identity of the Estonian written culture (autogenesis and transfer of culture),
- Modern Baltic literary space and Estonian-Latvian literary relations,
- Rhetorico-narratological models for description of European and Estonian culture,
- Drama and theatre research.

Since 2008 the Literature Centre has fulfilled the governmental research project "Autogenesis and transfer: The development of modern culture in Estonia" (2008–2013, head of the project J. Undusk). The goal of the project is to research the mechanisms of creation of identity of the Estonian written culture between the opposite fields of autogenesis (spontaneous creation) and cultural transfer. The theoretical background is created by theory of cultural transfers, postcolonial studies and analyses, researching the retarded modernity of small nations. It is shown that the roots of national identity of Estonia are hybrid and can be partly based on the ethnically, linguistically and geographically "alien" communities as well: Baltic German culture, international modernism, global exile, the Soviet imperial cultural transfer etc. Under consideration are transfers between different types of art (literature-theatre). The key problems are convertibility of the original and copy, transition of colonial cultures into national cultures, cultural memory, modern European culture and its reception in the 20th C. Estonia. Underlying the research is genre-wide broad-based discourse-analytical consideration of texts (fiction, pieces of writing on history, travelogue, philosophy, theatrical texts).

On 4 December 2008 the Literature Centre presented in the black-ceilinged hall of the Estonian Union of Writers the omnibus volume "Estonian Exile Literature in the 20th Century" (edited by Piret Kruuspere, 823 pp.). Speeches were delivered by President of the Republic of Estonia Toomas Hendrik Ilves, the former writer in exile Enn Nõu, co-authors of the volume J. Undusk, Maie Kalda and P. Kruuspere and Deputy Permanent Secretary of Ministry of Foreign affairs Aino Lepik von Wirén. The omnibus volume of wide authorship

provides a review of the literary process in exile after WWII. Considered in ten chapters are prose, poetry, memoirs, plays, children's and translated literature, translations to and works originally published in foreign languages, repeat publications, critique and science of literature. The book is added value both by extensive select biographies completing every chapter and the biographic data, consolidating the information about 158 persons. The omnibus volume has been illustrated with numerous photos and supplied with a resume in English. In connection with research of culture in exile P. Kruuspere and J. Undusk also participated at the autumn conference of Art Museum KUMU "Art in exile".

One of the highlights of the year was the exhibition "On the threshold" held by the Literature Centre in Tallinn, in Vabaduse Gallery from 17 July–6 August. Put on display was the art collection of the Foundation for Estonian Arts and Letters in the U.S.A from 1968–1975 (29 works). Starting from 7 March 2007 that collection representing the best works of art in exile has belonged to the Literature Centre. Before the exhibition the works were restored and framed on account of a state subsidy and a catalogue of the exhibition was issued, which appeared as no. 3 of the series "Cultural collections of the Under and Tuglas Literature Centre" (compiled by Eha Rand).

In 2008 co-operation continued with the Department of Fenno-Ugric Languages and Literatures of Groningen University, where also Departments of Literature of the University of Tartu participate. Within the framework of that co-operation and on the basis of papers of the international workshop held in 2006, a collection of articles was published as No. 22 of the series "Collegium litterarum", "National culture and its others" (editor Rein Undusk, 13 authors). Being the second publication of the joint project, there appeared in Maastricht the collection "The End of Autonomy? Studies in Estonian Culture" (editor Cornelius Hasselblatt).

As a continuation of the standing co-operation with Latvian literary scholars the year 2008 witnessed the volume "Back to Baltic Memory. Lost and Found in Literature 1940–1968" (editors E. Eglaja-Kristsons, B. Kalnačs), comprising the papers of the 7th Conference of the Baltic Literary Scholars held in Riga in 2007. The volume is a follow-up to the work "We Have Something in Common: The Baltic Memory", published by the Under and Tuglas Literature Centre in 2007, developing the analyses of cultural features uniting and making different the peoples of the present day Baltic States. The grant of Anneli Mihkelev from the Estonian Science Foundation for the comparative Baltic researches "Intertextual contacts as sources of strategies and ideologies" ended that year, in the framework of which several Estonian-Latvian literature seminars were held. An outcome of that work is the collection "Turn of the Century, Turns in Literature II: Estonian and Latvian Literatures in European Context at the Turn of the 20th/21st Century" (editor A. Mihkelev).

In 2008, there appeared within the framework of the project “Baltic Literature” a book in Latvian (1108 pp.) with resumes in English. The Estonian contributor to this volume was A. Mihkelev. As an annex in a separate book appended to the collection, is the bibliographic volume, containing bibliographies compiled by A. Mihkelev of Latvian literature issued in Estonia (periodicals, books, drama works).

In connection with Marie Under’s 125th anniversary, the Literature Centre organised in co-operation with Estonian Literary Museum a scientific conference “Marie Under and hundred years of Estonian poetry” in Tartu on 28–29 March 2008 (Aare Pilv). There were two expositions dedicated to M. Under. The exposition “Portraits of Marie Under and her intimates” (E. Rand jointly with Tio Tepandi) was on display in Estonian Drama Theatre on 24.03–06.04, in Tallinn Central Library on 1.07–30.07, in Nõmme Cultural Centre on 22.08–22.09 and in Tallinn City Theatre on 21.11–31.12. The second exposition, “Art in Marie Under’s home” (E. Rand jointly with T. Tepandi), was on display at Estonian Literary Museum in Tartu on 28.03–26.05.

Within the framework of the Baltic-German research, the Literature Centre organised a workshop “About the possibility of history of the Baltic Literature” (Liina Lukas) on 19 September 2008. Conjointly, compiling of the older Estonian history of literature was started, basing on new methodological techniques, attempting to visualise jointly the development of German, Estonian and Latvian literary word in the historical Baltic area. The authorship of the future compendium will be international.

In co-operation with Institute of Cultural Sciences and Arts of the University of Tartu, the interdisciplinary series of seminars was continued for researchers and post-graduate students “Migrating concepts” (E. Laanes, M. Grišakova).

On 19 November 2008 Director of the Under and Tuglas Literature Centre and Member of Academy in the area of the Humanities J. Undusk delivered a public academic lecture in the Academy House on the topic “Oxymoron as a figure of thinking in the European history of ideas”. He also delivered a paper “Islands in literature” on the Science Day of the Academy held in Hiiumaa in May.

In 2008, researchers of the Literature Centre released 10 major articles in foreign languages and 16 articles in Estonian both at home and abroad.

They delivered 33 scientific papers, of which 14 at international scientific events. Among them there were conferences “The memoirs of the 20th century” (Oslo), “Im Buch die Bücher: Zum 80. Geburtstag von R.-R. Wuthe-now” (Frankfurt am Main), “Philology, memory and forgetfulness” (Lisbon), “The Chronicle of Henry of Livonia: Crusading and chronicle writing on the medieval frontier” (Tallinn), “Baltic cross-roads: Examining cultural, social and historical diversity” (Bloomington), “Die Aufklärung im Baltikum: Recht –

Sprache – Kultur” (Heidelberg), “The poetics and politics of identity formation and life writing” (Bern), “Jaan Kross: Bilan et découvertes” (Paris) etc.

Researchers of the Literature Centre are involved in co-operation with Estonian universities in supervising and reviewing B.A., M.A. and Ph.D. theses. They participate in the work of academic council of the Academic Library of Tallinn University and in completing the collections of the Library.

Within the framework of the state programme “The Estonian language and national memory”, in 2004–2008 the Museum Department fulfilled, under the research sub-programme “National memory and identity” the scientific project “Intellectual heritage of Friedebert Tuglas” (supervisor Ülle Kurs). The goal has been to mediate the legacy of E. and F. Tuglas and M. Under and A. Adson as historical cultural assets to public by way of academically edited issues, through art exhibitions etc. One of the main goals of the project is completion of the “Collected Works” by F. Tuglas, edited text-critically and supplied with forewords and detailed commentaries. In the reporting year there was continued preparation of correspondence of A. Adson and F. Tuglas (A. Eelmäe, Ü. Kurs), the textological works “Collected Works” Vol. 13 of F. Tuglas were completed and the work arrived at the Publishers by the end of the year.

Within the framework of the state programme “The humanitarian and natural science collections” the Museum Department of the Literature Centre fulfilled the project “Scientific collections of the Under and Tuglas Literature Centre (cultural history collections) 2004–2008” (supervisor E. Rand). The goal is streamlining the collections of scientific and historical value, improvement of the maintenance conditions and optimising the opportunities of use. Electronic database KVIS was continually replenished with entries. As of 31, December 2008 the database contained 11231 entries of archival holdings. The Centre has applied to Ministry of Culture for transfer of database entered into KVIS to MuS. The Museum Department of the Literature Centre has been recorded in the list of museums, which will obtain the new database in 2009.

During the year, 113 historians of culture used the data of altogether 1202 holdings. Besides that, there were excursions presenting the Museum Department, the lectures about the history of the house and a seminar “The practicalities of editing”. During the year 808 people came to look at the cultural assets of the Museum Department.

Art collection of the Literature Centre features 1164 works of art. In 2008, three separate expositions were composed and put on display: “Portraits of Marie Under and her intimates”, “Art in Marie Under’s home” and “On the threshold”. Assets of Under and Tuglas Literature Centre were exhibited at 9 joint exhibitions, of which 2 were international. On display at Amos Anderson Art Museum in Helsinki exhibition “Önningeby artists”, were 3 Konrad Mägi’s and 2 Nikolai Triik’s works, incl. Nikolai Triik’s large oil painting “Port-

rait of Konrad Mägi” (1908). In summer 2008, put on display at an exhibition of the Turku Art Museum “Under red banners” was the decorated citation of honour granted to F. Tuglas and designed by Adamson-Eric (1946). The Centre also participated at expositions in the House of Exhibitions of Tartu Art Museum, in the palace of Maarjamägi of Estonian Historical Museum, at Kristjan Raud House Museum of Estonian Art Museum, at travelling exhibition of museums of Estonian artists “The writer, nevertheless a man” (the exhibition was exposed during the year in 10 museums), in Estonian National Museum and at display exhibition of museums of Estonian artists “Once there lived a writer” (the travelling exhibition to schools, libraries, cultural houses of rural districts).

The Publishers “Tänapäev” released Elo Tuglas’ book “Tartu diary 1928–1941”, the manuscript and part of the photos were received from stock of Museum Department of the Under and Tuglas Literature Centre.

In the series of events, dedicated to F. Tuglas’ 122nd anniversary, the Museum Department hosted from 2–7 March 5 plays of the theatre “Varius” “Welcome!”, scrip writer and stage director Heidi Sarapuu.

In 2008, repair works were completed in work premises of the Literature Centre at Roosikrantsi 6. Installed in Museum Department at Väikese Illimari 12 were new water supply and sewerage pipes, connected to the municipal system. Premises of repositories in the basement were repaired and new metal movable shelves were ordered to the repository.

## FINANCIAL ACTIVITIES

The budget of the Estonian Academy of Sciences for 2008 and its execution  
(thou kroons)

	Budget	Implement- ation
<b>INCOME</b>		
<b>ALLOCATIONS TO THE ACADEMY OF SCIENCES FROM THE STATE BUDGET</b>		
	22819.00	22819.00
incl. for basic activities of the Academy	16659.00	16659.00
for fees of Members of Academy	3960.00	3960.00
for fees of research professors	1800.00	1800.00
for effecting National Science Prizes	400.00	400.00
<b>OTHER REVENUE</b>	4970.10	5112.67
Target allocations of Ministry of Education and Research (MER)	2000.00	2000.00
incl. membership fees	750.00	750.00
for investments	300.00	300.0
for renovation of Kohtu 6	850.00	850.00
for radio programme "The Falling Apple"	100.00	100.00
Income from rent of rooms	300.00	306.98
Income from sale of the car Mazda	0.00	135.59
Income from the analysis ordered by MER	1498.50	1498.50
Reciepits from sale of printed matter and commissioned works (Academy Publishers)	986.00	986.00
Reciepits from residual funds (Academy Publishers)	185.60	185.60
<b>ALLOCATIONS TO UNDER AND TUGLAS LITERATURE CENTRE</b>		
	4557.80	4557.80
Through Ministry of Education and Research	4342.10	4342.10
incl. targeted funding of research	2295.00	2295.00
for infrastructure expenses	626.00	626.00
basic funding	337.80	337.80
for fulfilment of the state programme	583.10	583.10
for study loan	57.20	57.20
for investments	100.00	100.00
for renovation of the Literature Centre	343.00	343.00
Target allocations	152.70	152.70
From sale of literature	63.00	63.00
<b>TOTAL INCOME</b>	<b>32346.90</b>	<b>32489.47</b>

## EXPENDITURES

### GENERAL BREAKDOWN

Main activities of the Academy (through Academy Office)	11284.00	10399.51
Estonian Academy Publishers	5421.60	5421.60
Fees of Members of Academy	3960.00	3828.00
Fees of research professors	1800.00	1800.00
Prizes, grants and medals	350.00	347.28
incl. Grants	150.00	150.00
Prize for the students' works	200.00	197.28
Scientific Societies	1475.00	1475.00
incl. Estonian Naturalists' Society	500.00	500.00
Mother Tongue Society	150.00	150.00
Estonian Geographical Society	130.00	130.00
The Society of Estonian Regional Studies	115.00	115.00
Estonian Union of the Philosophy and History of Science	110.00	110.00
Estonian Literary Society	110.00	110.00
Learned Estonian Society	110.00	110.00
Estonian Musicological Society	110.00	110.00
Estonian Physical Society	110.00	110.00
Estonian Association of Engineers	30.00	30.00
Membership fees to internat. science organisations	750.00	832.67
Capital repairs of the Academy House	850.00	850.00
Commission of the national science prizes	400.00	400.00
HTM tellitud analüüs	1498.50	70.19
Under and Tuglas Literature Centre	4557.80	4338.10
<b>TOTAL EXPENDITURES</b>	<b>32346.90</b>	<b>29762.35</b>

MAIN ACTIVITY OF THE ACADEMY (THROUGH ACADEMY OFFICE)		
Wages	5089.00	4713.81
incl. permanent staff	4200.00	4122.88
other than permanent staff	720.00	451.85
fees to Emeritus Professors	99.00	70.68
allowances to widows of Members of Academy	70.00	68.40
Social tax and unemployment insurance premium	1700.00	1546.16
Office expenses	500.00	443.63
Maintenance expenses of the property and premises	950.00	904.44
Investments	550.00	541.34
Transport	195.00	133.13
Mission expenses	450.00	438.24
Representation and entertaining expenses	300.00	271.81
Young scientists and popularisation of science	400.00	389.53
incl. radio programme "The Falling Apple"	100.00	100.00
Training expenses	30.00	13.87
Expenses on commissions and divisions	80.00	79.90
Expenses on Foundation for International Exchange	700.00	610.77
Juridical service, accounting and auditing	60.00	40.00
Wages for Academy 70th anniversary (publications, etc.)	280.00	272.88
TOTAL OFFICE EXPENDITURES	11284.00	10399.51
ESTONIAN ACADEMY PUBLISHERS		
Wages	2552.60	2552.60
incl. permanent staff	2464.10	2464.10
other than permanent staff	88.50	88.50
Social tax	850.00	850.00
Administration expenses	399.80	399.80
Printing expenses	376.00	376.00
Acquisition of equipment and inventory	71.60	71.60
Expenses related to commissioned work	1171.60	1171.60
TOTAL EXPENDITURES OF THE PUBLISHERS	5421.60	5421.60
UNDER AND TUGLAS LITERATURE CENTRE		
Wages	2386.50	2386.50
incl. permanent staff	2208.50	2208.50
other than permanent staff	178.00	178.00
Social tax	794.70	794.70
Research and administration expenses	876.40	696.10
Investments (acquisitions and renovation)	443.00	443.00
Study loan	57.20	17.80
TOTAL EXPENDITURES OF LITERATURE CENTRE	4557.80	4338.10

Explanation: 1428.31 thou EEK – income for analysis ordered from MER, date of fulfillment 31.10.2009.



## **ASSOCIATED INSTITUTIONS**

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Pursuant to “Estonian Academy of Sciences Act” passed by the Riigikogu in 1997, the research, development and cultural institutions and scientific societies outside the structure of the Academy, whose activities and objectives however conform to the activities and objectives of the Academy can associate themselves with the Academy. The association of institutions with the Academy is effected under bilateral agreements, which specify the purpose of association as well as the tasks and commitments for both parties.

On 23 September 2008 there was signed the association agreement with the Jõgeva Plant Breeding Institute.

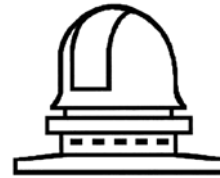
One form of cooperation between the Academy and the institutions associated with it is the reciprocal exchange of information. Surveys of the activities of the institutions associated with the Academy have been published in the Academy Year Book since 1998. Included reviews differ from one another by their structural composition, exposition and scope. They are practically presented in the same form as submitted, with minor modifications, suggested by the editorial board and kindly accepted by respective institution.

Reviews on the 2007 activities of the institutions associated with the Academy have been presented in the chronological order of their association date:

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## TARTU OBSERVATORY

Associated with the Estonian Academy of Sciences  
8.05.1998



Founded 1808

Personnel: 75, of whom 44 researchers

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The matters handled by the Tartu Observatory in the reporting year were multifaceted. New target-financed research topics were started, continuing the fundamental research in the area of cosmology, stellar physics and remote sensing of the Earth. Launched was the FP7 project EstSpacE for developing the space research potential of Estonia and establishing links with the best centres of Europe. The same project enabled procuring a number of new research instruments, of which our researchers had long been dreaming. Thanks to the support scheme of the Estonian Science Foundation we could take on employ two young post-doctors. The application for renovation of the main building of the Tartu Observatory and for building the laboratory block annexed to it was included into the schedule of investments planned by the Government. There were also some setbacks – in the first place the competition for Centres of Excellence, the results of which deplorably imply that there are no top level research teams of exact scientists in Estonia.

As ever, the researchers published their main work results in scientific articles, totalling 77. There were published even more than 120 popular science pieces of writing meant for wider public, of which two third plus constituted by weather stories from Ain Kallis, who won the 1st prize at the past year competition of popularising science. The second equal prize was awarded to Mare Ruusalepp and the NGO Stellaarium headed by her, organising excursions to those interested in Tõravere.

The largest known and visible structural elements of our Universe are superclusters of galaxies. The emergence of that observable structure against the background of dark energy and dark matter dominating the Universe continues to provide a topic for research to cosmologists in the whole world, incl. the Tartu Observatory. Databases, continually replenished and available to all astronomers enable participation in that work also without personally carrying out observations. From the viewpoint of evolution of the Universe, of most interest are the so-called rich superclusters, containing thousands of galaxies and whose formation one has not too well managed to model numerically he-

retrofore. The past year work of our cosmologists in learning to know in detail a couple of rich superclusters helps us again to reach a small step nearer to truth. The Sloan Digital Sky Survey – the presently largest public database – enables researching also the connections of galaxies and quasars. For the time being it seems that quasars or active nuclei of galaxies looking like stars keep to the districts, where the ordinary galaxies are fewer. Research into absorption of light in our neighbouring galaxy M31 (the Andromeda Nebula) showed that the said effect has been underestimated up till now. If it turns out to be so also in other galaxies, we have often estimated their masses as being too small. Beside researches basing on observational data our cosmologists were also concerned with purely theoretical calculations e.g. in the area of gravitational theory and statistics of cosmological structure.

The involutions of stellar evolution may lead to various interesting objects of short lifetime. For instance, to our knowledge there are only four so-called hydrogen deficient close binary stars in our Galaxy. The chemical analysis of one of them, KS Per helped elucidate the evolutionary status of such stars. The ratio of hydrogen and helium contents of subtype WN of hot Wolf-Rayet stars was determined by a novel method, which takes into account the clumped structure of stellar wind. For modelling the physical processes taking place in atmospheres of hot stars we found more accurate approximation equations, which take into account that the stellar atmospheres do not contain ideal gas, but real high temperature rarefied plasma. For a certain type binary stars (containing the so-called EHB objects, of orbital periods within the interval 0.1–30 days) we managed to find a simple analytical relation between the velocity of outflow of matter of the donor star and radius of the binary star gravitational Roche limit. We worked out a new statistical method for estimation of the lifetime of Sun's activity complexes. Research of impact of absorption on polarisation of radiation in stellar atmospheres showed, that in a general case the absorption reduces the polarisation of the upward moving radiation and increases that moving downward. We continued observations of a number of particular stars with our own 1.5m and 0.6m telescope, and also in other observatories. Simultaneously, preparations continued for future data processing of the European space telescope Gaia.

Traditionally multifaceted were the undertakings of our atmospheric physicists and remote sensing experts. In active cooperation with several European countries they continued measurements and analysis of solar ultraviolet radiation. The state of upper part of troposphere and lower layers of stratosphere is significantly affected by exhaust gases of aircrafts. The Estonian airspace is crossed by over 100 000 aircraft in a year and their environmental impact calls for more accurate research which we started in 2008. The statistical model describing long-term variation of radiation fluxes precipitation and temperature reveals that the climatic system of the Earth is dominated by the rhythm imposed by the 11-year cycle of annual solar radiation and solar acti-

vity. The remote sensing experts of the water bodies did field works on the lakes Peipsi and Võrtsjärv and on the Askö sea station in Sweden. They collected a large database for interpreting the data of spectrometer MERIS working on sensing satellite Envisat of the European Space Agency. In summer extensive measurements were also made in the support area of satellite measurements in Järvelja. The database for use of three Järvelja 100x100 m forest stands as testing object in the next stage of international comparison RAMI of canopy reflectance models was prepared. Sample measurements were made with the meter for indicatrice being worked out in our laboratory, designed as under-atmospheric support of satellite sensors measuring in several directions. The researchers analysed the capability of forest's reflectance model to describe the seasonal turns of reflectance properties of forests and studied the alterations of reflectance properties of stands of forest caused by variation of weather conditions from year to year.

Quite naturally this synopsis does not embrace all issues handled by our researchers in 2008. Another Annual Report of the Tartu Observatory has appeared from print, where those interested will find a much more thorough treatment.

## **INSTITUTE OF ECOLOGY AT TALLINN UNIVERSITY**



Associated with the Estonian Academy of Sciences  
16.06.1998

Founded 1992

Personnel: 33, of whom 26 researchers

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In 2008, scientific research was carried out within the framework of 36 topics of different levels and projects, incl. 2 target-financed topics by Ministry of Education and Research of Estonia, 6 Estonian Science Foundation grants, 28 applied co-operation agreements. 8 international co-operation agreements were concluded. The institute participated in several international programmes. Research work was also carried out within framework of 4 Doctoral theses.

The Institute participated in international cooperation projects, of which the most comprehensive were COST Action FP0601: Forest Management and the Water Cycle (FORMAN), Coordinators on part of Estonia: M. Pensa, E. Lode; COST Action 639: Greenhouse gas budget of soils under changing climate and land use (BurnOut), Coordinator on part of Estonia E. Lode; COST Action E38: Forests and Forestry Products, Coordinator on part of Estonia L. Truus and 6th EC Framework Programme project EroGRASS Failure of Grass Cover Layers at Seaward and Shoreward Dike Slopes, Expert on part of Estonia A. Kont.

The main research effort of the Institute was carried out within the framework of the following target financed topics.

Topic: Lake-level fluctuations during the postglacial period: causes and impact on lake ecosystems (project leader: Prof. Jaan-Mati Punning). Basic researches were connected with different aspects of changes of Holocene environmental conditions. Basing on development of climatic conditions, the researchers attempted to find the impact of paleogeographic and geochemical factors on accumulation of sediments. The dynamics of lakes of Vidzeme and Otepää highlands provided an opportunity to describe the sedimentation dynamics and biochemical change of structure of matter, especially accumulation of organic and carbonate material. In view of the heightened interest to carbon

circulation in the recent years, it is planned to involve in the research respective specialists and expand the research in the area of organic geochemistry. Because in natural processes, in evidence is joint impact of many factors, it was planned to increase substantially the number of analyses and also to apply more laboratory experiments. For that purpose modern high performance apparatus was used.

Topic: Impact of disturbances on wetland ecosystems in Estonia (project leader: Margus Pensa). It was found that the ground water depression funnel generated by underground mining may increase the outflow of water from the border areas of mires. Hence the negative impact of underground mining on border areas of North East Estonian mire ecosystems cannot be excluded, even if the basic part of the mire ecosystem has formed on watertight geological strata. Observations in test zones of restoration of peat lichens showed that beside the *Eriophorum vaginatum*, the positive impact of which on colonisation of the peat lichens is known, the similar so-called 'nursery plant' species can also include the *Warnstorfia fluitans*. *Molinia caerulea* however may totally inhibit the restoration of mire plants. On the basis of results of observations made on coastal wetlands it may be asserted that east of the new port of Sillamäe the erosion of coasts has become active and the coastal ecosystem is out of natural balance. In survey areas of Saaremaa the frequency of storms has increased and coastal ecosystems cannot get restored before the next storm.

56 scientific articles and individual issues were published by the staff members of the Institute in 2008, incl. 21 articles in high level peer reviewed international scientific publications, 11 articles were published in conference volumes. Besides the above, 5 abstracts of conference, plus 4 popular science articles came out. The compendium "Peipsi" came out co-edited by A. Raukas. 16 papers were delivered at international conferences and meetings, 14 papers at national events and 27 papers at scientific seminars of the Institute.

The majority of applied researches were involved with analysing the status of the environment and its improvement potentialities. The accent of the applied researches has started to incline towards general and more science oriented environmental policy projects. The volume of applied research connected with issues of ecological restoration is on the incline.

In autumn 2008, the Institute organised the national inter-universities symposium of young geographers "Agu Sihvka reports...", where some papers were delivered. Students supervised by personnel of the Institute were acknowledged as worthy of approval at competitions of the student papers.

The prize for the best natural science article was granted to the article Punning, J.-M., Boyle, J. F., Terasmaa, J., Vaasma, T., Mikomägi, A. (2007). Changes in lake sediment structure and composition caused by human impact: repeated studies of Lake Martiska, Estonia. *The Holocene*, 17(1), 145-151.

Researchers of the Institute were actively involved in teaching at universities – by delivering lectures and supervising students and postgraduate students at Tallinn University and the University of Tartu. Out of personnel of the Institute, the Doctor's degree in geo-ecology was defended by Angelika Portsmouth and Hannes Tõnisson

## ACADEMIC LIBRARY OF TALLINN UNIVERSITY

Associated with the Estonian Academy of Sciences  
17.06.1998



Founded 1946

Personnel: 143, of whom 2 researchers

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Director: Andres Kollist, Tel: +372 665 9401, Fax +372 665 9400  
[andres.kollist@tlulib.ee](mailto:andres.kollist@tlulib.ee)

Number of users 45 490

Number of copies in the circulating collection 2 536 848

In this reporting year, the availability of scientific information grew in the Academic Library of Tallinn University through the introduction of various electronic databases. In 2008 the Library acquired the multidisciplinary collection (over 14000 titles) of e-books of the library Ebrary, containing science literature from more than 170 publishing houses of good repute; the collection ProQuest Dissertations & Theses: The Humanities and Social Sciences Collection (altogether nearly a million dissertations); the portal of medical information *Univadis* for physicians and students, where there is free of charge limitless access to science publications and leading clinical sources (incl. Elsevier, Merck Manual etc.); Library PressDisplay – a web-based portal for reading on-line newspapers, embracing over 700 digitized issues from 76 countries in 38 languages (it is deplorable that it is not yet in Estonian) and provides to the readers versatile opportunities for search, leafing, printing, and to some degree translation of the texts and the ability to listen to them. The newspapers can be read retroactively within 60 days of publication.

As a science library the Academic Library is also vested with the task of compiling bibliographic databases. By the end of 2008 the website of the Academic Library held 11 bibliographic and 2 biographic databases available to users. Within the framework of the Compatriots' programme of the Ministry of Education and Research, 434 700 kroon were allocated to the project of the Centre of Estonian Literature in Exile "Conservation and making available of the Estonian cultural heritage in exile". The project enables Estonian newspapers in exile to be digitised, to record a greater amount of data in self-made databases, to compile the bibliography of Estonian books in exile and to issue the list "Books of recollections of Estonians in exile".

The Library is also concerned with compiling the Estonian retrospective national bibliography and is responsible for that includes: books in Estonian between 1525–1917; journalism in Estonian between 1766–1940; books relating



to Estonia in foreign languages, having appeared in Estonia and elsewhere up to 1940; periodicals relating to Estonia in foreign languages, having appeared in Estonia and elsewhere between 1675–1940. Beside retrospective national bibliography the Library compiled bibliographies also to the incunables of the Baltic collection.

As part of the upgrade of library services readers are now able to receive SMS messages. The readers now enjoy the chance to lend the fiction and memoirs found in the Baltic collection, which appeared after WWII, hence from 1945 until now. For developing the Medial Information Centre cooperation was started with other institutions and leading specialists administering medical information.

Since February 2008, the CENTRE OF ESTONIAN LITERATURE IN EXILE has been operating at the Academic Library instead of the former Sector of the Estonian Literature in Exile. Already a score of years the collection of the Estonian literature in exile of the Library has been systematically replenished with literature, which has appeared abroad published by Estonians in exile and Estonian publishing houses in exile. By now the collection has 31 500 volumes, among others 5200 titles of books and over 500 titles of periodicals, being the most complete collection of the Estonian literature in exile in Estonia and the whole world. This unique collection has created opportunities for information work and compilation of databases, very actively used both domestically and abroad. The collections and databases serve as the basis for research, drawing on which articles are written, bibliographic issues are compiled, papers are delivered at national and international conferences and seminars.

In 2008 the CENTRE FOR EARLY PRINTED BOOK celebrated at various jubilee events the 40th anniversary of activities of the Baltic collection and Department of Rare Books. The 7th October was the day of scientific papers, held with the aim to attracting public attention to the circle of topics, which the researchers used in their work the Baltic collections have handled. On that occasion a booklet appeared from print “Collections of early printed book: Academic Library of Tallinn University, 2008”, that can be disseminated at similar events at home and abroad. By exhibition “Rebirth” organised within the framework of jubilee events the Library wished to highlight the fact that the early printed book is continually the cause and wellspring of the birth of new researches.

Meriting attention are the following purchases to the Centre for Early Printed Book: Martin Luther's 1st letter to Livonia printed in 1523 *Den vszerwölté lieben Freüden gottes allen Christen zû Righe / Reuell vñ Tarbthe in Lieff=land / meinen lieben herren vnnd brüderen in Christo / Martinus Luther / Eccle. witem. – M.D.xxij* (see the archives of website news); Andreas Knopken's *Epistolam ad Romanom*, Wittenberg, 1524 (see the archives of

website news). Classified as rare books are also three winning works acquired from the exhibition of modern Estonian bookbinding art “Poetical binding” and the binding designed by Rene Haljasmäe acquired from the same exhibition (see also the archives of website news).

Within the framework of international cooperation the Academic Library of Tallinn University acted with the Consortium of European Research Libraries (CERL), participating at solving the questions concerning the European early printed book.

In 2008 researchers of the Library continued the earlier started research topics, on the basis of which a number of papers were delivered and publications released. Kaja Tiisel continued her research on the topic “History of mentality of Tallinn of the 1st half of 19th C.”, Anne Valmas continued research of culture and publishing activity of Estonians in exile within the framework of the research topic “Exile book in Estonian cultural picture”. Active in the Library is the Restoration Department working on scientific bases, concerned with monitoring of microclimate of the repositories, restoring the rarities and research of the history of bindings. Head of the Restoration Department Rene Haljasmäe is doing doctoral research work in the Estonian Art Academy on the topic “Incunables. Ratio of damage and restoration in books printed in 15th C.”. The research analyses the incunables located at Academic Library and seeks the best solutions for their preservation and further use. The output of the research is creation and replenishment of web-based database of Estonian incunables to be compiled by the Academic Library of Tallinn University.

## **INSTITUTE OF THE ESTONIAN LANGUAGE**

Associated with the Estonian Academy of Sciences  
11.05.1999



Founded 1947

Personnel: 79, of whom 24 researchers

14 lexicographers

13 terminologists and language planners

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Senior Researcher – Academic Secretary: Hille Pajupuu, Tel: +372 6177 500

[hille.pajupuu@eki.ee](mailto:hille.pajupuu@eki.ee)

Institute of the Estonian Language has six departments:

Department of Linguistics and Language Technology, Head Dr. Phil. Urmas Sutrop

Department of Fenno-Ugric Languages and Dialects, Head M.A. Sven-Erik Soosaar

Language Planning Department, Head Dr. Peeter Päll

Department of Dictionaries, Head M.A. Margit Langemets

Terminology Department, Head Tiina Soon

Personnel and Administration Department, Head M.A. Kai Oro

### DEPARTMENT OF LINGUISTICS AND LANGUAGE TECHNOLOGY

Performed in 2008 the target funded research “The Estonian language as modelling communicative system: code, translation and history”, leader of topic Dr. Phil. Urmas Sutrop.

At fulfilling the topic the researchers focussed on two research problems: “Modelling of vocabulary and Juri Lotman’s treatment of language” and “Formation of discourse and name systems in the Estonian language”. Within the framework of the first problem, the main parameters of treatment of language by Lotman were elucidated. The Lotman’s language model is dynamic, embracing at least two independent parameters. Main dichotomies, describing the language are its syntagmatic and paradigmatic axes, synchronic and diachronic axes, logical and mythical thinking axes etc. Besides those parameters it is important to treat the communication as a process, which contains the cultural memory.

Within the framework of the second problem, the history and evolution of both the Estonian language and name system were researched. Kristiina Ross

has researched the linguistic structure and vocabulary of two anonymous translation texts dating from middle 17th C. with the aim to estimating how probable is the supposition that the translator of both is the Urvaste pastor Johannes Gutsloff. Work on compiling of electronic concordance of the Estonian bible translation has continued. In the domain of Estonian (place) name systems (Marja Kallasmaa and Peeter Päll), the research of polylinguality of names has been continued (the Estonian-Swedish place names, historical polylinguality of Estonian street names, Estonian-Latvian name relations on Lutsi language isle). Survey of development of local name systems has been started (Hageri, Juuru, Rapla and Türi parishes the list starting from XVIII century, in case of Rapla parish starting from XV century).

Within the framework of the national programme “Lingua-technological support of the Estonian language (2006–2010)” the Department fulfils three projects: The Estonian Emotional Speech Corpus, project leader Hille Pajupuu; Corpus-based speech synthesis for Estonian, project leader Meelis Mihkla; Lexicographer's workbench, project leader Ülle Viks. In greater detail about the projects see <http://www.keeletehnoloogia.ee/projektid>

MAIN ACTIVITIES OF THE DEPARTMENT OF FENNO-UGRIC LANGUAGES AND DIALECTS IN 2008 were:

- Compilation of dialectal and etymological dictionary;
- Storing and replenishment of scientific archives, data collections and databases of Estonian dialects and cognate languages;
- Research of origin of the Estonian language and its history;
- Research of dialects of the Estonian language and Fenno-Ugric cognate languages.

An important outcome of the year was completion of the Dictionary of the Estonian dialects volume IV, 20th fascicle (*lahi – laulurästas*). Edited by Mari Kendla, Vilja Oja, Mari-Epp Tirkkonen, Jüri Viikberg. Institute of the Estonian Language. Tallinn: Eesti Keele Sihtasutus, 2008, pp. 821–1032.

Released was Dmitri Tsvetkov's “Grammar of the Votic language”. Compiled and edited by Jüri Viikberg (translation by Ada Ambus, design by Merle Moorlat), Eesti Keele Sihtasutus, 2008.

#### LANGUAGE PLANNING DEPARTMENT

The language planners have continued, as their basic work delivery of recommendations, explanations and consultations on language. The consultations by telephone and letter (e-mail) are free of charge. To an ever wider scope, the Department has attempted to make the necessary advice and aids available through electronic media, so that those interested would get their answers by themselves. As a novelty, language tests have been added (Argo Mund), see <http://www.eki.ee/keeleabi>

In 2008 the adults' training was successfully launched (training conferences of teachers in Tallinn and Tartu, project leader Sirje Mäearu) and euro language care (Katrín Hallik and Katre Kasemets).

Collection "Language consultation recommends 4" appeared (compiled and edited by Maire Raadik).

#### DEPARTMENT OF DICTIONARIES

In the domain of dictionaries, compiling and editing of dictionaries of the Estonian general language has been continuing. All lexicographic works are being done in the Institute's vocabulary system EELEX. In 2008, transferred to that system was also "The Explanatory Dictionary of the Estonian Language" (Ülle Viks, Tiina Puolakainen, Andres Loopmann).

Within the framework of common project Valgus – the Institute of the Estonian Language– Estonian Association for Applied Linguistics, edited has been the terminological picture vocabulary Oxford-Duden (Mai Tiits).

Jointly with the Association for Applied Linguistics and Tallinn University the Department organised the VII Conference on Applied Linguistics. By the time of the Conference the "Estonian Papers in Applied Linguistics 4" appeared.

By joint undertaking of Department of Dictionaries and Department of Fenno-Ugric Languages and Dialects there was organised the international Fenno-Ugric dictionary seminar "Fenno-Ugric dictionaries: what unites them and what keeps them apart". There were participants from Finland, Hungary, Russia (Komi, Mari El, Udmurtia), Poland, Latvia, Austria.

#### TERMINOLOGY DEPARTMENT

Is working prevalently in the project-based mode.

The largest project is in the area of military and security and defence policy terminology in cooperation with Ministry of Defence, consisting of two parts: work of the terminology commission (in 2008 at 24 meetings 1422 terms were considered) and translation project (1855 pages of translation works were made).

After several years of preparatory work the aviation terminology project was started, in cooperation with Ministry of Economic Affairs and Communications (Aviation Administration). In 2008 the job of euro-terminologist was created at the Department, in progress is mapping the problems of sub-units, companies and freelancers engaged in translation in the European Union institutions and doing the same for them in Estonia.

The follow-up project of the Department is in the area of education terminology in cooperation with Ministry of Education and Research. In the frame-

work of that project, being tested is the prototype of common term base (ÜTB), with a view to taking it into use also in other projects.

From 2005–2008 operating at Department of Philosophy of the University of Tartu through agency of Foundation Innove, supported by the EU Structural Fund was the Doctors' School "Linguistics and Language Technology", with the Institute of the Estonian Language and Institute of Cybernetics of Tallinn University of Technology acting as partners. There were 8 doctoral students of the Institute enrolled at the Doctors' School. In the previous year, doctoral degree was defended by M. Mihkla on the topic "Modelling the temporal structure of speech to Estonian text-speech synthesis" and Mari Uusküla "Basic colour terms in Finno-Ugric and Slavonic languages: myths and facts".

The works and doings of the Institute in 2008 can be looked at in greater detail on website of the Institute: <http://www.eki.ee/eki/aru2008/index.html>

## **ESTONIAN LITERARY MUSEUM**

Associated with Estonian Academy of Sciences  
11.05.1999

Founded in 1909 as the Archive Library of the Estonian National Museum

Personnel: 105, of whom researchers 41, librarians and bibliographers 13

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janika@kirmus.ee

Secretary: Annela Oona, tel. 7377700, annela@kirmus.ee

In the reporting year the Estonian Literary Museum functioning as a research institution fulfilled 5 target-financed topics, supported by 10 grants from the Estonian Science Foundation. For replenishing the collections of the Museum and for different research and publication projects support was provided from state programmes “Collection of the Humanities and Natural Sciences”, “The Estonian Language and National Memory”, “The Language and Culture of South Estonia”, the Compatriots Programme, the Setomaa cultural programme and classics programme, the Cultural Endowment of Estonia and from elsewhere. At implementing the Compatriots Programme of the Ministry of Education and Research, the Museum engaged in close cooperation with Karl Ristikivi Society and other memorial institutions and participated at organisation of archives-related trainings and seminars both in Estonia and abroad.

Estonian Literary Museum consists, like in the former years of five structural units, of which three are based on collections important as regards the cultural history:

Archival Library with Department of Bibliography – Head Merike Kiipus;

Estonian Cultural History Archives – acting Head Vilve Asmer;

Estonian Folklore Archives – Head Ergo-Hart Västriik, who had held that position for 10 years; in connection with his proceeding to work at the University, the academic council of the Museum elected, starting from 2009, Risto Järv as acting head of the Archives;

Department of Folklore – Head Mare Kõiva;

Department of Ethnomusicology – Head Triinu Ojamaa.

During 2008, 4 researchers of the Estonian Literary Museum defended their doctorates: Liisi Laineste and Mari Sarv at the University of Tartu, Janika Oras at the Estonian Academy of Music and Theatre, Mari Laanemets at Berlin Humboldt University. Regarding the research work the Estonian Literary Museum endeavours to establish science publishers of international Collegium with demand of peer-reviewing that would also achieve respective acknowledgement and qualification in the Estonian science information system. The publishing group headed by vigorous folklorists have done much

work in the name of that goal and the periodical issues "Mäetagused" and "Folklore" published by them are the main outcome of that activity. Besides, under aegis of the science publishers, complemented dissertations have appeared. By the end of the year, there appeared the first publication in two issues "METHIS", the joint publication of Institute of Cultural Sciences and Art of the University of Tartu and Cultural Archives of the Estonian Literary Museum. It is great progress in cooperation of two research institutions and also in creation of scientific out-come to interdisciplinary humanitarian thought. The issue has been dedicated to the *Noor-Eesti* Movement and in that, 22 researchers of culture and historians present various viewpoints to program integration into Europe of the Estonia one century back. Editing and publication of the following volumes of the collection will be coordinated by a common editorial board. In the reporting year, the science publishers issued the monographic works forming the basis for defending of doctorates by Mari Sarv and Janika Oras as well as Krista Aru's monographic work "One passion, three dimensions", dealing with the journalistic activities of K. A. Hermann, J. Tõnisson and K. Toom. The book appeared in print for the 140th anniversary of Jaan Tõnisson.

The research activity of folklorists ranged from collecting and studying of local heritage to participation at conferences of international resonance. In October the representatives of the Estonian Literary Museum participated at the conference held in Bulgaria, Sofia "Balkan and Baltic States in United Europe: History, Religions, and Culture". In December Tartu hosted the Estonian-Latvian joint conference "Compatriots in Siberia", the initiator of which was Researcher of the Estonia Folklore Archives and one of the best informed person on Russian Estonians' heritage Anu Korb. A number of local seminars, a folk poetry conference and the conference "From language to mind" II dedicated to Ülo Tedre's 80th anniversary were arranged.

Department of Ethnomusicology, founded in 1978 and hence having celebrated its 30th anniversary has been rather close to the work of folklorists. The spring identity seminar initiated by the Department gathered speakers from various domains and gave new impulses to research of links of identity and music, in particular in expatriate Estonian environment. The 18th issue "Karksi old folk songs with music" (author Taive Särg) of the series publication "*Ars Musicae Popularis*" as well as jointly with the Estonian Academy of Music and Theatre the 5th issue "Fenno-Ugric polyphony music in the context of other musical cultures" (edited by Triinu Ojamaa and Žanna Pärtlas) of the series publication "Works on ethnomusicology" were completed.

Beside the deposit copies received at archival collection the Museum acquired in the process of follow-up completion the missing rarity printed matter both in Estonia at auctions and antiquaries and also as donations from abroad. The especially valuable replenishment regarding desiderata was obtained from Estonian Archive in Sydney (Australia). Experience has been exchanged and



cooperation has been smooth also with St. Petersburg book scientists. Among book-scientific events organised by the Museum, the regular Oskar Kallas Day and conference was held and the exposition of publisher Andres Laur's 100th anniversary. In view of the forthcoming 100th anniversary of establishment of Archival Library in the composition of Estonian National Museum "a calendar of calendars" to last until end 2010 was issued.

Under the aegis of the Estonian Cultural History Archives, the manuscript of two-volume compendium "20th C. Trends of thought" was prepared for printing (editor in chief Epp Annus) and Piret Viires' monograph "Estonian literature and postmodernism" appeared. The largest international scientific event was the conference "Transformation as Stability: Audiovisual Archives in the Era of New Media", held in cooperation with BaltherNet on 25–27 September, head organiser Piret Noorhani. Most attendance attracted the conference "Juhan Viiding, Estonian poet" held on 29–30 August in cooperation with Estonian Literary Society, Estonian Union of Writers and Library of the University of Tartu, the papers of which will appear as a volume in 2009. Cultural theory team of Estonian Cultural History Archives organised two scientific conferences ("Archive of oblivions" considering the extra canon texts held in Tartu on 25 April and "Autumn ball" considering Mati Unt's work held in Tallinn on 9 June).

Collection and transfer of expatriate Estonian archival legacy was continued, of which the most unique were author Ain Kalmus' archive from the USA, Oskar Nahe's archive from Australia, Helmi Rajamaa's, Madis Üürikene's and Märt Raud's archives from Stockholm, besides the materials of the Uppsala Estonian Society and the Paris Estonian Society. The collections were also replenished with correspondence and manuscripts of Johannes Semper, Vaino Vahing, August Eelmäe. Kaare Kolbre residing in New York donated to the art collection the work of art "Künstners' club" created by Endel Kõks in Geislingen refugee camp.

An important achievement in the life of the Estonian Literary Museum in the reporting year was also improvement of work conditions of the personnel thanks to completed renovation project. The hall was given a face lift and the conference equipment was updated.

**INSTITUTE FOR INTERNATIONAL  
AND SOCIAL STUDIES  
AT TALLINN UNIVERSITY**

Associated with the Estonian Academy of Sciences 28.01.2003

Founded 1988

Personnel: 40, of whom 30 researchers

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alina@iiss.ee

Starting from 2008 the composition and structure of the Institute for International and Social Studies at Tallinn University has been complemented as compared to the earlier years. Accessed to the Institute has been Department of Social Theory of Estonian Institute for the Humanities, Department of Sociology of the Division of Social Sciences, R&D Centre of Civic Society, carrying out fundamental and applied research in the area of the third sector and civic society. Besides the research the academic personnel of the Institute is now also responsible for carrying out and developing instruction in sociology on the level of B.A, M.A and Ph.D.

The research activity of the Institute was successful in 2008. A new target-financed topic was added, a new grant of the Estonian Science Foundation and projects accompanying the structural changes. The personnel published a number of scientific publications, attended numerous scientific conferences both in Estonia and abroad and organised scientific events. At the end of the year, there was held a seminar of wide attendance dedicated to the 20<sup>th</sup> anniversary of the Institute "Transparent society: Sociologists in dialogue with the public".

In 2008 researchers of the Institute authored 30 publications at home and abroad. Special mention should be made of the CC category articles:

- E. Saar, M. Unt. Selective mobility into self-employment in post-socialist transition: early birds, later entrants, quitters and shuttles, *International Small Business Journal*, 2008, 26, 323-347.
- E. Saar, M. Unt. Falling high: structure and agency in agriculture during the transformation, *Journal of Baltic Studies*, 2008.
- N. Derman, E. Heinla. Изменения в ценностной системе населения в период социальной трансформации в Эстонии, *Социологические исследования*, 2008, 91-98.
- Under editing of Heigo Plotnik the volume was released "Concepts of social justice in the Estonian society", considering the understandings of the Estonian population in the economic and political spheres. In the

first case, the researchers considered the understandings of the people about an equitable distribution of the means, important from the point of view of achievement of incomes, status and feeling of social security, in the other case estimates to the actors were considered, who are responsible for exercise of economical justice.

In 2008 the Institute fulfilled three grants of the Estonian Science Foundation and three target financed topics. In 2008 the Institute started a new target-financed topic “Changes in attitudes and life styles of Estonian residents in 1985–2013: horizontal stratification” (supervisor Airi-Alina Allaste), which is partially a follow-up to the ended topic in sociology of family. Continued “Impact of Lifelong Learning on Life Course and Social Cohesion in Estonian Society” (supervisor Rein Vöörmann), “Consolidation of Democracy in Multicultural Society” (supervisor Raivo Vetik).

The Institute participated in numerous international projects. Continued fulfilment of the 6th EU Framework Programme project “Towards Life-long Learning Society in Europe: The Contribution of Educational System” (coordinator Professor Ellu Saar), with involvement as co-operation partners by scientists from twelve countries. In the process of changes of structure, brought under umbrella of the Institute were the 6th EU Framework Programme projects “SAL Society and Lifestyles: Towards Enhancing Social Harmonisation through Knowledge of Subcultural Communities” (supervisor on Estonian part Airi-Alina Allaste) and “EUROSPHERE: Diversity and the European Public Sphere. Towards a Citizens’ Europe” (supervisor on Estonian part Mikko Lagerspetz).

The Institute continued participation in European research network TIES (Integration in Europe of the second generation) and IMISCOE (International migration, integration and social cohesion), focussing on the topic of integration of the second-generation migrants. There was also carried out survey of population Estonia 2008: work, family and spare time. The said survey of population belongs to a polling strategy, carried out under similar methodology since 1985, embracing the population aged 16–70 and important domains of activity.

The Institute continued cooperation with several ministries of the Republic of Estonia (Ministry of Education and Research, Ministry of Social Affairs, Ministry of the Interior Affairs) and governmental authorities (Statistical Office).

## **ESTONIAN NATIONAL MUSEUM**

Associated with the Estonian Academy of Sciences  
21.12.2006



Founded 1909

Personnel: 94, of whom 17 researchers

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The Estonian National Museum has five departments: Collections Department, Research Department, Preservation and Conservation Department, Exhibitions and Museum Study Department, Management Department. As compared with many other institutions, the Estonian National Museum has a bigger and better chance to be the creator of coherency of the society, the mediator of different languages, and the provider of feeling of security. All that can be implemented by the Museum through knowledge, cooperation and openness. In the reporting year, on the threshold of its 100th anniversary, the Estonian National Museum strived to consolidate its activities for fulfilment of those purposes.

### ESTONIAN NATIONAL MUSEUM AS CENTRE OF KNOWLEDGE AND EDUCATION

Over years the Museum has been the place where the students of grade schools from all over Estonia come to consolidate the matters learned at school classes in the area of history of Estonia and national culture. The folk costume school for those interested and willing to prepare folk costumes has worked successfully with consistency for years at the Museum. In 2008 the main issue was how to expand and enhance the museum study so that it could enthrall also the gymnasium youth and offer more opportunities than hitherto to everyone, willing to create something new, basing on national culture.

The most successful event, attracting to the workshops organised by the Museum the elderly and the young, specialists with higher education and starting up interested people was the exhibition of 2008 "Pig to soap: Traditional work techniques in the modern times". The exhibition was of practical applied profile and when setting it up, we had in view to show, how to make the chip roof, boil the soap or cast a candle. There is more to it: the exemplified and presented techniques – the usual manner to prepare the household utensils and necessities common to Estonians for many centuries – were selected to the exhibition so that their performance should not require special pre-learned knowledge, that they should be practical also nowadays and that the necessary materials should be easily accessible. Quite a few urban children got to know

at the exhibition and in the accompanying workshops, what is common in sheep and a woollen sock, and the young men and also the fathers of family learned to nail the chip roof. To the Museum that exhibition gave assurance that the best way to teach and educate is through practice. Marvelling at the items placed in showcases tends to turn insufficient for the guest, he wants to have a touch with his own hand and create. Every exhibition must be accompanied by programmes, workshops, museum classes – it is only that way the museum becomes a necessary and irreplaceable education centre in the society.

#### COOPERATION NETWORKS OF THE MUSEUM

People always get stuck with the idea that the museum has on display only old things, and they are unlikely to think that the things accompanying our life and giving meaning to it will inevitably become, upon passage of decades, the old things characterising our time to the coming generations. The Estonian National Museum must be capable and able to see its modern times and eternalise it with whole feeling of responsibility. This is one of the ideas for designing the cooperation networks of the Estonian National Museum: to make our time visible and accessible. It is clear that fulfilling that task cannot only consist in collecting random items. Collecting work of any kind must base on knowing which are those stories and items, phenomena and event which are characteristic to our time. The basis of the collecting work of the Estonian National Museum is the strategic development plan basing on scientific methods “Collecting policy of the Estonian National Museum in the years 2008–2013”. The essence of thematic scientific expeditions of the Museum organised to various Estonian counties (in 2008 we visited Saaremaa) is not only questioning of the people and target-specific collection of items but also recording of everyday life of people on a film. It is the audio-visual recording of how bread was baked in 2008 or how the garbage sorting (dubbed “second literacy”) was mastered which will be, in decades the vocal sonorous story about us and our time.

Because the staff of the Estonian National Museum cannot record everything at different places of Estonia, although ideally it should be so, we established a network of picture sending collaborators to the Museum. It is they who can notice and preserve for the future generations in the name of the Museum our present day life, beside correspondents of the Museum and members of the Society of Friends of the Museum. In the reporting year the Museum tried to create the cooperation networks, which would enable recording out time in all its versatility and multiple aspects as easily as possible, without major bureaucracy and fuss, however adequately.

In the process of preparation and organising of the exhibition “Estonian pride” dedicated to the 90th anniversary of the Republic of Estonia the Museum was acknowledged by a number of our enterprises: the sweets factory “Kalev”, the socks and stockings factory “Suva”, the Kreenholm Manufacture, the alcohol

producer “Liviko” etc. Foundation was laid to the cooperation, which made it possible to record the weekday of those enterprises in the year 2008 and to create the feeling of assurance so that the knowledge about the activity of those enterprises will endure as items and film roll over the times. The Estonian Chamber of Commerce and Industry, who initially eyed the undertaking of the Museum suspiciously and a bit surprised, became a reliable further cooperation partner, with whose help and upon whose advice we want to record the progress of Estonian industry and companies in the pending years.

With its large and rich ethnographic collection the Museum is an irreplaceable research centre and practice base to ethnologists, folklorists, historians and anthropologists of the University of Tartu, however not only a passive partner anytime longer. Almost all researchers and keepers of the collections of the Museum have been involved in target financed research topics of the University of Tartu and grants of the Estonian Science Foundation.

Cooperation agreements with the Tartu Higher Art School and the Viljandi Culture Academy of the University of Tartu have been concluded in the belief that it is only jointly that we can research and teach the best of the past and today. Those cooperation agreements base on the recognition that all of us, under slightly different names, pursue the same cause: national culture is the basis of our specificities and differences.

The peer-reviewed science journal issued in English “Journal of Ethnology and Folkloristics”, the technical editing whereof has been shouldered by the Museum, is the joint issue of three research units (the Estonian National Museum, the University of Tartu, the Estonian Literary Museum), presenting the best part of research work of Estonian ethnology and folkloristics. The journal founded in 2007 proved its vitality in the reporting year: at the beginning of the year issue no. 2 appeared, and in the second half of the year issue no. 3 was compiled.

The belief in achievements deriving from cooperation is also promoting the activity of Preservation and Conservation Department having started work in the Museum as a separate department in 2008. The common projects of the Museum and the Estonian National Archives (restoration of the rare map which belonged to Ernst Jaakson) are exercised in the name of a clearly perceived common purpose– to preserve the Estonian cultural heritage as fully as possible.

#### OPENNESS TO INNOVATIONS

The newspaper proper of the Museum “Värat”, which is released twice a year as an annex to the daily “Estonia Päevaleht” is one of the initiatives brought by the Museum with belief that the knowledge about the Museum of those desirous of knowing more should not be kept within confines of the bits and bobs appearing in the regular dailies. Popularity of “Värat” has emboldened

the Museum to present its exhibitions and activities much more vigorously in the environment of electronic media (*YouTube*, Estonian virtual embassy *Second Life*) and to undertake experiments, which allow to present the rich culture collections of the Museum in the virtual media and in even slightly unorthodox form. However the openness to everything new, the skill to use new technological opportunities is more surely that anything else the guarantee that the old and valuable will live and endure.

In 2008, the largest touchstone for the essential strengths and openness of the Museum was and will be for several coming years, the designing of the building of the Museum and elaboration of the idea conception of large standing exhibitions. The Fenno-Ugric standing exhibition, which will be located in the hall sized over 1000 m<sup>2</sup>, must create a bridge between all Fenno-Ugric peoples and give to the Museum an opportunity to again make it to the position of the largest and modern-most Fenno-Ugric research centre in the world. The standing exhibition of the Estonian culture, to the disposition of which, together with the theme halls 3000 m<sup>2</sup> has been planned in the new building, will do with the skill to unite different hobby groups for presenting the history of culture of Estonia – researchers, pupils, workers, the old and the young, who have lived and acted here in Estonia at some time. The skill to unite and cooperate however presupposes in the first place boldness and openness. Suffice it to say that the Museum celebrating its centennial of activity in April 2009 has enough of both.

To sum up, here are some numerical data characterising the year of 2008: exhibitions in the premises of the Museum – 28, those outside the premises of the Museum – 17, inc. in Finland and Portugal.

Printed matter: 21 books, incl. two editions of follow-up series of the original material “From collection trips of the antiquities”, monograph “National clothes of northern khanty in the last quarter of the 20th century”, “Picture album of the Estonian National Museum” and many others.

## **JÕGEVA PLANT BREEDING INSTITUTE**

Associated with the Estonian Academy of Sciences  
23.09.2008



Founded 1920

Personnel: 112, including 27 researchers

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The main areas of activities of the state research and development institution Jõgeva Plant Breeding Institute are variety breeding of agricultural crops, maintenance breeding of existing varieties, elaboration and enhancing of variety based agrotechnologies, production and marketing of breeders, pre-basic and certified seeds of agricultural crops, maintenance of varieties and valuable breeds in gene bank, plant breeding fundamental and applied research, development activity and innovation, publishing of results of research, advisory activity and organisation of training within its competence. Starting from 2002 we have organised efficacy evaluation of plant protection products, starting from 2003 the variety comparison trials for registration of new varieties and for composing the recommended variety list.

We are concerned with variety and maintenance breeding of cereals, pulses, oil crops, fodder and turf grasses, potato and vegetables. In 89 years 285 varieties have been bred in Jõgeva. In Estonian variety list 2009 there are 68 varieties, in the recommended variety list of vegetables 8 varieties. All varieties on Estonian variety list have been included on the Common catalogue of varieties of agricultural plant species of the European Union. The cereal varieties are disseminated in Finland, winter turnip rape varieties in Sweden and Finland, grass-varieties in Lithuania, Finland, in Sweden, Norway and Russia, potato varieties in Latvia and Lithuania, vegetable varieties in Finland and Latvia. In the years 2005-2008 the Estonian variety list has been replenished by 7 new varieties: barley Viire (2007), Leeni (2007), spring wheat Mooni (2007), winter turnip rape Largo (2005) (developed in co-operation with Swedish breeding company Swalöf-Weibull AB), potato Reet (2007), kidney bean Lemmik (2006), tomato Malle F1 (2005). In 2008 the state registration trials introduced new varieties of field pea, sheeps fescue and large-leaved lupine. Starting from 2000 Estonia is member of The International Union for the Protection of New Varieties of Plants (UPOV). The main tasks of the parties to convention is providing for the rights of breeders and variety protection in all states who have joined to the convention. Jõgeva Variety Breeding Institute



has registered all newest varieties according to requirements of International Union for the Protection of New Varieties of Plants (UPOV) and 35 of them have been recorded in the register of protected varieties. According to Plant multiplication and variety protection Act the Jõgeva Variety Breeding Institute obtained licence agreements for use of varieties as intellectual property and collects royalties on that basis.

We provide maintenance of varieties included in Estonian variety list. The maintenance breeding involves 19 graminous and 10 leguminous grass varieties, 14 cereals, 4 pulses and 2 winter turnip rape varieties and 22 vegetable varieties. The Sangaste experimental station is involved in maintenance breeding of oldest known cultivated winter rye variety Sangaste.

Jõgeva Plant Breeding Institute gene bank has on long term *ex situ* preservation *ca* 2000 accessions of 52 species. Gene bank organises expeditions for collection of seeds of grass plants and mapping of the natural habitats and research of holdings subject to international standards. We participate in the activities of The European Cooperative Programme for Plant Genetic Resources (ECPGR), the Nordic Centre of Genetic Resource and in working groups of gene banks of the Baltic States, as well as international projects coordinated by FAO and Biodiversity International.

The direction of scientific research is obtaining novel theoretic knowledge for breeding the varieties of agricultural crops suitable to sustainable agriculture, creation of initial material having valuable properties and implementation of new breeding methods. Our goal is increasing genetic variability of Estonian varieties, raising the yield potential, increasing tolerance to conditions of different biotic and abiotic stresses, as well as improvement of disease resistance and quality properties. We use classical plant breeding methods conjointly with genetic and bio-technological studies. The Institute participates in EU AGRI GEN RES project AVEQ (Oat genetic resources for quality in human consumption). The Institute continues participation in Potato Late Blight Network For Europe (EUROBLIGHT), Global Fenology Cooperation Network and Nordic Baltic Resistance Action Group (NORBARAG). We participate at the project launched under guidance of the Latvian University on mapping QTLs related to local adaptation of Nordic and Baltic barley genotypes (2008-2011) and in Lithuanian R&D project on population research of plant pests and diseases causing significant economic damage in the Baltic region (2008-2012). Four ESF grants filled in 2008 embraced the research about the organic production of vegetables, the variability of potato mericlones pollination behaviour of bumblebees and population studies of phytopathogenic fungi. In 2008 we released 16 scientific articles.

The applied research embrace working out and improvement of the variety based agrotechnologies of agricultural crops and drawing recommendations for production at different intensity (conventional, intensive, organic),

Elucidation of technological and quality parameters determining the designed use of varieties and product development to add value to the plant production; making out agro-meteorology prognoses and summaries and elaboration of optimum plant protection strategies. On topics of applied research 56 articles were published in Estonian journals and proceedings in 2008.

The new directions of applied research are studies related to the biomass and bioenergy production. In the reporting year, the Institute was involved, within framework of projects financed by Foundation for Promotion of Rural Life and Centre for Environmental Investments for selection of reed canarygrass genotypes suitable for energy hay production and selection of cereal crops and varieties suitable for bioethanol production as well and clarification of reed canarygrass growing technologies for recultivation of exhausted milling peat fields .

Thematic field days, annual seminar and information days organized by the institute have won great popularity among farmers. We are engaged in close cooperation with the advisory system with participation at training days and events. Over thousand participants attended the seminars and field days organised by the Institute in 2008.

The potential for development of the Institute is supported by intensive domestic and international research cooperation, reliability, traditions and connections with seed producers, knowledge on local situation and needs and availability of experienced staff. The Institute has successfully participated in international scientific cooperation (EU framework programmes, cooperation networks, bi- and multilateral cooperation programmes). Common research projects link the Institute with other Estonian research institutes and universities. The association agreement made with the Estonian Academy of Sciences in 2008 is an acknowledgement to achievements of the Institute.

## **ASSOCIATED SOCIETIES, UNIONS**

Scientific societies and unions, outside the structure of the Academy, whose activities and objectives however conform to the activities and objectives of the Academy can associate themselves with the Academy. The association of institutions with the Academy is effected under bilateral agreements, which specify the purpose of association as well as the tasks and commitments for both parties.

On 23 September 2008 there was signed the association agreement with the Estonian Association of Engineers.

Reviews on the 2008 activities of the institutions associated with the Academy have been presented in the chronological order of their association date:

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## **ESTONIAN NATURALISTS' SOCIETY**

Associated with the Estonian Academy of Sciences  
23.01.1998



Founded 1853

Membership: 757 active members,  
16 honorary members, 640 trustees

Subunits: 21 Subunits

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President: Tõnu Viik, Tel: +372 741 0154, +372 743 7935, +372 50 89 045

Academic Secretary: Katrin Alekand, Tel: +372 734 1935

Estonian Naturalists' Society has 21 subunits. Subunits that work as sections are as follows: the section of amateur meteorologists, of anthropology, of biology, of botany, of entomology, of forestry, of geology, and of theoretical biology; the Commission of Lakes, the Estonian Malacological Society, the Estonian Mycological Society, the Estonian Teriological Society and the Jakob von Uexküll Centre. Commissions with special tasks focus on the history of natural sciences, the library, natural education, observation networks and plant names. In addition, the Society has assemblies of ecology, of honorary members and the round table of nature conservation.

In the reporting year seven General Assemblies of the Estonian Naturalists' Society were held, one review meeting on the year of activity and four lectures from the series "From natural scientists to the teachers of natural sciences". There were organised meetings of the subunits, conferences, seminars, gatherings, camps, exhibitions, etc.

### SEMINARS, CONFERENCES

The Naturalists Day "The Planet Earth – Global and Local Problems" was XXXI in succession and it was held in Karula National Park and at Lüllemäe on June 28–29. On the first day of the event, several presentations were heard from the global problems of the planet Earth to the overviews of the Karula National Park, on the second day an excursion was organised in the Karula National Park. The special volume "XXXI Estonian Naturalists' Day. The Planet Earth – Global and Local Problems" was published. The volume dealt with the problems relating to the weather and the richness of life of the planet Earth and also gave a specific overview about the surveys of climate and plant canopy relating to the Karula National Park. The Society participated in the organising committee of the opening event of the UNESCO The Planet Earth Year on February 18 in the hall of the University of Tartu. The Planet Earth Year concentrates on basic problems of the planet Earth geology, incl. cli-

mate, water and mineral resources, environmental risks, formation of natural diversity and its protection. The programme of UNESCO "The International Year of Planet Earth" was opened festively on 12-13 February in Paris, the activities will take place in 2007–2009, international culmination of it has been planned for 2009 and drawing conclusions for 2010 (<http://yearoftheplanetearth.org/>).

The Commission on plant names and botanical terminology in Estonian worked very energetically and was supported by the Estonian Terminological Union. The library commission, the anthropology section, the Geological Society and forestry section were elected new boards. The activity of several sections has languished or is languishing, due to scarcity of monetary means and human force, the general problem of many subunits is enlisting younger generation into membership and activity of the units.

Traditional events carried out by subunits of the Society were: The Spring School of Theoretical Biology "Laws in Biology" at Haanja on May 23–25, the Autumn School of Geology "Grand Theories" at Mäetaguse on October 10–12 and the 7th Baltic Teriological Conference in Pärnumaa at Lepanina on October 1–5. The topics considered were reflected in the volumes issued in connection with the events. The Jakob von Uexküll Centre organised on January 25–26 jointly with the Institute of Philosophy and Semiotics of the University of Tartu an international seminar "What's Wrong with Nature? An Interdisciplinary Seminar Investigating Human Perceptions of Nature and Environmental Change" and on November 8–9 "Resemblances in Nature and Culture: Theoretical and Semiotic Perspectives". The anthropology section organised in March jointly with the Institute of History of Tallinn University and the NGO Archaeological Centre the Science Day dedicated to Karin Mark's 86th anniversary "Physical Anthropology. Second Science Day in the Institute of History" and in October the traditional conference commemorating Juhan Aul's anniversary was held jointly with the Centre of Physical Anthropology of the University of Tartu.

The subunits organised scientific meetings as well. Members of the botany section participated in the conference-expedition of Baltic botanists held in Daugavpils. There was a gathering of Friends of Mosses at Piusa. The Mycological Society organised two mushroom camps, in spring and in autumn, it participated at organisation of several mushroom expositions, held topical lectures on mushrooms, supervised Study Days and Hikes. Within the framework of Naturalists' Day there was a meeting of the amateur meteorologists. The Naturalists' Society in cooperation with the Nature Protection Commission of the Academy of Sciences and the Estonian Chamber of Environment Associations discussed at several meetings the principles and reformative problems of the reorganisation of the Estonian forestry and the Environment Department to be created by the Ministry of the Environment. Unfortunately the Ministry declined all propositions of the Society.

## PROJECTS

The Society participated in fulfilling the projects funded by the Ministry of the Environment, the Foundation Environmental Investments Centre, the State Nature Protection Centre, the Centre of Forest Protection and Silviculture, the Tallinn Environment Department, the Financial Mechanism of European Economic Area and the Financial Mechanism of Norway, the Council of Gambling Tax at the Ministry of Education and Research, the Tartu City Government, the Tartu Parish Government, the Cultural Endowment of Tartu, the Estonian University of Life Sciences, the Estonian Union of Terminology, the Union of Setomaa Parishes, the Foundation Tuuru and the NGO Läänemaa Bird Club.

The Society completed the protection organisation plan of Keeri-Karijärv, it composed several expert opinions concerning assessment of environmental impacts and a detailed plan, as well as an expert opinion as to the need or the possibility to improve the state of eight lakes of Vooremaa landscape protection area by removing the plant cover. The Society carried out the inventory of the forests suitable to flying squirrels and radio-telemetric surveys of flying squirrels. A number of new habitats of flying squirrels were found and a proposal was made to the Ministry of Environment to take under protection 10 areas as species protection sites for flying squirrel.

The Society continued to develop the databases of observations of nature and its presentation in cooperation with the information network of biological diversity. The public database is a good and interesting study aid to schools and nature centres, which can be used by everyone. The Society continued to monitor the diversity of Estonian biota and landscapes, embracing collection of data on flying squirrels, bats and snails; the national monitoring of water areas, as well as the education and information programme of the UNESCO The International Year of Planet Earth and the filling in the report forms of the European Union Nature Directive. The Society finalised the first stage of the catalogued herbarium of water plants consisting of 3000 pages which is ready for putting up also in Internet. In connection with reforming the Environment Department and the Forestry Act, there was an active cooperation with the Nature Protection Commission of the Academy of Sciences and the Estonian Chamber of Environment Associations.

As of December 31, 2008 the library of Estonian Naturalists' Society had 159 794 printed items. The titles were exchanged in the reporting year with 78 institutions and organisations from 24 countries. During the year the library was visited by 202 persons, the number of visits was 902. The library has 435 registered readers, who borrowed 4066 items, of which borrowing home consisted of 1236 items and those use in place 2830 items.

## GENERAL ASSEMBLIES OF THE SOCIETY

Considered were different topics:

- Alar Läänelaid "Dating of buildings with the help of growth rings.", electing of members of Presidium (January 31).
- Baer Day, speakers Erki Tammiksaar and Ivar Puura (February 28).
- Tõnu Viik "Radioactive radiation around us", discussion of reports for 2007 and approval of working plan for 2008 (March 27).
- Linda Kongo "Karl Eduard von Liphart and Estonian Naturalists' Society", Juta Keevallik "Karl Eduard von Liphart – attribution specialist and collector" (April 24).
- Joint meeting of the Estonian Naturalists' Society and the Nature Protection Commission of the Academy of Sciences "Science and Law in the Forest" on the topic of reform of the Forestry Act: Urmas Tartes "Introduction", Ülo Tamm "The Forestry Act in the Estonia of regained independence", Kalev Jõgiste "Sustainable forest use and eco-systemic economy", Enn Pärt "The tree cutting volumes of the past score of years", Kaili Viilma "Protection of the forest nature", Meelis Teder "Overview on the development of timber trade", Lembit Maamets "Practice of forest economy", Rainer Kuuba "Forestry related legislation and practice", Marku Lamp "Renovations in the Forestry Act" (May 29).
- Joint meeting of the Estonian Naturalists' Society and the Nature Protection Commission of the Academy of Sciences: Leelo Kukk "A couple years of activity of the Nature Protection Centre", Urmas Tartes "On nature protection ideally", discussion on topics of reorganisation of Nature Protection Centre as suggested by Ministry of the Environment (September 25).
- Erast Parmasto "Endless self-reorganisation and postmodernist world", Erich Kukk "The ostensibly new may turn out the forgotten old." (October 30).
- Juhan Telgmaa "The doings of the Estonian Naturalists' Society" (November 27).
- Reports of subunits of the Society about the activity in 2008 (December 18).

#### PUBLICATIONS

In 2008, 12 pieces of printed matter and 1 Internet journal were released by the Estonian Naturalists' Society. Released from print were:

- Estonian Naturalists' Society Year Book Vol. 85. Researches about history of the Estonian natural sciences. 264 pp.
- Folia Cryptogamica Estonica; 44. 160 pp. (jointly with the University of Tartu).
- Protection of the *Triturus cristatus* in Estonia. 36 pp. (The Handbook of a Nature Observer; 99).
- Keerus, K., Keskspaik, R., Vaher, A. (ed.). Key texts of the environmental ethics. 93 pp. (Uexküll Centre jointly with Ethics Centre of the Uni-

versity of Tartu); the text also available at the address  
[http://www.eetika.ee/orb.aw/class=file/action=preview/id=409486/Environmentalleetika\\_v6tmetekste.pdf](http://www.eetika.ee/orb.aw/class=file/action=preview/id=409486/Environmentalleetika_v6tmetekste.pdf)

- Odonata. 64 pp. (Atlas of propagation of Estonian bugs; 3).
- Collection of the 31st Estonian Naturalists' Day "The Planet Earth – Global and Local Problems". 116 pp.
- Resemblances in Nature and Culture: Theoretical and Semiotic Perspectives. 31 pp.
- Saar I, Suija A (eds.). XVII Symposium of the Baltic Mycologists and Lichenologists. Estonia, Saaremaa, Mändjala, September 17-21, 2008. Abstr. 40 pp.
- Laws in Biology. 107 pp. (Schola Biotheoretica; 34).
- 7th Baltic Teriological Conference. 110 pp.
- Grand Theories. 84 pp. (Schola Geologica; 4).
- Action plan for organising the protection of bats for 2005-2009. 64 pp. (Estonian game; 10).
- Action plan for the conservation management of bats 2005-2009. 70 pp. (Estonian game; 10a).
- The Siberian Flying Squirrels and its Protection in Estonia. 80 pp. (Estonian game; 11).
- Internet journal "Friend of Mosses", no. 11, 37 pp.



## **ESTONIAN GEOGRAPHICAL SOCIETY**

Associated with the Estonian Academy of Sciences  
27.01.1998



Founded 1955

Membership: 418 active members, 20 honorary members, 5 foreign members

Address: Kohtu 6, 10130 Tallinn, ESTONIA

President: Jaan-Mati Punning, Tel: +372 619 9833, +372 525 1095,  
punning@tlu.ee

Academic Secretary: Helve Kotli, Tel: +372 645 2744, +372 5591 7186,  
geograafiaselts@gmail.com

In 2008, three sections were active in the composition of Estonian Geographical Society: section of school geography, section of natural geography and section of human geography; Tartu Department and the Youth Club.

In the reporting year the plan of research of the Society featured three problem areas with the following subtopics:

ESTONIAN GEOGRAPHY (supervisor Member of Academy Anto Raukas) with the following subtopics

- Geoecological research in North-Estonia (Hella Kink);
- Morphology and structure of meteorite craters of Estonian Holocene (Reet Tiirmaa);
- Structure and evolution of the coastal zone of lakes Peipsi and Võrtsjärv (Elvi Tavast);
- Glacier originated surface mode of the Peipsi depression (Reet Karukäpp).

HISTORY OF ESTONIA CARTOGRAPHY (supervisor Candidate in Geography Heino Mardiste)

- Map collection of J. von Krusenstern;

HISTORY OF GEOGRAPHY (supervisor PhD in geography Erki Tammiksaar)

- Reception of the continent of Antarctic in the scientific literature of the 19th C. and 20th C.

Released in print were: the 10th part of series of publications of the Society "Muhu monologues. Collection of articles of autumn symposium of young geographers" and the collection in English "Estonia. Geographical studies 10" released on occasion of the 31st International Congress of Geography in cooperation with Institute of Geography of the University of Tartu.

Members of the terminology commission advised those referring to the Society in issues of terminology of geography and toponymics.

6 April – General meeting of the Society. Scientific paper "Meteorological measurements on Arctic drift ice in summer 2007" was delivered by Erko Jakobson.

22 May – The Academy House hosted the joint seminar of the Estonian Geographical Society and the Society of Estonian Regional Studies, dedicated to the 90th anniversary of the Republic of Estonia “Limestone in Tallinn nature and buildings” (Rein Einasto). The scientific papers were followed by a tour in Toompea and Old Town guided by Professor Einasto, to look at specimen of limestone architecture (almost 60 participants).

12–15 August – Tunis hosted the 31st International Geographical Congress, with a group of Estonian leading geographers attending.

17 September – The Societies having associated with the Academy came together to dispute on topic “Where is synergy?” The team elected at the Conference composed a joint address of Societies to Board of the Academy.

Youth Club of the Estonian Geographical Society in co-operation with young geographers from Tartu organised an autumn symposium in October at Abja-Paluoja on a free topic. Sightseeing of the surroundings were presented to the young by a local pedagogue Leida Lepland.

The section of school geography of the Society (Ulvi Urgard) participated, as usual in regular cooperation with Institute of Geography of the University of Tartu and Ministry of Education and Research at solving the scientific-methodical problems of teaching geography, preparation for state examination in geography of the gymnasium and analysing the results of the examination, as well as promotion of the environmental education and self-education of teachers (Lea Koppel, Ulvi Urgard). There were a number of lectures organised to teachers in January and in April, in cooperation with Environment Department the study trips to the Harjumaa preserves. In May there was a study trip to Naissaare (Ulvi Urgard, Urve Timm). The spring days of geography teachers were held on 11–12 April 2008 (Ülle Liiber, Ulvi Urgard). In August, the teachers went on excursion to Åland islands upon organisation of Estonian Union of Biology and Geography Teachers. In August there was a conference of geography teachers at Keila-Joa. The school students were organised a topical day “South America” in November (Sirje Siska).

18–20 April – The final round of the traditional Geographical Olympiad for school students was held, which was in several aspects innovative. The Science Days for the best young geographers and their supervisors organised as a co-event of the Olympiad (AHHAA science theatre) were a big success and made participation at the Olympiad to students and teachers more memorable and diverse. While the students were writing the competition papers, the teachers made themselves familiar with the global positioning system (GPS) (Edgar Sepp Institute of Geography of the University of Tartu).

The Society organised 5 club nights, hearing the recounts of travels and news in the realm of geography. The traditional county excursion of the Youth Club took the participants to on 25–27 January to Pärnumaa. On 19.01–05.02 the

members of the Society were on a hiking trip in the Sultanate of Oman. Of small islands of Estonia, Prangli and Keri were visited. The club of friends of bogs and mires went on 27 April on a hike at the route Jalase village-Tulimurru springs-Abrumetsa Koralliloo-Lipstu moorland-Palamulla bench (Tiit Petersoo). On a trip guided by Vello Joonuks on 9 August, members of the Society looked at Vääna manor complex, nature of the Vääna Landscape Preserve, geography and plants. They went to the reed-bed of Tõlinõmme Lake and bird watching tower. The hike 17 km long ended on Türisalu cliff. On 18 October they went from Märjamaa church through Haimre and Sulu to the Sillaotsa farm-museum, from there to Velise and Valgu (Tiit Petersoo).

The regular summer excursion of the society took in August a busload of geographers to Hiiumaa, where they got a thorough overview of the Hiiumaa nature and people, guided by the active member of the Society Toomas Kokovkin and worker of the Hiiumaa Museum Helgi Põllo, as well as about the history and perspectives of the county. On the third day of the excursion they returned to the mainland and the masterful presentation of the art researcher Jüri Kuuskemaa conjured up before the spiritual eye the picture of the town of Haapsalu through history of Estonia.

As earlier, co-operation was developed with research institutions of the Estonian Academy of Sciences, many other research institutions, organisations and higher schools. Contacts were also maintained with scientists of foreign countries. Representation of the Society in International Geographical Union and in Association of Geographical Societies of the Baltic Region, as well as participation of members of the Society in foreign scientific forums, propagation of publications abroad and visits of foreign scientists to inform themselves as to the work of the Society helped to present the Estonian geographical science also outside Estonia.

## **SOCIETY OF ESTONIAN REGIONAL STUDIES**

Associated with the Estonian Academy of Sciences  
27.01.1998



Founded 1939

Membership: 227

Address: Kohtu 6, 10130 Tallinn, ESTONIA, [ekus@ekus.ee](mailto:ekus@ekus.ee)

Chairman: Andrus Ristkok, Tel: +372 5664 7806

Vice-Chairman: Kalju Idvand, Tel: +372 509 6265

Academic Secretary: Eva Maaring, Tel: +372 644 0475

At the general meeting of the Society on 15 April 2008 in Tallinn, under consideration were the reports of the Board about the activity of the Society in 2007 and the plans for the year having started. After that the general meeting elected the 6-member strong Board for the following 3-year period. On occasion of the 90th anniversary of the Republic of Estonia, Member of Academy Mihkel Veiderma delivered at the general meeting a paper “School teachers in the War for Independence”. As customary, the Board exposed to those present at the annual meeting, the books released by members of the Society in the past year.

Board of the Society held 9 meetings at the reporting year. The Board has developed immediate contacts with membership of the Society (Members are in Tallinn 63, Pärnumaa 47, Viljandimaa 27, Järvamaa 21) and with four divisions of the Society, as well as with local societies of regional studies (in counties, parishes) (in Pärnumaa, Põlvamaa) and clubs (circles etc.). The Society of Regional Studies has working relations with associations and institutions close by topic (Estonian National Heritage Protection Society, Estonian Genealogical Society, Estonian Geographical Society, Estonian Limestone Union, Estonian Centre of Youth Work, and the Association *Kodukant* (Native Corner of the World)).

22 May – The joint seminar of the Society of Regional Studies and Geographical Society at Estonian Academy of Sciences. The seminar was moderated by Member of Academy M. Veiderma. The lecture on topic “Limestone in Tallinn nature and buildings” was delivered and the following study tour was guided by Professor Rein Einasto.

The anniversary of the Republic was celebrated by activists of regional studies everywhere (conferences were held, lectures delivered, exhibitions and excursions organised). The regional studies circle of Tallinn City Museum held on occasion of the anniversary of the Republic a conference on 21 February and on 8 May, another conference to celebrate the 45th anniversary of its activity (the event was supported by Tallinn City Museum). In cooperation

with Estonian Centre of Youth Work, the 40th Estonian regional studies conference of the school youth was held on in Tallinn on 10 October (moderator Ene Luka), attended by 174 young activists of regional studies.

17 September – Chairman of the Society A. Ristkok presented the activity of activists of regional studies at the seminar of Societies associated with the Academy of Sciences “Where is synergy?” Put on display at the literature exposition dedicated to the 70th anniversary of the Academy in National Library (opening of the exposition on 15 October) was also a selection of printed items of the Society. Chairman of the Board A. Ristkok presented the Estonian regional studies movement on 13 February, at Tallinn conference of the societies of regional studies and home-place studies of the Nordic countries (organised by the Estonian Institute of Finland) and on 7–10 August in Finland, at the 60th home-place days organised by Suomen Kotiseutuliitto in Raahe.

An important place in the activity of the Society is held by methodological work. At summer study excursion of the Society titled “Mulgimaa”, held on 9–10 August in Viljandimaa (organisers Kalju Idvand and Marge Liivakivi) Maire Salo presented the cemetery culture in Halliste. At the study trip thoughts were suggested for starting to study local religion impacts. Kalju Idvand visited several parishes delivering lectures on use of archives. Andrus Ristkok was invited to speak, at the study days of village elders organised by the Movement Home-Place, about the role of village elder in the past and now. A. Ristkok also participated at training of six counties. Nõmme Museum presented, within the framework of information days of Harjumaa museums, the history and local lore related activity. Individual reports of members of the Society report about more than half hundred presentations of activists of regional studies at relevant undertakings in their home-place, about 15 presentations of expositions and about organising about ten smaller seminars or conferences in place.

Upon initiative of the Village Working Group of the Society a new manuscript of methods handbook was composed titled “Guide of the activist of regional studies” (composed by K. Laas, editors L. Jaanits, E. Maaring, A. Ristkok and G. Troska). The manuscript of handbook of 16 authors was sent to the publishers *Maalehe Raamat*, however due to scarcity of support moneys, which the Society managed to procure, the publication of the books was put back to 2009.

“Year Book 2007” composed in cooperation of three Societies (The Society of Estonian Regional Studies, Estonian National Heritage Protection Society, Estonian Genealogical Society) was released in print.

In 2008 the activists of regional studies published numerous articles on regional studies in various media issues (local and parish newspapers, net issues of parishes-societies, collections, the press of the Republic and issues abroad, in

the first place in Finland) or even as a separate book. Supported by local self-governments, various institutions and authors themselves, over 40 titles of books and other printed items have been released. The Board of the Society has information about the bibliographic data of at least 130 articles. The members of the Society have also informed about completion of ca. 60 researches executed as manuscript. The list of new printed items, which the Board has been informed of is available at website of the Society of the Regional Studies: [www.ekus.ee](http://www.ekus.ee).

## **ESTONIAN MOTHER TONGUE SOCIETY**

Associated with the Estonian Academy of Sciences  
4.02.1998



Founded 1920

Membership: 335 active members, 6 honorary members

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Chairman: Helle Metslang, Tel: +372 522 5074

Academic Secretary: Annika Hussar, Tel: +372 644 9331

Librarian: Helju Kaal, Tel: +372 644 9331

In 2008 the Estonian Mother Tongue Society organised 3 conferences, 8 meetings with scientific papers, 10 language days abroad.

Outside Estonia, the Society organised together with Ministry of Education and Research and the local Estonian societies the Language Days in Hague, St. Petersburg, Vilnius, Toronto, Petseri, Minsk, Hamburg, Moscow and Oulu. Topics of papers were widely different, in what was said, the propositions and expectations of local Estonian community was taken into account. The topics included reviews of Estonian language policy, mastering Estonian, new angles of view in linguistics, the participants deliberated about the new orthological dictionary and the present first name use and the code of politeness of Estonians; they spoke about the opportunities to learn Estonian abroad, about the dictionary work. At foreign language days, altogether 40 papers were delivered.

The Estonian Mother Tongue Society was one of the organisers, beside Institute of the Estonian Language, Ministry of Education and Research, Language Inspection, Väike-Maarja Gymnasium and Väike-Maarja Parish Government, of international conference dedicated to 20th anniversary of institution of Ferdinand Johann Wiedemann Language Prize. Conference was held on 16–17 April at Väike-Maarja. The history of creation of the Language Prize was recollected, less known aspects of Wiedemann's life and activity were touched upon and the situation of other state languages (German, Swedish, Latvian, Hungarian, and Finnish) in their homeland was spoken of. The papers of the conference were issued in the collection "Mother tongue Estonia, mother tongue Europe".

On 27 June the traditional J. V. Veski language conference was held in Tartu. The topic of the XLI Veski Day was related to the anniversary year of the Republic of Estonia and it was "Role of Estonian at the beginning years of the Republic". Six papers were in the programme from representatives of different domains of science. The opening paper "Language laws of 1934 and

1995: the common and the divergent” was authored by Tõnu Tender and Andres Hallmägi. Ott Kurs presented in his paper “Development of geographical terminology in the 1920s” the development of terminology through the eye of a geographer. Jakob Kübarsepp spoke on the topic “Estonian as study and science language in engineering education” in the light of history of Tallinn University of Technology. The topic of Reet Kasik’s paper was “Estonian and linguistics at the University of Tartu in 1919–1940”. Riho Saard spoke about development of Estonian in church and the topic of the paper was “Estonianisation of Lutheran church”. Tiit Hennoste provided an overview on language life in press and the topic of his paper was “The coming of independence: The Estonian press and its language at incipience of the Republic of Estonia”.

The traditional students’ conference, with which the Society also celebrated the Day of European Languages, was held on 3 October in the University of Tartu. Students of bachelor and master studies of Tallinn, Tartu and Tampere universities and gymnasium students spoke about their language research works, and delivered altogether 12 papers.

At the annual meeting of the Mother Tongue Society on 27 March 2008 the academic paper on topic “The kindred Livonian language” was delivered by Vice-Chairman of Board of the Society, Professor Karl Pajusalu. The report of the 88th (2007) year of activity of the Society was presented by Scientific Secretary Annika Hussar. Upon proposition of the Board, Peeter Päll was elected to continue as the elder of the language working group.

At the meetings with presentation of papers, 20 papers were delivered. The year of 2008 was started with two jubilee meetings. On 9 January the 80th anniversary of Professor Emeritus Huno Rätsep was celebrated, papers were delivered by Lembit Vaba (“Three eventual Baltisms: on what depends the credibility of etymology?”), Udo Uibo (“Etymology of the word *simman*”), Tiit-Rein Viitso (“*Tsuhh-tsuhh*”). On 4 March, Professor Emeritus Tiit-Rein Viitso was congratulated. There were three papers: Karl Pajusalu “Tiit-Rein Viitso’s thousand languages”, Valts Ernštreits’ “Tiit-Rein Viitso and formation of the Livonian literary language”, Tiit-Rein Viitso “Linguistics as the path of trial and error”. On 10 April, under consideration were linguistic biographies and communication networks, speaking were Anna Verschik, Kristiina Praakli and Mari Mets. Speaking at the meeting on 16 May were Ene Vainik, Hille Pajupuu, Rene Altrov and Anni Oja on the topic “Language and emotions”. At the first autumn meeting Eva Liina Asu delivered a paper on Estonian sentence intonation and Tuuli Tuisk on Livonian interruption tone; two books were presented: T.-R. Viitso “Livonian and Fenno-Baltic language landscapes” and I. Lehiste, P. Teras, V. Ernštreits, P. Lippus, K. Pajusalu, T. Tuisk and T.-R. Viitso “Livonian Prosody”. On 10 October the newest issue of the Estonian Mother Tongue Society was presented: the collection compiled by Mari Must, Eevi Ross and Helju Kaal “In the ancient Mulgimaa”. The book was presented by Eevi Ross, the doings of inhabitants of



Mulgimaa were spoken about by Alli Laande. At the last meeting on 27 November the topic was acquisition of the first language and authors of the papers were Reili Argus, Sirli Parm, Maigi Vija, Reeli Torn-Leesik and Renate Pajusalu.

In 2008, upon initiative of member of Board Annika Kilgi, the Internet based word collection competition was held, for the first time directed at school youth. The goal was to collect new vocabulary, adopted by youth, which is not to be found in the dictionaries, to invigorate the language activity of the youth by new means and to raise interest in Estonian. The festive completion of the word collection competition held from 1 February to 15 May took place at the University of Tartu and the best collectors and their mother tongue teachers were invited to attend. Speaking to the youth were Anni Oja, Annika Kilgi and Huno Rätsep. Katriin Vesik and Jaan Erik Kiissel spoke about their language collecting experiences.

The language working group of the Society held four meetings in 2008 and adopted three decisions (on use of the words of Japanese origin in Estonian text; Internet and internet; changes in Estonian-Russian letter table). Under discussion was the morphology-related decision, the recommendation on execution of Arabic words and correction of the Ukrainian-Estonian letter table. Working group recommended to set up directly at the Estonian Mother Tongue Society or the Estonian National Broadcasting Company, the pronunciation working group, who would be engaged in elaborating the recommendations concerning the pronunciation of Estonian.

Published in 2008:

- The Estonian Mother Tongue Society Year Book 53 (2007). Editor in chief Mati Ereht, editor Tiiu Ereht. Estonian Academy of Sciences. The Estonian Mother Tongue Society. Tallinn 2008. 272 pp.;
- Ennemustitsel Mulgimaal. Valimik korrespondentide murdetekste VII. Editors Helju Kaal, Mari Must ja Eevi Ross. Estonian Academy of Sciences. The Estonian Mother Tongue Society. Tallinn 2008. 340 pp.;
- Language magazine Oma Keel no. 1, 78 pp.;
- Language magazine Oma Keel no. 2, 95 pp.

The library of the Estonian Mother Tongue Society was replenished in 2008 by 159 items of printed matter, obtained by exchange, donation and purchase. The library keeps on record 6 059 inventory items of printed matter.

## **ESTONIAN UNION OF THE HISTORY AND PHILOSOPHY OF SCIENCE**

Associated with the Estonian Academy of Sciences

4.02.1998

Founded 1967

Membership: 72 active members,  
7 honorary members (of whom 4 outside Estonia)  
9 corporate members

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<http://www.baer.emu.ee>

Chairman: Jaak Aaviksoo, Tel: +372 717 0010

Academic Secretary: Erki Tammiksaar, Tel: +372 742 1514

Estonian Union of the History and Philosophy of Science divides into Tallinn and Tartu branches. It is member of Baltic Association of the History and Philosophy of Science and member of International Union of the History and Philosophy of Science, of which one embraces the history of science and technology and the other the logic, methodology and philosophy of science.

In 2008, the Board of the Union met once, and the general meeting was held on 23 May. The meeting of the Board decided to involve in the Board Peeter Mürsepp of Tallinn University of Technology. The general meeting approved the activities report for 2007 and the working plan for 2008. Like in the earlier years, the most important scientific project of the Union was compiling of the Biographical Lexicon of the Estonian Science.

In the reporting year, the editorial board of the Lexicon approved the biographies of the 3rd volume for print (altogether 1 943 biographies). The Union has started seeking opportunities for publishing the 3rd volume of the Lexicon.

The highlight event of the reporting year was active participation of members of the Union with papers at XXIII Conference of Historians of Science of the Baltic on 9–10 October in Riga. At the same time, meeting of the Baltic Association of the History and Philosophy of Science was held, agreeing with the proposition of Department of Philosophy of Tallinn University of Technology and Board of the Union to organise XXIV Conference of Science Philosophers and Science Historians of the Baltic in October 2010 at Tallinn University of Technology. Elected Chairman of the Baltic Association of the History and Philosophy of Science became Jaak Aaviksoo, Chairman of the Union, and members of the Baltic Association of the History and Philosophy of Science – representatives of Estonia – Ken Kalling, Peeter Mürsepp, Erki Tammiksaar and Rein Vihalemm.

In 2008, the Tartu branch of the Union continued monthly meetings with the Academic Baltic German Cultural Society in Tartu including presentation of

scientific papers. Altogether, 9 such meetings were held: in January, Sirje Kivimäe delivered a paper on the topic “Keyserlings as tillers of land”; in February, Milvi Hirvlaane’s survey on the topic “Roths in Estonian history of culture” was listened to; in March, Tõnu Viik spoke on the topic “Carl Friedrich Tenner – founder of Russian geodesy”; in April, Lea Leppik performed “Germans in Estonian University (1919–1939). Who they were and whence they came?”; in May, those interested listened to the paper of a researcher of Humboldt Research Centre of the Berlin-Brandenburg Academy of Sciences, Petra Gentz-Werner, “What Darwin never got (in connection with Alexander von Humboldt and Christian Gottfried Ehrenberg)”; in September, Meelis Friedenthal delivered the paper “Opportunities of research of medieval manuscript on the example of Tallinn City Archive “*Tractatus moralis de oculo*””; in October, Õie Utter performed “Löwenwolds’ century in Rāpina”, in November, Erki Tammiksaar’s report was “Baron Eduard Toll – the polar hero as a result of erroneous decisions?”. In December, Pärtel Piirimäe concluded the season by “Scientific thought in the early modern time Baltic: the situation of research and its perspectives”.

At the meeting of the Tallinn branch of the Union, an account was presented of the decisions of the annual meeting held in Tartu.

## **ESTONIAN LEARNED SOCIETY IN SWEDEN**

Associated with the Estonian Academy of Sciences

19.03.1999

Founded 1945

Membership: 87 active members and 4 honorary members

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Southern Swedish Department: c/o I. Martinson, Blåmesvägan 40,  
24735 Södra Sandby, SWEDEN

Chairman: Ants Anderson, Tel +46 8 913833,  
ene-ants.anderson@globalnet.net

Secretary: Diana Krull, Tel +46 8 162852, diana.krull@ling.su.se

Chairman of Southern Swedish Department: Paavo Roos, Tel +46 42 260334

Secretary: Indrek Martinson, Tel +46 46 57308, indrek.martinson@fysik.lu.se

The Estonian Learned Society in Sweden incorporates the Estonian scientists in Sweden and is a forum, where they can present their works in Estonian.

In the reporting year, the Society held its annual meeting and six meetings with papers at the Estonian House in Stockholm. One of the meetings was organized in collaboration with the Estonian Embassy and the League of Estonians in Sweden and was held at the Embassy. There was also a study tour in the Old Town of Stockholm.

The meetings dealt with various topics: "The Universities at Tartu since 375 yrs and in Tallinn since 3 yrs – do they together constitute an Estonian University?" (Mats Estonius), "The balance between the human body and the bacteria" (Katrin Pütsep), "Alfred Nobel and his Prizes" (Indrek Martinson), "The Hebrew language in past and present" (Diana Krull), "Is Artificial Intelligence superior to human brains?" (Indrek Aunver), "A 21st century expedition into the world of microbes" (Nora Ausmees), "The Russian-speaking population as part of the Estonian society" (Marju Lauristin).

On the 30th of November the 89th anniversary of the Estonian University of Tartu was celebrated. A scientific paper was delivered by Professor Peep Algvere on the topic "Macular degeneration – an eye disease or simply a change due to old age?" The Stockholm Estonian Mixed Choir performed.

In February the books and other printed matter, belonging to the Society, were catalogued and gathered into a box-room in the cellar of the Estonian House, shared with The Institute of Estonian Language and Literature (Paul Laan).

At the annual meeting of the Southern Swedish Department of the Society on 17 February two papers were delivered: Fil.lic. Ants Michael Uesson "History of medical science at the University of Tartu"; Doctoral student Kristiina Savin "Trials and tribulations in the early Modern Era and presently".

On 25 May Doctoral student Kristian Nilsson delivered a paper “The uproar around the Bronze Soldier – the mass disturbance taking place in April 2007 and its background”

On 12 October the scientific paper by PhD Katrin Hiietamm “Is there in Estonian a definite article?” was heard.

At the anniversary public meeting of the University of Tartu on 30 November Doctoral student Siiri Tomingas-Joandi spoke on the topic “The myths of the substituted child in the folklore of the Nordic countries. Why did the nymphs substitute the children?” and the Foreign Member of Academy Indrek Martinson spoke on the topic “The Estonian Academy of Sciences 70”.

## **ESTONIAN LITERARY SOCIETY**

Associated to the Estonian Scientific Academy

January 23, 2001

Founded in 1907

Members: 287 members (incl. 35 life-time, 16 honorary and 21 regional representatives)

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<http://www.kirjandus.ee>

Chairman: Toomas Liivamägi, Tel: + 372 515 3274, [toomas.liivamagi@ut.ee](mailto:toomas.liivamagi@ut.ee)

Academic Secretary: Marja Unt, Tel: + 372 742 7079, [eks@kirjandus.ee](mailto:eks@kirjandus.ee)

Tallinn representative: Kristel Kiigemägi, Tel: +372 56 644 243,  
[kristelkiigemagi@gmail.com](mailto:kristelkiigemagi@gmail.com)

For the Estonian Literary Society (EKS/ELS) 2008 was in many respects a year of preserving tradition and stability but at the same time also a year of finding new initiatives and opportunities of cooperation. During that year several extensive long-term actions were planned.

The beginning of the year was strongly influenced by the follow-up of the 100th jubilee celebrated at the end of the previous year as during the first half year presenting of the mobile 100th anniversary exhibition EKS/ELS-100 went on in Estonian libraries and museums. In Tartu a play by Peeter Olesk dedicated to the society *Kaks pingil, kolm ümber* (Two on a bench, three standing) and written especially for the occasion in autumn 2007 was performed in various places.

On March 26 the traditional annual meeting of EKS took place where Estonian prose, poetry, translations and comic books published in 2007 were discussed and at the same time the 100th anniversary of the first meeting of the kind was celebrated.

In the middle of April a literary festival SOTSIA took place in Tallinn which concentrated mostly on presenting literary works with the purpose of popularising literature, reading texts to the public from the stage introducing the authors of the texts. As in the earlier years literary contacts were important for the society, also creating a common field of understanding between different cultures. At the festival both Estonian writers, Russian writers living and writing in Estonia and visitors from Georgia and Karelia presented their work. Within the festival's framework literary meeting, poetic performance and a concert took place.

At the beginning of May the traditional Tartu literary festival *Prima Vista* took place extending its activities also to Pärnu. The main organizer of the festival is a non-profit society *Prima Vista* but the Estonian Literary Society, the Estonian Writers' Union, the Tartu University Library, and the Oskar Luts

Town Library participated. The 2008 festival had two main themes: libraries and translating. The festival's slogan *Loeb, mida loed!* (Choose what you read) was meant to turn people's attention to quality literature and to choose carefully what to read.

In June in cooperation with the Chairs of Literature and Theatre Studies of the University of Tartu a spring school of literature students was organized where the students, of Estonian literature presented their reports on problems of both literary history and criticism.

Towards the end of August a conference *Juhan Viiding, eesti luuletaja* (Juhan Viiding, an Estonian author) took place in the conference halls of the Tartu University Library and the Tartu Home of Literature. All in all 13 reports were presented offering an overview of nuances of Viiding's poetry, of the reception of his work, various backgrounds, of his becoming a poet and factors that have influenced his creative manner. The conference was organized in close cooperation between the Tartu section of the Estonian Writers' Union, Estonian Literary Museum, and the Tartu University Library.

During the year two seminars in the series of *Nihkuv vaatepunkt* (Shifting Viewpoint) took place. Within the framework of the series the essential works of the newest Estonian literature are discussed from various aspects by the representatives of different fields of knowledge. In the first seminar Ene Mihkelson's novel *Katkuhaud* (Grave for the Plague) was discussed, in the second Indrek Hargla's novels *French ja Koulu* (French and Koulu) and *French ja Koulu Tarbatu* (French and Koulu in Tarbatu) were spoken about.

The Tallinn section of EKS organized traditional seminars of criticism, seminars of children's literature and poetry events from the series of *Umbluule*. In organizing the seminars the section cooperated with the Central Library of Tallinn and the Centre of Estonian Children's Literature.

EKS published two books on 2008:

- Paul Ariste *Mälestusi* (Reminiscences) (362p)
- Eesti Kirjanduse Seltsi aastaraamat nr 32 (2006)/Ain Kaalep 80. Konverentsikogumik (Year-book of the Estonian Literary Society No 32 (2006)/ Ain Kaalep 80. Dedication conference (188 p)

## **ESTONIAN LEARNED SOCIETY**

Associated with the Estonian Academy of Sciences  
23.01.2001



Founded 1838

Membership: 99 active members, 15 honorary members

Address: Lossi 3, 51003 Tartu, ESTONIA

<http://www.ut.ee/OES>

Chairman: Heiki Valk, Tel: +372 737 5653, [heiki.valk@ut.ee](mailto:heiki.valk@ut.ee)

Vice-Chairpersons: Tiit Rosenberg, Tel: +372 737 5650, [tiit.rosenberg@ut.ee](mailto:tiit.rosenberg@ut.ee),

Marju Luts-Sootak, Tel: +372 737 5936, [marju.luts-sootak@ut.ee](mailto:marju.luts-sootak@ut.ee)

The Estonian Learned Society is a scientific society operating at the University of Tartu bringing together representatives of sciences related to Estonia. The goal of the Society is to present and mediate to the public the newest results of research and also to provide opportunities to get experience in academic presentation for the younger scientists.

In 2008, 13 working meetings were held and two conferences, one of them international, altogether 418 participants. 36 papers were delivered, by topics: archaeology 16, history and history of culture 15, geography 2, history of law 1, linguistics 1, and history of literature 1. The attendance was at its highest at T. Rosenberg's paper "Activity of working groups of history and regional studies of the Estonian Literary Society in 1908–1940" (38 people) and H. Mardiste's paper "Classifying and distorting of maps in the Soviet Union after the example of maps of the ESSR" (33 people).

In 2008, the Estonian Learned Society Year Books of 2006 and 2007 appeared in new hard cover edition. The Society established the stipend to the best article published in Year Book or Proceedings (see Statute on website of the Society). The first stipend (2500 kroon) was assigned to Ott Kurs for articles published in the Society Year Books in 2001–2007.

The Society carried out archaeological excavations in ruins of Cathedral of Tartu, where the most outstanding finding was the supposedly Bishop's tombstone, also on the Alt-Laari settlement place, where the oldest in South Estonia, presumably the Bronze Age agricultural non-fortified settlement was discovered. In cooperation with the town of Viljandi research was carried out in Viljandi Order Castle. Archaeological monuments were inspected in Kose and Saarde parishes.



## **ESTONIAN MUSICOLOGICAL SOCIETY**

Associated with the Estonian Academy of Sciences

21.06.2004

Founded 1992

Membership: 59 active members, (of whom 5 outside Estonia),  
1 honorary member

Address: Rävälä pst. 16, 10143 Tallinn, ESTONIA, emts@hot.ee

<http://www.muusikateadus.ee>

Chairman: Toomas Siitan, Tel: +372 529 9117, tsiitan@estpak.ee

Estonian Musicological Society brings together people entertaining the interest to scientific or scholarly study of music and supports research in all fields of musicology in Estonia.

The highlight event of the reporting year, in the organisation of which the Society participated was the international scientific conference “Musical life in the 19th century: structures and processes” on 10–12 October in Tallinn. 28 researchers from seven European countries delivered papers.

In cooperation with Department of Musicology of Estonian Academy of Music and Theatre, the Society prepared publication of the musicological yearbook. The name of that scientific peer-reviewed series with international editorial board was selected by a public name contest; selected was “Res Musica”. The Society also completed the editing of the first issue of the yearbook.

Every year the Society organises two meetings with papers, in spring in Tartu and in autumn in Tallinn. On Tartu Day, April 12 seven papers were delivered (Tiina Kalda – University of Sussex, Anu Sõõro – Universität Freiburg, Kristi Viiding – Institute of Germanic, Romance and Slavonic Languages and Literatures of the University of Tartu, Sven Lepa – Institute of History and Archaeology of the University of Tartu, Konstantin Tretjakov – Institute of Computer Science of the University of Tartu, Aleksandra Dolgoplova – Estonian Academy of Music and Theatre (EAMT), Anna Dõõtõna – EAMT). The autumn Leichter Day in Tallinn on 24 November associated the regular annual meeting of the Society with lecture of Professor of EAMT Mart Humal “The voice-leading matrix as an archetype of tonal counterpoint”.

The Society also participated at the event held upon initiative of the European Commission “Researcher’s night 2008” with a lecture-concert, the topic of which was music at the University of Tartu in the years 1802–1918. The night was led by Member of Academy Jaan Ross and doctoral student of Estonian Academy of Music and Theatre Geiu Rohtla. The audience listened to musical works created by musicians associated with the University of Tartu in 19th C. in performance of musicians of “Vanemuine”.

It is also a tradition with the Society to organize cultural history hike at the beginning of September. In 2008 the members of the Society visited the islands Muhu and Saaremaa.

## **ESTONIAN PHYSICAL SOCIETY**

Associated with the Estonian Academy of Sciences  
14.06.2005



Founded 1989

Membership: 195 active members, 4 honorary members

Address: Tähe 4, 51010 Tartu, ESTONIA, [efs@fi.tartu.ee](mailto:efs@fi.tartu.ee)

<http://www.fyysika.ee/efs>

Chairman: Kaido Reivelt, Tel: +372 737 4623, [kaidor@fi.tartu.ee](mailto:kaidor@fi.tartu.ee)

Traditional Estonian Physics Days were held in the reporting year on 18 and 19 March in Tartu with over 130 people in attendance. The Physics Days were organised by Kaido Reivelt, Ilmar Kink, Jaak Jõgi and Aigar Vaigu. Within the framework of the Physics Days, on March 18 the general Meeting of the Society was held, approving the activities report and the financial report of Board of the Society. The working day was concluded by the traditional Society evening at the same place in Rehe motel.

On the Physics Days, the annual prize of the Society was issued to the collective of the company Laser Diagnostic Instruments for outstanding applied development work, which “has resulted in creation of high technology devices important for Estonia and has helped improve the representation of the public about the essence and necessity of science based development”. The letter of merit of the Society was awarded to Kalev Tarkpea for popularising physics. The school student prize of the Society was granted to Kaarel Mäearu for the work “Methods of measuring the static hardness”, which was completed under supervision of teacher of Tallinn secondary science school Mart Kuurme.

The yearbook of the Society 2008 came out (editors Anna Aret, Helle Kaasik and Piret Kuusk). The [seltsid.efs@lists.ut.ee](mailto:seltsid.efs@lists.ut.ee) list of the Estonian Physical Society is administered by Jaak Jõgi and the Society’s homepage ([www.fyysika.ee/efs](http://www.fyysika.ee/efs)) is edited by Kaido Reivelt.

At the 52nd Physics Olympiad of Estonian School Youth held in March the Society granted a special prize (annual subscription of the magazine “Scientific American”) to Taavi Pungas of Tallinn secondary science school.

There continued translation and editing of the base handbook of physics for the higher schools in Estonian (D. Halliday, R. Resnick, J. Walker “Fundamentals of Physics”). Translation of the book by J. Walker “Flying Circus of Physics” was started.

There continued the events of the Society popularising physics. Upon initiative of Taavi Adamberg, Science Bus Big Dipper carried on its work, so did the development of the physics portal ([www.fyysika.ee](http://www.fyysika.ee)) and as a result of an effort of almost sixty present and future physicists, there were organised the successive Family Days “Täpe” (Fleck) 2008. Besides the above, the Society

participated at various fairs and events – at the events of the fairs Intellektika (Intellect) and Teeviit (Road guide), at events of the Researchers' Night.

As new undertakings, video classes at Kihnu school were carried out (teacher Enn Õpik, technical support Taavi Adamberg and Andres Juur) and for pupils of the 5–6th form, there was organised a science camp in cooperation with Science School of the University of Tartu on 27–30 October (project leader Andres Juur).

There was the successive summer school of teachers of physics of the Society held in Türi on 25–27 June on the basis of the local college. The load of organising of the event was shouldered by the board of division of teachers of physics of the Society and it took place under the aegis of Open University of the University of Tartu. Speaking were researchers of the University of Tartu and Tallinn University of Technology; a long study tour was made to East-Viirumaa. The summer school was attended by 25 teachers.

During the whole year there were preparations for creating of the web-based, continually replenished English-Estonian-English dictionary of physics; terminological working group of physics was set up for editing and complementing the contents of the dictionary. That activity took place in cooperation with the Institute of the Estonian Language and Department of General Linguistics of the University of Tartu.

Upon initiative of young physicists of the Society, there were two schools of physics for the young held in the reporting year (see also <http://www.fysika.ee/kool/>). On 20–22 June Nelijärve Rest Centre hosted the sixth summer school of the Society for exact sciences, with 68 students from the University of Tartu and Tallinn University of Technology attending. 18 hours of lectures and seminars were heard, and a students' session with posters and speeches was held. Organizers were Maarja Grossberg, Andi Hektor, Ahto Kuusk and Kaido Reivelt. On 31 October – 2 November Kääriku hosted the autumn school of the Society for exact sciences, the 10th in succession, with 88 students, researchers and faculty members attending. Over 25 hours of lectures and seminars were heard, because for the first time the work was carried out simultaneously in two study halls. Considered among the topics were nano- and space technologies, quant-cryptography and nuclear energy. Organisers were Maarja Grossberg, Andi Hektor, Ahto Kuusk, Rünno Lõhmus, Taavi Adamberg, Heli Kuuseorg, Kaido Reivelt, Tanel Ainla, Aigar Vaigu.

The Estonian Physical Society is continuously member of the European Physical Society.

The undertakings of the Society were supported in the reporting year by Institute of Physics of the University of Tartu, Estonian Academy of Sciences, Ministry of Education and Research, Tiger Leap Foundation, Council of the

Gambling Tax, the University of Tartu and Tallinn University of Technology, Institute of Chemical and Biological Physics, Tartu Observatory, Institute of the Estonian Language, AS Eesti Energia, Foundation Tallinn Engineering and Research Centre, NGO Cinema Bus, Foundation Archimedes.

## **ESTONIAN ASSOCIATION OF ENGINEERS**

Associated with  
Estonian Academy of Sciences  
23. 09. 2008



Founded 1921 Estonian Union of Engineers  
Re-founded 10.12.1988 Estonian Association of Engineers  
Membership: 12 members-legal entities, incl. 1236 individual members  
Address: Liivalaia 9, 10118 Tallinn, ESTONIA  
<http://www.insener.ee>  
President: Arvi Hamburg, Tel: +372 630 3130, +372 516 2026  
[inseneronlooja@hot.ee](mailto:inseneronlooja@hot.ee), [arvi.hamburg@gaas.ee](mailto:arvi.hamburg@gaas.ee)

Estonian Association of Engineers is a creative association of engineers, acting in public interests, not for profit. Estonian Association of Engineers is an umbrella organisation, whose members are associations of engineers and trainers of engineers in different domains.

MISSION – merging of the engineering culture into a common cultural space, promotion of engineering sciences and innovation and respective education policy; VISION: knowledge- and innovation-based society.

Goals of activity:

- Creation of a corps of professional engineers, educated, with skills and experience;
- Transformation of Estonian Association of Engineers into a centre of engineering competence, having a significant role in the state national innovation system;
- Contribution to creation of knowledge-based economy in the state of Estonia, where society would value knowledge.

Directions of activity:

- Integrated process, linking of R&D&I with entrepreneurship;
- Creation of a corps of professional engineers;
- Increasing of engineering creativity, competence, cooperation and openness;
- Creating higher value-added by science-intensive economy;
- Storage of engineering culture as a cultural heritage.

The brake put on development of Estonia is the scarcity of the most valuable resource – people with skills. The share of students admitted in the engineering domain has dropped in the past 13 years from 23% to 13%, out of graduates of higher school 9.9% majored in engineering areas. The number of young people in the university age (16–25) will decrease twice by 2020.

Estonia has a number of state strategies and development programmes, however innovation is modest and the created value-added is scanty. “When living in the world, which is impetuously formed by technology, the opportunity to remain truly independent is enjoyed only by the nations, who have mastered and create technology, by the states where engineering education is respected” (Raimund Ubar, *Mente et Manu*, 26 September 2008).

Estonian Association of Engineers has been full member of European Federation of Engineering National Associations (FEANI – Fédération Européenne d’Associations Nationales d’Ingénieurs) since 1996. In Estonia, 32 engineers have fulfilled the respective demands of the Euroengineer and the Association has been recorded in FEANI register.

Members of the Estonian Association of Engineers cooperate with public sector (being experts of many state strategies) and with the third sector, mission organisations (Estonian Club). In cooperation with the Foundation Professional Chamber, the Estonian Association of Engineers will have to change the whole system of professional standards of engineers from the present 5-stage to 8-stage system.

IN 2008

Estonian Association of Engineers continued fulfilling the 2nd stage of the engineering education and culture information programme “Engineer is Creator” (2007–2010) initiated by the Association in 2007, doing that in cooperation with public sector, business and third sector, incl. school students’ and university students’ organisations. The 2nd stage of the project was co-funded by Ministry of Economic Affairs and Communication. The vision of the programme is biasing the attitudes of the society towards attaching value to engineering; the goal – uniting all interested parties for propagation of engineering education and attaching value to engineer work and clarification of priority of the role of production and manufacturing industry in the society, at creation the value-added. The primary goal is making the profession of engineer more attractive to the school students, their parents and teachers, thereby changing the attitudes of the school students when choosing profession.

Criteria of success of the project: rise of share of the engineering domain of graduates of the higher school to 15% (in 06/07 academic year it was 9.9%); Increase of state training order in higher schools in engineering specialities to 25%, in engineering schools to 30% (in 06/07 – 21%); growth of R&D investments to 3% of GDP (in 2007 – 1.05%); primary choice of school students at engineering direction will increase to 18%; 250 engineering teachers of comprehensive schools will pass in-service training; the number of attested professional engineers will increase fivefold (in 2007 – 274). The level-training paid by employer will be exempted from special benefit tax.

Performed at the 2nd stage of the programme:

- Integral terms of reference together with offer of executors for performance of monitoring of choice of profession and engineer's satisfaction.
- The curriculum of innovation course composed to school students of final forms of gymnasium and students of the 1st stage of the higher school.
- Consolidated prospectus of trainers of engineers composed and distributed ([www.insener.ee](http://www.insener.ee)).
- The 1st annual conference of engineers held (papers: [www.insener.ee](http://www.insener.ee)).
- The 1st part of the special-interest (magnet) class handbooks of physics composed ([www.insener.ee](http://www.insener.ee)).

In 2008, three round-table discussions and two conferences were organised: round table "Engineering education" in cooperation with Ministry of Education and Research (10.06); round table "Researcher & Innovator & Entrepreneur" in cooperation with the Estonian Academy of Sciences (30.04); round table "Professional associations of engineers and organisations in domains of entrepreneurs" in cooperation with the Estonian Academy of Sciences (16.10); the 1st annual conference of engineers in cooperation with Innovation Centre InnoEurope (11–12.11); Conference EIL-20 "Engineer and innovation" in cooperation with the Estonian Academy of Sciences and Tallinn University of Technology (10.12).

The Association participated at fairs: Intellektika (15–16.02, Tartu); Teeviit (4–6.12, Tallinn); Technology Fair (06–10.10, Tallinn); Week of entrepreneurship together with Tallinn City Government and Tallinn University of Technology (06–10.10); Robotex, Tallinn University of Technology (November).

The Association participated at county Engineering Days in cooperation with Tallinn University of Technology in Tartumaa, Virumaa and Pärnumaa.

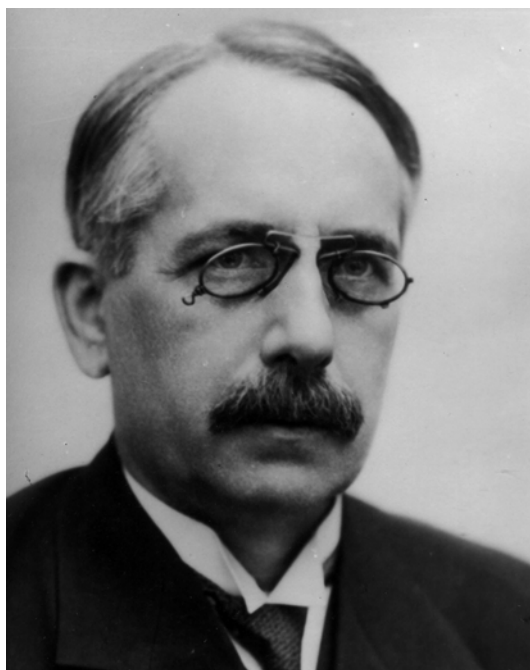
The magazine of engineering and production *Inseneeria* comes out regularly 10 times per year at monetary support of Enterprise Estonia.

Estonia has engineering competence, the task of the Association is to find it, stimulate and mobilise it.



## REMEMBRANCE

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To the 125th anniversary of Member of Academy *Gustav Suits*

Gustav Suits was born on November 30 in Võnnu Parish in the southern part of Tartu County to a school teachers' family of a generations-long teaching tradition. In 1896–1904 he studied at the Alexander Gymnasium of Tartu, graduating from it with a gold medal. In the same year G. Suits continued his studies at the Department of History and Linguistics of the University of Tartu, in January 1905 he moved to the Helsinki University. He elected as his major subjects the general history of literature and aesthetics, the Finnish language and literature and folklore. Besides German, Russian and Finnish, which G. Suits had mastered already prior to the University, he studied Norwegian, Danish and Swedish. As a young student he managed to share his time and energy between studies and creative activities, editing of literary publications and involvement in Finnish as well as Estonian cultural life. G. Suits graduated from the Helsinki University in 1910 with the Cand. Philos. Degree. After completing his studies he remained living in Helsinki and worked during 1911–1917 as a temporary workforce at the University library, a teacher of Finnish and Swedish at the Russian Gymnasium and as a

journalist. In 1914 G. Suits stayed in Paris as a Helsinki University scholarship holder.

In 1917–1919 G. Suits participated in political life of Estonia as member of the party of socialist-revolutionaries, formulating the idea of the “Estonian Workers Republic” and compiled the message under the same title. In 1918 he was head of information bureau of foreign delegation of the Republic of Estonia in Stockholm. In 1919–1920 G. Suits studied in Helsinki for the university lecturer’s profession, as a University of Tartu scholarship holder and in 1921 proceeded his work in Estonia as acting Professor in General Literature at the university. In 1920–1930s he frequently went on scholarly trips abroad to Finland, Norway, Paris, Germany, Holland, Sweden and Moscow. In 1924 G. Suits became Professor Extraordinary. In 1931 he was elected the first Professor Ordinary in the area of Estonian literature and was in that position until emigrating in 1944.

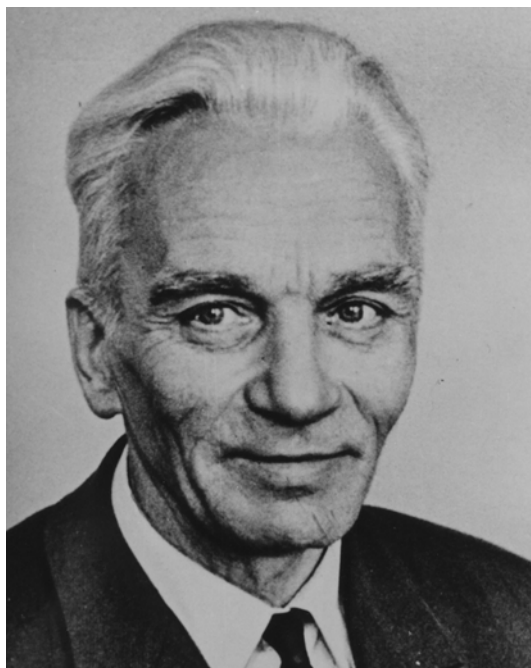
G. Suits joined the literary community in 1889, publishing notices, critical essays, presentations of books, etc. in the newspaper “Uus Aeg”. At the beginning of his creative path G. Suits tried out several genres – poetry, prose and drama. Under his editing, literary notebooks of school students “Kiired” I-III (1901–1902) were published. Since 1903 G. Suits wrote poetry under the name of Kustas Vahur, publicizing his verses in the family paper “Linda” and in an annex to “Postimees”. He was one of the leaders of the literary group “Noor-Eesti”, the editor of its albums and magazine (1905–1915). As a poet G. Suits was the first modernist of Estonia, who had a good knowledge of the Finnish literature and learned much from Eino Leino. G. Suits’ virgin volume “Elu tuli” (1905) brought for the first time powerful symbols to the Estonian language of poetry. In the student days there appeared, in addition a book of essays “Sihid ja vaated” (1906) and a review of Estonian history of literature in the review volume in German “Die Kultur der Gegenwart” (Berlin, 1908). G. Suits’ essays were from the very start of international embrace, he maintained correspondence with the important literary authority of the time Georg Brandes, he was influenced by Nietzsche’s ideas and aspired to achieve harmonization of national and European cultures in Estonian literature. His later books of poetry “Tuulemaa” (1913) and “Kõik on kokku unenägu” (1922) were affected by Scandinavian, Russian, German and French intensively impressionistic and symbolic poetry and brought deeper philosophical meaning and higher culture of form into Estonian poetry. At the beginning of 1920 G. Suits participated in editing of the radical cultural magazine “Murrang” and belonged to the literature group “Tarapita” (1921–1922). In subsequent years, belonging to the board of the magazine “Looming”, he stayed away from the literary life outside the activities of the editorial board, interfering only on exclusive occasions (for instance the movement of closeness to life 1920/1930). G. Suits’ later verses appeared in the book of poetry “Tuli ja tuul” (Stockholm, 1950).

G. Suits is one of the founders, together with F. Tuglas of the Estonian art-demanding literary critique. While working at the University he combined his pedagogical tasks with scholarly studies. A legendary Lecturer in Literature, he formed the birth of Estonian academic national literary science. Under his demanding teacher's hand two generations of Estonian literary scholars have been formed. G. Suits integrated in his Professorship both the national and comparative viewpoint at Estonian and world literature. In research he applied the cultural history point of view. His basic topics were history of Estonian earlier literature, primary source critique, poetry (K. J. Peterson, F. R. Kreutzwald, L. Koidula), as well as selected chapters from world literature (e.g. Molière, R. Rolland, G. Brandes etc.). G. Suits was a compiler and editor of numerous compendiums of literary history. In cooperation with M. Lepik, he edited to print a text critical anthology considering the path of formation of national Estonian literature "Estonian History of Literature in Texts I" (1932). He published as short studies in "Looming" and "Eesti Kirjandus" about earlier Estonian literature, incl. an outstanding series about youth of F. R. Kreutzwald, articles about E. Vilde, A. H. Tammsaare, M. Under, J. Barbarus etc. The list of his works includes over one thousand titles. G. Suits was among the founders of the Academic Literary Union and its first and only chairman in 1924–1941.

As an outstanding literary scholar G. Suits was elected to the Finnish Literature Society (1931) and a corresponding member of the French *Académie Septentrionale* (1936) and *Doctor Honoris Causa* of the Uppsala University (1935). G. Suits belonged, after establishment of the Estonian Academy of Sciences, into the first membership nominated by the State Protector (1938–1940). In 1939 he was awarded the 3rd class Order of White Star.

In April 1944 G. Suits travelled through Finland to Sweden, where he got a job at the Nobel Institute library. In the Swedish period he authored two important literature history researches: "History of Estonian Literature I" (Lund, 1953) and "Nuori Kreutzwald" (Helsinki, 1953).

G. Suits died in Stockholm on 23 May 1956 and he was buried in the Stockholm Forest Cemetery.



To the 100th anniversary of Member of Academy *Arnold Humal*

Arnold Humal (up to 1936 Tudeberg) was born on March 10, 1908 in Tallinn to the family of a Kopli factory worker. The school days of the boy born under the Tsarist regime passed through the years of Estonia's gaining independent, occupation, the War of Independence and establishment of the Republic. A. Humal started his school path in the 3rd form of a local primary school and studied in 1917–1925 at Tallinn Boys' Gymnasium for Humanities (the present Gustav Adolf Gymnasium). His studies continued in 1925–1929 at the Department of Mathematics and Natural Sciences of the University of Tartu. In 1928 he proceeded, upon proposition of Professor G. Rāgo, working as Assistant at the Institute of Mathematics of the University. His task was to supervise over the practical assignments of students and to help them, if necessary, in solving their tasks, checking the works and keeping record of their obligatory tasks realization. During his undergraduate years A. Humal participated in the activities of the Students' Society *Veljesto*. He was Secretary of the Academic Mathematical Society, was singing in the Academic male choir, writing articles to the Estonian encyclopaedia.

In 1930 A. Humal defended at the University his Master Thesis "Additions and Method-Critical Remarks to Some Mathematical Courses of Thought". Thereafter he worked another year in his former post, passed obligatory military service as a topographer of artillery and was sent in 1932 as a University of Tartu scholarship holder to Göttingen University. The main goal was to

obtain good education in theoretical physics, however he was ever more attracted to research on applied mathematics, which he had already started. Among his supervisors were outstanding figures of modern mathematics R. Courant and H. Weyl. A. Humal continued self-education in the status of extraordinary external student at Vienna University (1933–1934). The topics of the lectures heard and seminars attended were comprehensive: differential calculation, radioactivity, theory of electricity, integral theory, theoretical physics etc. Among members of faculty, the deeper impression was left with him by H. Hahn and H. Thirring. In February 1934 A. Humal defended at the University of Tartu his Doctoral Thesis “Über die Theorie und die Anwendungsmethoden der Quadraturreihen” and was awarded, at the age of 25 the degree of doctor philosophiae naturalis. The Doctoral Thesis appeared also in Proceedings of the University.

In 1934–1937 A. Humal’s activities as faculty member continued in the post of Senior Assistant, where his task was, as earlier supervision of practical work of students. Regardless of the Doctoral Degree and the pedagogic experience accumulated from work at the University he did not as yet have the right to deliver lectures. According to the strict order prevailing at the University of Tartu the young scientist became an independent member of faculty with the right to deliver lectures only after habilitation. For the habilitation work A. Humal wrote a research “About Energy Loss in Iron Tin in Case of Remagnetising at Low Frequency”, whose mathematical model he verified by tests while working at the State Gauging Chamber. The research published in 1936 in the Proceedings of the University was accorded recognition of colleagues, who acknowledged the research activities of the young member of faculty as meriting application for the position of Assistant Professor. In 1937 he started to apply for Assistant Professorship, needed for working as Assistant Professor He presented three new researches meeting the conditions of application. Hence, in less than three years after defence of the Doctorate A. Humal had completed four scientific works. Beside research of calculation methods and basics of geometry he was involved in solving the problems of physics.

The main essence of his further work as researcher and member of faculty was delivery of lectures and compiling of necessary study materials. In the University of Tartu of that time the member of faculty had to deliver very different courses, which called for the need to engross in many domains, in research and to consider the issues both of logical basics of mathematics and their applications in other sciences. In 1938, in the process of changing of the titles of posts taking place at the University A. Humal became, at the age of 30, the Adjunct Professor in practical mathematics. In that period he delivered several base courses in mathematics at the Department of Mathematics and also at the Department of Economics. Being demanding in his own respect and an enjoyable lector, A. Humal’s lectures were clear, logical and worded in

good Estonian. On the basis of lectured delivered to students of economics, the study aids were released in 1938 “Elements of mathematical statistics”, “Commercial arithmetic” and “Financial mathematics”. Like many members of faculty of the University of Tartu, A. Humal was involved with popular education, in the first place in training of teachers and enhancing their qualification.

The study year 1939/1940 was the last year of peaceful development for the University of Tartu and the collective. A. Humal remained at the service of the University after the June overthrow, however the apex of his scientific work stayed in the years of independent Estonia. In autumn semester of 1940, in the process of reorganisation of study work at the University, chairs were created after the example of Soviet (Russian) scheme and it was contemplated to transfer to the system of courses. Acting Professor Humal was appointed Head of the Chair of Mathematics, at the end of the year he was awarded Full Professorship. In that study year he delivered the courses of analytical geometry and higher algebra. Professor Humal, who had never belonged to any political parties or organisations, was dismissed from the University upon beginning of German occupation and he stayed almost two months as detainee in Tartu Concentration Camps. After being released he was for a short time engaged in agricultural works at the farm of relatives at Valgeristi and left Tartu, proceeding to work in Tallinn as teacher of mathematics. In the years of war A. Humal taught in Tallinn II Gymnasium (presently Secondary Science School) and gave some private lessons, he prepared the materials of school textbooks and continued research.

Although the dismissal of the German period was annulled and A. Humal was again in the list of Professors of the University of Tartu in autumn 1944, he decided to stay in Tallinn and accepted the invitation to Tallinn Polytechnic Institute (presently Tallinn University of Technology), in order to organise, as Head-Professor of the Chair of Mathematics and Theoretical Engineering the teaching of mathematics of the future engineers. He held that position until 1953, working also as Head of Studies of the Tallinn Polytechnic Institute (1945–1946), as Scientific Secretary of the Council of Tallinn Polytechnic Institute (1946–1947) and Director of the Institute of Physics, Mathematics and Mechanics of the Academy of Sciences (1947–1950). The Higher Attestation Commission of the USSR approved Professorship of A. Humal in 1945 and the Doctor’s Degree in Physics and Mathematics in 1946.

At Tallinn Polytechnic Institute A. Humal had to dedicate himself in the first place to teaching and organisation work, less time was left for research. When compiling the mathematics course for engineers he made great emphasis on mastering the calculation methods and techniques and developing practical skills. In teaching theoretical parts he considered it of paramount importance to develop logical thinking, ability to analyse, the foresight basing on

knowledge of exact sciences. Main subjects of the Chair of Mathematics and Mechanics were higher mathematics, theoretical and graphic geometry. Beside classical higher mathematics, the curriculum included elementary mathematics and especially extensively the topics located on the borderline between elementary and higher mathematics. Due to high work load of members of faculty the work was done as economically as possible: the lectures of all mathematical disciplines were delivered together. The lectures of a large study hall were basically for Professor Humal to bear. He also participated at carrying out practical studies held per groups and continued publishing the lecture texts and practical aids, necessary for study work. In cooperation with O. Rünk and A. Garšnek the first handbook of graphic geometry in Estonian was completed (I-III, 1946–1951). In 1959, released as mimeograph issue were the notes of higher mathematics for students of the first course. A. Humal's obligations included also various so-called *pro bono publico* tasks: presentation of the Tallinn Polytechnic Institute, reviewing the research work of colleagues, participation at compiling school mathematics programmes, supervising the Student Scientific Union, popularisation of science, incl. organisation of lectures of the Radio University etc. He submitted, in the issue in Russian released in 1948 "Mathematics in the USSR during 30 years (1917–1947)" the list of most important works of Estonian mathematics, with annotations appended to the most significant ones.

In 1951 A. Humal was elected active member of the Academy of Sciences of the ESSR (Member of Academy). In 1953–1964 he was Vice-President of the Academy and in 1953–1961 Chairman of the precursor of the Union "Science" – Union of Propagation of Political and Science Related Knowledge. While working at the Presidium of the Academy the Vice-President A. Humal was responsible for the Post-Graduates Department and preparation of scientific cadres of the Academy, material-technical supply of the Academy institutions, distribution of research apparatus, chairing of the examination commission of foreign languages. He was Chairman of the Council of Division of Physics and Mathematics and Engineering, Chairman of the Editorial Board of the series Proceedings of Physics and Mathematics and Engineering of the Academy, Vice-Chairman of the Editorial Board of the Council of the Academy publications. His versatile activity as science administrator included participation at important meetings of scientific institutes and scientific conferences, participation at formation of science policy of the Republic (especially in the area of exact sciences), support of financing of scientific projects etc. He considered as his strategic task opposition to the authoritarian attempts implemented under the sign of coordination of Estonian science and he endeavoured with all available means to protect the regional specificity of Estonia. In 1966 A. Humal proceeded again to work at Tallinn Polytechnic Institute, in the Chair of Mathematics, where he was Head of Chair and Professor in 1966–1971, in 1971–1986 Professor and in 1986–1987 Professor-Consultant.

Research works by A. Humal of later period considered a rather wide range of topics. He was not a researcher of modern type, involved with one area. He was rather an outdated universal scientist, who felt at home in several classical so-called higher and applied mathematics domains. The articles published by A. Humal have a clear-cut common feature – perception of mathematics as an integral unity. Out of research tasks, his favourites were problems of practical significance. He attempted to give to the results obtained a beautiful, elegantly simple, preferably elementary or geometrical proof. Although A. Humal was in those years mainly concerned with solving methods of mathematical analysis, he released works also in the area of axiomatic, graphic geometry, physics, physical chemistry, basics of geometry, mathematical statistics, history of Estonian mathematics and methods. His research and methodical materials in the area of mathematical statistics were the first works in that area, in post-war Estonia. The linguistically interested Professor Humal participated actively in the works of language workshops of the Academy and was demanding in using the terms.

Professor Humal fell short only a couple of months of his 60th anniversary as member of faculty of a higher school. The number of his students can be estimated as ten thousand – it embraces a significant part of community of engineers of Estonia. The success of selection of specialty made in the youth is confirmed by the expression of thought presented by Humal in an interview: “Lecture is enjoyment to me. It is a satisfaction. A good lecture is an improvisation. It will be enjoyed also by the lecturer himself, when he sees that the audience is emphatic. It is the so-called feedback. University gave me courage for human openheartedness in protecting my scientific positions. Mathematics is a lucky science. It is the most integral and poetic science.” [Ülo Tuulik. Member of Academy Arnold Humal speaks... // Noorus, 1966, 4, 6-9.]

The Professor of mathematics of very reserved behaviour also liked sport. He played tennis on Harjuorg, Kadriorg and Hiiu tennis courts and he was a frequent visitor of tennis competitions.

In 1978 A. Humal was awarded the honorary title of Merited Scientist of the ESSR and in 1983 he was awarded the Letter of Appreciation and the Memorial Medal of Tallinn Polytechnic Institute.

Arnold Humal died on December 13, 1987.

Since 1989 the Arnold Humal Prize has been issued, assigned every year to a young mathematician having outstanding achievements (age limit 30) by the Estonians Society of Mathematics.



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Estonian Geophysical Committee (Chairman: Rein Rõõm, Rein.Room@ut.ee)	International Union of Geodesy and Geophysics, IUGG
Estonian National Committee for IGU (Chairman: Jaan-Mati Punning, punning@tlu.ee)	International Geographical Union, IGU
Estonian National Committee for Geology (Chairman: Dimitri Kaljo, kaljo@gi.ee)	International Union of Geological Sciences, IUGS
Estonian Association of Engineers /Estonian Systems Engineering Society (contact: Sven Nõmm, sven@cc.ioc.ee)	International Federation of Automatic Control, IFAC
Estonian National Committee for Mathematics (Chairman: Mati Abel, Mati.Abel@ut.ee)	International Mathematical Union, IMU
Estonian Polar Research Committee (Chairman: Rein Vaikmäe, Rein.Vaikmae@ttu.ee)	ESF European Polar Board, EPB
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| 1989      | Annual Report of Estonian Academy of Sciences<br>(issued separately in Estonian, Russian and English)   |
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