

*Facta non solum verba*

ESTONIAN  
ACADEMY OF SCIENCES  
YEAR BOOK

ANNALES  
ACADEMIAE SCIENTIARUM  
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# CONTENTS

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Foreword. . . . .	5
Chronicle . . . . .	7
Membership of the Academy. . . . .	15
General Assembly, the Board, Divisions, Councils and Committees . . . .	21
Academy Events . . . . .	38
Popularisation of Science . . . . .	46
Academy Medals, Awards . . . . .	50
Publications of the Academy . . . . .	53
International Scientific Relations. . . . .	54
National Awards to Members of the Academy . . . . .	60
Anniversaries . . . . .	61
Members of the Academy. . . . .	76
Estonian Academy Publishers . . . . .	87
Under and Tuglas Literature Centre of the Estonian Academy of Sciences.	91
Financial Activities. . . . .	96
Associated Institutions . . . . .	99
Associated Organisations . . . . .	127
In memoriam . . . . .	162
Remembrance . . . . .	166
Appendix 1 Statutes of the Estonian Academy of Sciences . . . . .	171
Appendix 2 Estonian Contact Points for International Science	
Organisations . . . . .	185
Appendix 3 Cooperation Agreements with Partner Organisations . . . . .	187
Directory . . . . .	188

## FOREWORD

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Composition of the Academy was rejuvenated this year by an influx of younger members –nine new Members of Academy were elected pursuant to the new Academy Act. A downturn to negative of the trend for growth of the average age of Members of Academy prevailing over years enables making optimistic plans to enhance the impact of Academy on the development strategy of the state of Estonia. In the meantime the somewhat overdone state bureaucracy has found a formulation, by which to divest the Academy of its influence on development of Estonian research, based on the fact that the Academy is not an evaluated research and development institution. The fact that the fulfilment of main tasks set down in the Academy Act is thereby hampered is not an argument to be reckoned with by the bureaucrats.

The budget of 2010 decreased even more as compared to the previous year, and is a true survival budget, run on a shoestring than that in conformity with anticipated future developments. The daily work effort was most painfully sapped by scarcity of the support money for updating of equipment and renovation of the Academy House, for the second year running nullified in the subsidy of the Ministry of Education and Research. Fortunately the enthusiasm is still running high in our workers. On account of the amounts for main activities we had to replace the outdated computers and liquidate the breakdowns in infrastructure of the House. As regards the replacement of the roof, leaking already for several years, the Government of the Republic committed itself to financing it in 2011.

Nevertheless, the Academy has persisted in continuing its activities reaching farther into the future. Take for instance the work of the Academy's Committee on Marine Sciences, Committee on Nature Conservation and Energy Council, participation of Estonian researchers in environmental and energy panels of the European Academies' Science Advisory Board (EASAC); ongoing is the preparation for setting up the Committee on Economic Development, continuing as Head of the European Federation of National Academies of Sciences and Huma-

nities “ALL European Academies” (ALLEA) is a Member of Estonian Academy. The yield of the sub-fund of the Estonian Academy of Sciences created mainly by savings of Members of Academy in the Estonian National Culture Foundation enabled the Academy to issue the first Young Researcher’s Grant (50 000 kroon) and two doctoral student’s grants (à 15 000 kroon). Continuing are the brainstorming sessions to elaborate the plans for advanced study institute and further improving the institution of research professors. The Academy has also, as far as possible supported the activity of Estonian scientific societies, although over years the amounts of support have decreased and we have landed on the level of 2001. The size of fees of the Member of Academy has also been fixed by Regulation of the Government of the Republic of 2002.

The Year Book endeavours to provide an objective picture of deliberations and activities carried out in the Academy in 2010, as well as the activities of the institutions and societies associated with the Academy. The offhand opinions of the Members of Academy on phenomena of the world and processes lurking behind them should help understand the state of the Academy and mood of Members of Academy in the reporting period.

You are welcome to read and join with us in contemplation!

*Leo Mõtus*

## **CHRONICLE**

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January 12 – Board members held a meeting with representatives of the Estonian Public Broadcasting (ERR). Discussions were involved with the mission, objectives and functions of ERR, among other issues the necessity of popularizing science was brought to attention.

January 12-15 – Vice-President Jüri Engelbrecht attended a General Assembly meeting of the InterAcademy Panel on International Issues (IAP) and a Biodiversity Conference in London.

January 19 – Board at its meeting approved the Academy's Action Plan 2010, the report of the first year's work presented by Research Professor Martti Raidal and nomination of Jaan Einasto and Enn Saar to candidacy for the Viktor Ambartsumian International Prize. Allowances were assigned to the Estonian Mother Tongue Society for publication of its Jubilee Yearbook to celebrate the 90th anniversary of the society and to Hans Trass for publication of his article collection. The Board decided to award the W. Ostwald medal to Ilmar Koppel. Audience was given to an interim review of executing the Development Plan 2006-2010 presented by Vice-President Jüri Engelbrecht and an overview covering the activities with regard to the Working Group of the Estonian Research Infrastructures Roadmap provided by Peeter Saari. A working group was formed, tasked with preparing for the implementation of the Estonian Academy of Sciences Act Amendment Act.

February 3-5 – Vice-President Jüri Engelbrecht attended a meeting of the International Advisory Board in Bucharest dedicated to the higher education reform in Romania.

February 8 – Vice-President Jüri Engelbrecht participated in an advisory committee meeting of the EU 7th Framework Programme for Research and Technological Development (in further text FP7) Specific Programme "People" in Brussels.

February 19 – 125th anniversary of the birth of Karl Schlossmann, the first President of the Academy was celebrated at his birthplace in the village of Pikknurme, Jõgeva County.

February 19 – Board members held a meeting with representatives of the Estonian Economic Association (EMS). The issues under discussion were involved with association of the EMS with the Estonian Academy of Sciences and possible formation of a committee on economic development at the Academy.

February 25 – Vice-President Jüri Engelbrecht participated in the working group meeting of the European Science Foundation (ESF) and the European Heads of Research Councils (EUROHORCs) in Frankfurt, which had dis-

cussion of a restructuring plan for the European Science Foundation on the agenda.

March 9 – Board at its meeting decided to award the Paul Ariste Medal to Member of Academy Huno Rätsep to acknowledge his notable contribution to furthering the studies on the origin of the Estonian vocabulary and the Finno-Ugric languages. After hearing a review on the reasons for discontinuing activities of the Academy's Council for Population and Public Health presented by Ain-Elmar Kaasik, the Board decided to consider the mission of the council completed and to terminate the council's activities. The decision of the Academic Board of the Under and Tuglas Literature Centre concerning re-election of Jaan Undusk to the position of Director of the Under and Tuglas Literature Centre was approved. Further issues under discussion were related to installation of the Nord Stream gas pipeline and a draft on the "Organisation of Research and Development Act and Administrative Co-operation Act Amendment Act".

March 13-17 – Vice-President Jüri Engelbrecht participated as an invited lecturer in a conference of academies of sciences under the title "Science and Accountability" on the premises of the Israel Academy of Sciences and Humanities. The conference was held in the framework of festive events celebrating the Academy of Sciences' 50th Jubilee.

March 23-24 – Vice-President Jüri Engelbrecht attended an Advisory Board Meeting of the FP7 project NETWATCH in Brussels. The meeting was primarily focused on technical and administrative issues.

April 6 – Board at its meeting discussed a draft regulation of the Ministry of Education and Research for supporting energy technology research and development activities and noted that the strategic plan, which had been prepared in 2007 called for expeditious, authoritative and critical examination with regard to its specific objectives. The new composition of the Committee of Meteoritics (headed by Jüri Plado) was approved. After hearing arguments presented by Urmas Varblane concerning the Estonian Academy of Sciences Committee on Economic Development under formation, the Board decided to submit a motion to the General Assembly for formation of this Committee. The Student Research Paper Contest was announced. The Board further discussed possible development scenarios for the Estonian energy company Eesti Energia and a request submitted by Nord Stream for establishment of monitoring stations. The Board also heard information about organising issues relating to the International Physics Olympiad, a meeting of the University of Tartu publishing board, preparation of the Estonian Research Infrastructures Roadmap and the Organisation of Research and Development Act.

April 7-8 – Assistant Secretary General Galina Varlamova attended the 1st workshop meeting of the ESF Member Organisation Forum on Science in Society Relationships held in Brussels and participated in the sessions of the

Best Practices Working Group. Discussions resulted with preparing a survey of the success stories that had been collected from member organisations with regard to their public-oriented activities concerning the society-related needs of science.

April 12 – British conservationist and author Randal Keynes visited the Academy and had a talk with Jüri Engelbrecht. R. Keynes is a great-great-grandson of Charles Darwin, who has committed himself to using the legacy of Charles Darwin for interpretation of natural phenomena and for educational purposes.

April 20 – Academy held a seminar “Feasibility of Conducting Complex Systems Analysis of a State”.

April 24-27– Vice-President Jüri Engelbrecht had a meeting with representatives of the Basque Foundation for Science *Ikerbasque*, the Basque Academy of Science, Arts and Humanities *Jakiunde* and the Basque Center for Applied Mathematics (BCAM) in Bilbao. He delivered a paper “Complexity in Mathematics” at the last mentioned institution. Among other things consideration was given to the potential expansion of Complexity-NET after expiration of the project.

April 28 – conferral of the Academy’s memorial medals at an annual meeting of the General Assembly: the Wilhelm Ostwald Medal on Ilmar Koppel and the Paul Ariste Medal on Huno Rätsep. Reports on the activities of the Academy in 2009 were presented by Heads of Divisions Jaak Aaviksoo, Tarmo Soomere, Ilmar Koppel and Urmas Varblane. The Academy’s financial activities in 2009 and its budget for 2010 were introduced by Secretary General Leo Mõtus. Urmas Varblane expanded upon the functions and objectives of the Committee on Economic Development currently under formation at the Academy. While President Richard Villems deliberated the opening of vacancies and assignment of fees to Members of Academy, Secretary General Leo Mõtus informed about the composition and tasks of a committee formed for amendment of the Academy’s Statutes and updating of other documents.

April 29-30 Foreign Relations Manager Piret Press attended a consortium and partners meeting of the EU 6th Framework Programme for Research and Technological Development (FP6) coordination action project “European Network of Funding Agencies – Coordination of National Complexity Research and Training Activities” (Complexity-NET). Pilot projects to receive funding were selected and possible future activities were discussed regarding the time after the project expires.

April 30 – Academy House was the venue for the concluding conference “Bioenergetics and Medicine” of the French-Estonian Science Month. Papers were presented by Member of Academy Valdur Saks and Professor Pierre Dos Santos (INSERM Bordeaux, France).

May 6-7 – Vice-President Jüri Engelbrecht participated in a conference “Preparing Europe for a New Renaissance” organised by the European Research Area Board (ERAB) in Seville.

May 19-20 – Vice-President Jüri Engelbrecht attended a festive meeting of the Austrian Academy of Sciences in Vienna and a subsequent symposium “Research – Change of Paradigms?”

May 21 – Academy Science Day was held in Põlva County.

May 24-29 – Board Member Peeter Tulviste attended as representative of the Academy the 24th General Assembly of the *Union Académique Internationale* (UAI) in Budapest, wherein a new Board was elected for the organisation.

May 27 – Academy organised a discussion meeting with Michiel M. Kolman, Vice-President of a leading scholarly publisher Elsevier. Under consideration were issues involved with future objectives, incl. possible options to enhance the research competitiveness of Estonia. Contingencies for Estonian funding agencies to contribute to the transition process towards Open Access (unrestricted free of charge online access to the content of OA scientific and scholarly publications) were considered.

May 27-29 – Vice-President Jüri Engelbrecht participated in the ISE conference “ERC – from Programme to Institution” in Barcelona.

June 2 – Academy was visited by Secretary-General of the OECD Angel Gurría, who met with President of the Academy and delivered an open lecture “Society Needs Independent Analysis: the Role of the OECD”.

June 8 – Board held its meeting, followed by a presentation of the book “National Science Prizes of the Republic of Estonia 2010”. The Board heard the report on the work results of the working group responsible for compiling the Estonian Research Infrastructures Roadmap, presented by WG Chair Peeter Saari and substantiated the decisions of the working group to be submitted for approval to the Government. The Board decided to announce 11 vacancies for the Academy membership and prepared the time schedule for elections. An audience was given to information provided by Vice-President Jüri Engelbrecht relating to the developments of the European Science Foundation.

June 10 – Assistant Secretary General for Foreign Relations Anne Pöitel participated in a meeting of the quality working group of the European Network of Mobility Centres EURAXESS in Brussels. Various issues involved with social security and researchers’ visa were discussed and the latest EURAXESS internal website (Extranet) improvements were introduced at the meeting.

June 16-18 – Vice-President Jüri Engelbrecht attended a joint roundtable conference of the European Science Foundation and member organisations entitled “Grand Challenges and Interdisciplinarity: Opportunities for Member Organisations and ESF in the Developing European Research Area” in Istanbul.

June 17-18 – Secretary General Leo Mõtus represented the Academy at the meeting of the European Academies' Science Advisory Council (EASAC) in Budapest discussing the work programmes of 2010 and 2011. It was the last Council meeting to be led by the outgoing EASAC Chairman Prof. Volker ter Meulen (Academia Leopoldina), who handed over leadership to Sir Brian Heap (*Academia Europaea*).

June 23 – Vice-President Jüri Engelbrecht attended the Royal Society's 350th Anniversary Celebrations in London.

June 24-July 7 – young scientists Els Heinsalu (National Institute of Chemical Physics and Biophysics) and Anneli Kruve (Institute of Chemistry at the University of Tartu) nominated by the Academy listened to lectures of Nobel Laureates and interacted with the international Best Talents at an interdisciplinary joint conference in Lindau (Germany).

June 25 – Vice-President Jüri Engelbrecht attended a scientific conference organised by the Royal Flemish Academy of Belgium for Science and the Arts in Brussels.

July 2-6 – Vice-President Jüri Engelbrecht participated in an EuroScience Open Forum (ESOF 2010) in Torino.

July 7-8 – Assistant Secretary General Galina Varlamova attended an EuroScience Open Forum (ESOF 2010) in Torino and participated as a representative of the Academy in the session "4th ESF Communication Network" dedicated to relationships between the media and science.

August 23 – Academy Hall was the venue for presentation of the book "Estonian Research Infrastructures Roadmap 2010". Minister of Education and Research Tõnis Lukas gave an overview of the principles and future trends of Estonian science policy as well as of the position of Estonian research in the world of science. Member of Academy Peeter Saari outlined the compilation process of the roadmap and shortly explained which objects and why had been included in the roadmap. Representatives of applicants who had submitted proposals were also attending.

September 6-7 – Vice-President Jüri Engelbrecht attended the Kavli Prize Award Ceremony and accompanying scientific events in Oslo. The Kavli Prize is conferred since 2008 for significant scientific achievements in the fields of astrophysics, neuroscience and nanoscience.

September 13 – Nikolai Alumäe Memorial Lecture "Structural Analysis and Optimization of Mechanical Engineering Products and Processes" was delivered by Rein Küttner, followed by conferral of the memorial diploma and discussion. The event was held at the Institute of Cybernetics and jointly organised by the Division of Informatics and Engineering of the Estonian Academy of Sciences and the Estonian National Committee for Mechanics.

September 14 – Board at its meeting had a joint discussion with the Council of the Estonian Science Foundation, wherein the participants exchanged views on the new draft Organisation of Research and Development Act as well as realization of the Estonian Science Agency. Pursuant to the following items on the agenda the Board decided to nominate Peeter Tulviste as a member to the National Committee for Popularization of Estonian Science and Krista Aru, Director of the Estonian National Museum as a candidate for the Aadu Luukas Foundation mission award of 2010. On the basis of received applications the Board registered 30 researchers as candidates for the Academy membership and decided to present their candidacy for election to the General Assembly on December 8.

September 22 – Academy Hall hosted a seminar “Problems relating to Siberian Estonians”.

September 23-24 – Vice-President Jüri Engelbrecht delivered a paper at the “Research Institutions Forum” of the academies from the Visegrad Group in Prague. The theme of the paper was young researchers in the next EU Framework Programme.

September 24 – Academy as a project partner coordinated the Researcher' Night 2010 events in Tallinn, introducing researchers and science to the wider public.

October 5 – Foreign Relations Manager Piret Press participated in a promotion event of the European Network of Mobility Centres EURAXESS in Brussels, which aimed at introducing the actions of the network to legislators, journalists and mobile researchers.

October 10-12 – Vice-President Jüri Engelbrecht delivered a paper at an academic event “Mapping of Academic Excellence in the Context of Quality Assurance” in Maribor (Slovenia), the theme of which was assessment and acknowledgement of academic excellence.

October 18-19 – Vice-President Jüri Engelbrecht gave an invited talk at a conference “Joint Programming in Research 2010: A Common Approach towards Innovation” held under the Belgian EU Presidency.

October 20 – Academy Hall hosted a public academic lecture by Member of Academy Jaan Undusk “Oxymoron as a Figure of Thought in the Intellectual History of Europe. Part 2: Marxism and Analytical Psychology (C. G. Jung)”.

October 27 – Institute of Cybernetics was the venue for a seminar-workshop “Model-based Software Engineering – High Technology in Software Manufacturing” organised in the series NEW TRENDS IN SCIENCE by the Academy.

November 4-5 – President Richard Villems, Secretary General Leo Mõtus, Vice-President Jüri Engelbrecht, Board Member Ain-Elmar Kaasik, Assistant Secretary General Galina Varlamova, Project Manager of the Natural History

Museum of the University of Tartu Ivar Puura and Science Journalist Margus Maidla participated in the 12th Baltic Conference on Intellectual Co-operation “Science and Society” in Vilnius. The conference was focused on various aspects of the relationship between science and the society. In the course of the conference renewal of the trilateral co-operation agreement for the following three years was signed with the Latvian and Lithuanian academies of sciences.

November 8-10 – Vice-President Jüri Engelbrecht and Assistant Secretary General for Foreign Relations Anne Pöitel attended in Brussels a Complexity-NET stakeholders' workshop and a seminar targeted at the wider public outside of the network. Heads of collaborative projects funded by Complexity-NET partner countries introduced the ongoing research studies. Discussions touched upon closing project feedback and launching of follow-up activities.

November 9 – Board at its meeting heard an overview on the results of the 2010 Student Research Paper Contest of the Academy presented by the Head of the Appraisal Panel Member of Academy Georg Liidja and at his suggestion it was decided to rejuvenate the panel and to supplement it with experts in the fields of economics and law. The new composition of the Council for International Exchanges and the Committee on Nature Conservation were approved. The Board decided to submit new redactions of the Statutes of the Academy, regulations for election of the Board, regulations for election of Members of the Academy and regulations for election of Foreign Members of the Academy to the General Assembly for approval. An audience was given to overviews on discussions of the candidates for the Academy membership presented by Heads of Divisions and the agenda for the General Assembly on December 8 was approved.

November 9 – Academy Hall hosted a conference of the winners of the Student Research Paper Contest with diplomas handed over to laureates and prize-winning papers delivered.

November 10 – Academy Hall hosted a public academic lecture by Member of Academy Raimund-Johannes Ubar “The Race between Engineers and Technology in the Nanometer Distance”.

November 12 – Vice-President Jüri Engelbrecht attended an international conference “Research and Development as the Basis for Innovation in Creating the Competitive Region” held by the Montenegrin Academy of Sciences and Arts in Podgorica.

November 17 – Academy Hall was the venue for a seminar “International Year of Biodiversity”.

November 25-27 – Vice-President Jüri Engelbrecht visited the Sciences Academy of Lisbon in Portugal and delivered a paper in the field of science policy.

December 2-3 – Secretary General Leo Mõtus participated as representative of the Academy in the meeting of the European Academies' Science Advisory Council (EASAC) in Warsaw.

December 3 – Vice-President Jüri Engelbrecht visited a festive meeting of the General Assembly of the Bavarian Academy of Sciences and Humanities in Munich.

December 8 – General Assembly at its meeting elected ten new Members of Academy from among 30 candidates to the announced vacancies: in astronomy – Enn Saar, in mathematics – Eve Oja, in energy technology – Enn Lust, in computer science – Tarmo Uustalu, in ecology – Martin Zobel, in medicine – Eero Vasar, in biotechnology – Andres Metspalu, in psychology – Jüri Allik, in historical sciences – Valter Lang and in art history – Mart Kalm. The General Assembly approved new redactions of the Academy's Statutes, regulations for election of the Board, regulations for election of Members of Academy and regulations for election of Foreign Members of Academy.

December 9-14 – Board Member of the Academy Peeter Tulviste attended on behalf of the *Union Académique Internationale* (UAI) a General Assembly meeting of the International Social Science Council (ISSC) in Nagoya (Japan).

December 13 – Foreign Relations Manager Piret Press represented the Academy at a meeting of national Bridgehead Organisations of EURAXESS in Brussels. Under consideration were the coming into force of the Blue Card scheme as well as new options and expansion strategies of the internal website (Extranet).

December 14 – Board at its meeting heard and approved reports of Research Professors Tiina Nõges, Pärt Peterson and Martti Raidal for the second working year, information provided by Vice-President Mart Ustav concerning the principles for using the earnings of the Estonian Academy of Sciences subsidiary foundation of the Estonian National Culture Foundation and their application when using the foundation earnings of 2010 as well as information about the ALLEA Strategy Plan 2010-2015 and its implementation programme.

## MEMBERSHIP OF THE ACADEMY

Ten new members were elected to previously announced vacancies of the Academy membership on December 8:



*Enn Saar* in astronomy



*Eve Oja* in mathematics



*Enn Lust* in energy technology



*Tarmo Uustalu* in computer science



*Martin Zobel* in ecology



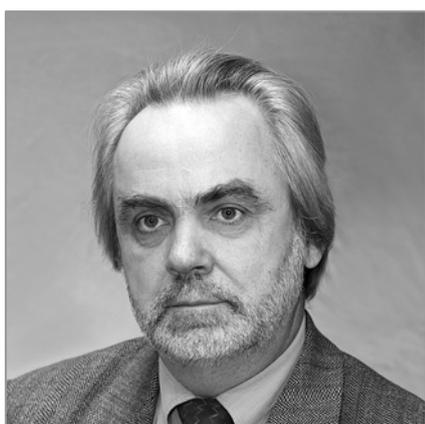
*Eero Vasar* in medical sciences



*Andres Metspalu* in biotechnology



*Jüri Allik* in psychology



*Valter Lang* in historical sciences



*Mart Kalm* in art history

During 2010 four members have passed away from the membership, among them Members of Academy Viktor Palm, Loit Reintam (see Year Book 2009 p. 172-175) and Harald Keres (see p. 162-163) and Foreign Member Ilse Lehiste (see p. 164-165).

As of January 2011 the Estonian Academy of Sciences numbered 66 full members and 17 foreign members, who distributed among four Divisions as follows:

DIVISION OF ASTRONOMY AND PHYSICS  
(16 Members of Academy, 4 Foreign Members)

Members of Academy: Jaak Aaviksoo (Head of Division), Jaan Einasto, Ene Ergma, Vladimir Hižnjakov, Arvi Freiberg, Georg Liidja, Endel Lippmaa (up to December 14, 2010), Ülo Lumiste, Tšeslav Luštšik, Eve Oja, Enn Saar, Peeter Saari, Mart Saarma, Arved-Ervin Sapar, Gennadi Vainikko, Richard Villems.

Foreign Members: Richard R. Ernst, Charles Gabriel Kurland, Jaan Laane, Jaak Peetre.

DIVISION OF INFORMATICS AND ENGINEERING  
(16 Members of Academy, 4 Foreign Members)

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

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

DIVISION OF BIOLOGY, GEOLOGY AND CHEMISTRY  
(20 Members of Academy, 5 Foreign Members)

Members of Academy: Jaak Järv, Ain-Elmar Kaasik, Dimitri Kaljo, Mati Karel-son, Ilmar Koppel (Head of Division), Hans Küüts, Agu Laisk, Ülo Lille, Udo Margna, Jüri Martin, Andres Metspalu, Erast Parmasto, Anto Raukas, Valdur Saks, Martin Zobel, Hans-Voldemar Trass, Raivo Uiibo, Mart Ustav, Eero Vasar, Mihkel Veiderma.

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

DIVISION OF HUMANITIES AND SOCIAL SCIENCES  
(14 Members of Academy, 4 Foreign Members)

Members of Academy: Jüri Allik, Mihhail Bronštein, Raimund Hagelberg, Mart Kalm, Arvo Krikmann, Armo Kõörna, Valter Lang, Jaan Ross, Huno Rätsep, Karl Siilivask, Peeter Tulviste, Jaan Undusk, Urmas Varblane (Head of Division), Haldur Õim.

Foreign Members: Els Oksaar, Päiviö Tommila, Endel Tulving, Henn-Jüri Uibopuu.

During 2010 the majority of Members of Academy carried on their research and academic activities as leading experts in their fields.

Ene Ergma continued as President of the Riigikogu and Jaak Aaviksoo as Minister of Defence.

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

Riigikogu – Peeter Tulviste;

President's Academic Advisory Board – Jüri Allik, Jüri Engelbrecht, Mati Karelson, Jaan Ross, Mart Saarma, Richard Villems;

Research and Development Council – Mart Saarma, Richard Villems;

Estonian Research Council – Rein Küttner, Eero Vasar;

Council of the Estonian Science Foundation – Enn Mellikov, Leo Mõtus;

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

Richard Villems sat on the Commission for Sustainable Development reporting to the Government of the Republic of Estonia.

Olav Aarna and Mart Kalm were members of the Quality Assessment Council of the Estonian Higher Education Quality Agency.

Mati Karelson, Ilmar Koppel, Rein Küttner, Peeter Saari and Peeter Tulviste were members of the Research Policy Advisory Committee of the Ministry of Education and Research. Jüri Engelbrecht was a member of the Steering Council for the Internationalisation of Estonian Higher Education and Research. Several Members of Academy were involved as members of the Steering Committees of National Programmes: Peeter Saari – “Supporting Terminology in Estonian (2008-2012)”, Jaan Undusk – “Estonian Language and Cultural Memory (2009-2013)” and Ain-Elmar Kaasik – “Compilation and Publishing of Textbooks in Estonian for Higher Education (2008–2012)”. Dimitri Kaljo was Chairman of the Expert Council on Science Collections.

Ülo Jaaksoo, Mart Ustav and Richard Villems were members of the Innovation Policy Committee at the Ministry of Economic Affairs and Communications; Ülo Jaaksoo was also a member of the Informatics Council.

Raivo Uibo was a member of the Gene Technology Committee at the Ministry of the Environment, Leo Mõtus was Deputy Chairman of the Research Council for the Ministry of Defence, Dimitri Kaljo was Chairman of the Commission of Estonian Mineral Resources (up to September 2010) and Haldur Õim a member of the Estonian Language Council.

Estonian Centres of Excellence in Research Eesti were headed by Raimund-Johannes Ubar – “Centre for Integrated Electronic Systems and Biomedical Engineering”, Martin Zobel – “Frontiers in Biodiversity Research”, Eero Vasar – “Centre of Excellence for Translational Medicine”, Tarmo Uustalu – “Estonian Excellence in Computer Science” and Valter Lang – “The Centre of Excellence in Cultural Theory”.

Jaan Ross was Director and Chairman of the Council of the Graduate School of Culture Studies and Arts at the Estonian Academy of Music and Theatre.

Ain-Elmar Kaasik was Chairman of the Registration Committee of the State Agency of Medicines.

In 2010 Estonia signed a Cooperation Agreement with the European Space Agency (ESA) providing Estonian scientists and enterprises with opportunities for partnership in specific ESA programmes designed for associated members. The preparatory work was performed by the Space Policy Working Group with participation of Ene Ergma as WG Head and Ülo Jaaksoo as a member.

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

Arvo Ots was awarded the National Science Prize for long-standing achievements in research and development (see p. 60).

More than a few members of the Academy were in 2010 conferred distinction with various awards and honorary titles as well as through election as a Fellow or a Foreign Member by a number of associations and organisations:

Hillar Aben was acknowledged with the highest award of the Society for Experimental Mechanics (USA) – the William M. Murray Medal;

Jaan Einasto was elected a *Doctor Honoris Causa* by the University of Tartu;

Jüri Engelbrecht was elected a Fellow of the World Academy of Art and Science (WAAS) and a Foreign Member of *Academia das Ciências de Lisboa*;

Andres Metspalu was acknowledged with the University of Tartu Rae-fond Award and was elected a *Doctor Honoris Causa* by Vilnius University;

Erast Parmasto was awarded the Gold Badge for Nature Conservation of the Ministry of the Environment and was elected an Honorary Member of the Estonian Biology Teachers' Association;

Anto Raukas received the Gottfried Wilhelm von Leibniz Medal, the Gold Badge for Nature Conservation and a Letter of Appreciation from the Ministry of the Environment, a Letter of Appreciation from the Georgian Science Foundation. He was named an Honorary Scientist of Europe by *Europäische Wissenschaftliche Gesellschaft, Europäische*

*Akademie der Wissenschaften* and *Internationale Rittervereinigung*, elected Honorary Member of the Estonian Real Property Owners Central Union and a Member of the European Academy of Natural Sciences;

Mart Saarma was awarded the Medal of the Faculty of Medicine, University of Tartu and was elected a Member of the European Molecular Biology Organisation (EMBO) Council;

Tarmo Soomere was elected an Honorary Professor of the James Cook University (Australia);

Enn Tõugu was elected a Member of *Academia Europaea*;

Raivo Uibo was elected an Honorary Member of the Scandinavian Society for Immunology;

Mihkel Veiderma received a Letter of Appreciation from NGO Konstantin Päts Museum.

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

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

## **GENERAL ASSEMBLY**

The General Assembly of the Academy convened twice in 2010:

April 28

- Annual Meeting
- Reports on the activities of the Academy in 2009 presented by Heads of Divisions Jaak Aaviksoo, Tarmo Soomere, Ilmar Koppel, Urmas Varblane and President Richard Villems
  - Report “Financial activities of the Academy in 2009 and budget for 2010” by Secretary General Leo Mõtus
  - Tasks and objectives of the Academy’s Committee on Economic Development
  - Opening of vacancies for the Academy membership and assignment of fees to Members of Academy
  - Composition and tasks of the working group for amendment of the Academy’s Statutes and updating of other documents

December 8

- Election of new Members of the Academy
- New redactions of the Academy’s Statutes and election regulations

The first session of the General Assembly was held as an annual meeting of the Academy. The session customarily focused on summing up the activities of the Academy in the reporting year 2009. Detailed data on the activities of the Academy in 2009 were made available in the “Estonian Academy of Sciences Year Book” XV (42), which had been previously mailed to Members of Academy.

At the beginning of the meeting President R. Villems handed over the Paul Ariste Memorial Medal to Huno Rätsep, the Wilhelm Ostwald Memorial Medal to Ilmar Koppel and the Medal of the Academy to Vladimir Hizhnyakov.

The activities of the Academy in 2009 were reviewed by Heads of Divisions Jaak Aaviksoo, Tarmo Soomere, Ilmar Koppel and Urmas Varblane, who first and foremost spoke about the doings of their Divisions. The summary was made by President Richard Villems. Upon proposition of Secretary General the General Assembly of the Academy approved the report of the Academy for 2009, by reference to papers heard and materials presented in the Year Book.

Secretary General Leo Mõtus provided an overview on the execution of the Academy's budget 2009 and presented the budget for 2010, which was successively approved by the General Assembly.

Head of the Division of Humanities and Social Sciences Urmas Varblane explained the expediency of establishing the Committee on Economic Development at the Academy. Definition of the name and goals of the Committee triggered discussions, whereby the floor was taken by Erast Parmasto, Endel Lippmaa, Richard Villems, Leo Mõtus, Jaak Aaviksoo, Dimitri Kaljo, Peeter Tulviste, Enn Tõugu, Tarmo Soomere, Agu Laisk, Valdek Kulbach and Ilmar Koppel. After deliberations a decision was taken to establish the Committee on Economic Development at the Estonian Academy of Sciences. The Division of Humanities and Social Sciences was assigned the task to start negotiations for formation of the membership of the Committee.

Minister of Education and Research Tõnis Lukas took the floor pointing out that by the Act approved by the Riigikogu prerequisites were created for the Academy to renovate its role. The Academy itself would have the say how to make use of those prerequisites.

In connection with opening additional vacancies for membership of the Academy created by adoption of the Academy Act Amendment Act and in the issue of payment fees to Members of Academy, President Richard Villems took the floor. Speaking in the ensuing discussion were Valdek Kulbach, Jaan Ross, Dimitri Kaljo, Erast Parmasto, Peeter Tulviste, Ülo Jaaksoo, Mihkel Veiderma, Udo Margna, Ene Ergma, Jaak Aaviksoo, Agu Laisk and Endel Lippmaa. Vote was taken on the decision of the General Assembly to open 11 vacancies for membership of the Academy in 2010 and the procedure for assigning fees to Members of Academy in 2010 and 2011.

Secretary General Leo Mõtus explained the need to update the Academy's foundation documents and to bring them in conformity with amendments to the Academy Act. On the same topic opinions were given by Erast Parmasto, Richard Villems and Udo Margna. After discussions the decision of the General Assembly was adopted on composition and tasks of the working group for amendment of the Academy Statutes and updating other documents.

In the process of discussions the floor was taken by Karl Siilivask, Peeter Saari, Jüri Engelbrecht, Agu Laisk, Dimitri Kaljo, Jaak Järv and Ülo Jaaksoo.

At the second session of the General Assembly, held on December 8 the first item on the agenda was election of new Members of Academy to the announced 11 vacancies from among 30 candidates nominated by Members of Academy, institutions of higher education and research establishments. As a result of ballot, elected in astronomy was the only candidate presented Enn Saar; elected in mathematics (presented Jaan Janno, Eve Oja) was Eve Oja; elected in energy technology (Malle Krunks, Enn Lust, Andres Siirde, Andres Öpik) was Enn Lust; elected in computer science (Tarmo Uustalu, Jaak Vilo) was

Tarmo Uustalu; elected in ecology (Ülo Niinemets, Martin Zobel) was Martin Zobel; elected in medicine (Jaanus Harro, Tõnis Timmusk, Eero Vasar, Airi Värnik) was Eero Vasar; elected in biotechnology (Ain Heinaru, Andres Merits, Andres Metspalu, Tanel Tenson) was Andres Metspalu; elected in psychology was the only candidate presented Jüri Allik; elected in historical sciences (Valter Lang, Tõnu-Andrus Tannberg) was Valter Lang; elected in art history (Karin Hallas-Murula, Veljo Kaasik, Mart Kalm, Jaak Kangilaski, Krista Kodres) was Mart Kalm. Of three candidates presented in chemistry (Alvo Aabloo, Ivo Leito, Margus Lopp) no one received the necessary number of votes in favour, whereby the vacancy in chemistry went unfilled.

The second half of the session was dedicated to consideration and approval of the Academy's Statutes and new redactions of election regulations. Secretary General Leo Mõtus presented the working group for amendment of the Academy's Statutes and updating of other documents and the amendment propositions made by Members of Academy, which were then discussed by the General Assembly. Thereafter, the General Assembly decided to approve the Statutes of the Estonian Academy of Sciences (see Appendix 1, p. 171-184), the Regulation for election of Members to the Estonian Academy of Sciences, the Regulation for Election of Foreign Members of the Estonian Academy of Sciences and the Regulation for Election of Board Members of the Estonian Academy of Sciences.

## **BOARD**

The Board of the Estonian Academy of Sciences worked in 2010 in the following composition:

President	<i>Richard Villems</i>
Vice-President	<i>Mart Ustav</i>
Vice-President	<i>Jüri Engelbrecht</i>
Secretary General	<i>Leo Mõtus</i>
Head, Division of Astronomy and Physics	<i>Jaak Aaviksoo</i>
Head, Division of Informatics and Engineering	<i>Tarmo Soomere</i>
Head, Division of Biology, Geology and Chemistry	<i>Ilmar Koppel</i>
Head, Division of Humanities and Social Sciences	<i>Urmas Varblane</i>
Non-Executive Members	<i>Ene Ergma</i>
	<i>Ain-Elmar Kaasik</i>
	<i>Mati Karelson</i>
	<i>Endel Lippmaa</i>
	<i>Enn Mellikov</i>
	<i>Peeter Saari</i>
	<i>Peeter Tulviste</i>
	<i>Enn Tõugu</i>

The Board held 7 working meetings in that year. Two times the decisions were passed under the procedure of electronic questioning.

The calendar schedule of events of the Academy for 2010 was discussed and approved at the first session, taking into account the proposals of the Divisions. For the most part the schedule was carried out by the end of the year. The work tasks of members of the new Board elected at the end of the previous year were approved. The session heard the interim summary by Vice-President Jüri Engelbrecht of fulfilling the plan of development of the Academy for 2006-2010 and discussed important issues to be taken into consideration when drawing the new plan of development for 2011-2015.

Science policy issues were discussed on several occasions. The Board heard overviews by President Richard Villems on draft "Organisation of Research and Development Activities Act Amendment Act" and on "Administrative Cooperation Act Amendment Act" and on problems relating to initiation of the Estonian Research Agency. In September a common session was organised with the Council of the Estonian Science Foundation, exchanging opinions on problems encountered by Estonian research and how the new draft Organisation of Research and Development Activities Act could solve those matters. The Board discussed the draft Regulation "Support of Energy Technology Research and Development Activity" sent by the Ministry of Education and Research for coordination and submitted its observations to the Ministry and the Research and Development Council. The Board heard explanations by Vice-President Jüri Engelbrecht regarding the current situation in the European Science Foundation and substantiated motivations for the need of the Estonian Academy of Sciences to terminate its activities in the European Science Foundation.

In the first half of the reporting year, the Board heard information presented by Peeter Saari, Chair of the Working Group responsible for compiling the Estonian Research Infrastructures Roadmap on the activities of the working group and the overview of June 8 on results of the work and explanations regarding the decisions of the working group.

Due to approval of the Academy Act Amendment Act by the Riigikogu, a working group was established for preparing its implementation, including President, Secretary General and all Heads of Divisions. Pursuant to amendments to the Academy Act additional vacancies of the Academy membership were created and issues relating to filling the vacancies were discussed by the Board at several meetings. In March, a decision was taken to open 11 new vacancies for election in 2010, whereas 8 of them by reference to the amendment of the Act; in June specialties for vacancies were approved and in September 30 candidates were registered to 11 announced vacancies for election at the General Assembly meeting to be held on December 8. The Board at its meeting of November 9 heard the results of discussions held by Divisions

and decided to reckon with the preferences for candidates expressed by the Divisions prior to elections.

In January the Board heard the first-year work report presented by Research Professor Martti Raidal. In December the Board heard and approved the second-year work reports of all three Research Professors – Tiina Nõges, Pärt Peterson and Martti Raidal, examined their third-year work plans and subsequently decided to open their third-year funding.

The Board decided to award the Medal of the Academy to Director of Tartu Observatory Laurits Leedjärv. Speaking of memorial medals of the Academy, the Paul Ariste Medal was conferred to Member of Academy Huno Rätsep and the Wilhelm Ostwald Medal to Member of Academy Ilmar Koppel.

In spring the Board decided to announce the Student Research Paper Contest and approved the composition of the Appraisal Panel (Chaired by Georg Liidja). On November 9 the Board heard information about the results of the competition, presented by Chairman of the Panel Georg Liidja. The session was followed by a conference with four papers presented by winners of the competition and granting of diplomas (see p. 38-39).

Discussions and decision making in issues related to current commitments constituted a considerable part of the Board's work. In April the Board considered and submitted to the General Assembly for approval the execution of the consolidated budget of the Academy for 2009 and the budget for 2010. Director of the Under and Tuglas Literature Centre Jaan Undusk was approved for the following five year period in office on the basis of competition results. Taking into consideration of propositions of the Universities, the composition of the Council for International Exchanges was approved (Chairman Member of Academy Jüri Engelbrecht). Compositions of the Committee on Meteoritics (Chairman Jüri Plado) and the Committee on Nature Conservation (Chairman Urmas Tartes) were approved. The Board heard a review of discussions that had been held over initiation of the Committee on Economic Development at the Academy, presented by Head of the Division of Humanities and Social Sciences Urmas Varblane and decided to submit a proposal for the establishment of the Committee to the General Assembly. Taking into account the review on the reasons for discontinuing activities of the Academy's Council for Population and Public Health presented by Ain-Elmar Kaasik, the Board decided to consider the mission of the council completed and to terminate the council's activities. It was decided to nominate Members of Academy Jaan Einasto and Enn Saar as candidates for the International Viktor Ambartsumian Memorial Prize. The Board nominated Director of the Estonian National Museum Krista Aru as a candidate for the Aadu Luukas Foundation mission award. The Board nominated Member of Academy Peeter Tulviste as a supplemental member with expertise in the Humanities to the National Committee for Popularization of Estonian Science. The Board nominated

Member of Academy Jüri Engelbrecht as a representative of the Academy to the Steering Committee of the Ministry of Education and Research on globalization of higher education and research. Due to the need for updating the Academy Statutes and other foundation documents and bringing them in conformity with amendments to the Academy Act, the Board discussed the propositions submitted by the working group that had been established at the annual meeting and decided to present for approval to the General Assembly of December 8 the Statutes of the Estonian Academy of Sciences and regulations for elections. Agendas for the General Assembly meetings were approved. The Board decided to assign allowances to the Mother Tongue Society for publication of a Jubilee Yearbook celebrating its 90th anniversary and to Member of Academy Hans-Voldemar Trass for publication of his article collection "The Nature and a Man of Hellrange".

The Board heard an overview by Chairman of the Energy Council Endel Lippmaa on further development of oil shale industry and diversification of energy sources, discussed at the Council meeting with Minister of Economic Affairs and Communications Juhan Parts and Chairman of the Management Board of Eesti Energia Sandor Liive. The Board discussed problems relating to installation of the Nord Stream gas pipeline, authorized the Academy's Committee on Marine Sciences and Energy Council to elaborate and submit to the Ministry of the Environment the Academy's position and recommendations for environmental monitoring.

The Board consented to accession of the Academy to the Consortium of European Taxonomy Facilities (CETAF) as representative of all major natural history collections in Estonia.

## **DIVISIONS\***

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

In 2010 two meetings of the Division were held.

The meeting of May 28 discussed the distribution of vacancies of Academy membership by specialties pertaining to the Division of Astronomy and Physics, where pursuant to the decision of the General Assembly and the Board competition could be announced in two specialties. According to the prevailing position specialties should rather be comprehensive than narrowly specified in order to afford a broader scale competition. Participants at the meeting reached a consensus on making a proposal to the Board to open the vacancies in astronomy and mathematics. The Members of Academy not attending had an opportunity to submit their positions by e-mail.

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\* Composed according to materials submitted by Heads of Divisions Jaak Aaviksoo, Tarmo Soomere, Ilmar Koppel and Urmas Varblane.

The meeting of November 3 discussed candidates for the vacant positions of Academy membership announced in the specialties of mathematics and astronomy and also organised an advisory voting on candidates for the vacant positions in all specialties. The Members of Academy participating at voting unanimously supported Enn Saar's candidacy in the specialty of astronomy and gave an overwhelming preference to Eve Oja's candidacy in the specialty of mathematics. The results of advisory voting on candidates for vacant position in other Divisions were also forwarded to the Board of the Academy.

The General Assembly of the Academy elected Enn Saar and Eve Oja new Members of the Academy in the Division.

Members of the Division were involved in the work of various committees and councils of the Academy.

Members of the Division represented the Academy or the Division in several decision-making bodies for science administration.

#### DIVISION OF INFORMATICS AND ENGINEERING

In 2010 four meetings were held by the Division.

April 19 – a report on the activities of the Division in the previous year was heard and its main positions to be presented at the General Assembly meeting accepted. The principles and process of compiling the Estonian Research Infrastructures Roadmap were discussed. Exchange of opinions on the topic of announcing new vacancies resulted in a conclusion that vacancies should be opened in engineering and informatics. The meeting decided to determine the specialties after official opening of the vacancies. It considered the scientific expertise of researchers as a critical factor in making the choice, however the specialties of candidates and their involvement in non-professional activities should also be considered.

May 25 – opening of new vacancies was the pivotal topic. According to the prevailing opinion of the attending parties it was reasonable to interpret engineering sciences as an aggregate of science directions concerned with areas inherently suggesting the English verb “to engineer”. Estonian has no exact equivalent of the notion, however, a whole range of concepts involved with engineering are conveyed through the word “inseneeria”. The branches of the field of knowledge thus defined should be synthesizable sciences based on physical and mathematical methods. Selection of vacancies and candidates should primarily proceed from an aggregate of criteria (scientific competence, needs of Estonia, charisma of the candidates, their social empathy, etc.). The meeting acknowledged the need for experts in the following areas: energy, civil and mechanical engineering, computer science, electronics, biomechanics, environmental equipment and technology and materials science. The major need for excellence in competence was pointed out in the area of systems

handling of energy and civil engineering, recognizing however, the scarcity of eligible candidates in those areas for the time being. It was decided to make a proposition to the Board of the Academy for opening of two vacancies: in computer science and energy technology.

September 17 – hearings of the researchers standing for the Academy membership in energy technology and computer science were commenced. Presentations by E. Lust, A. Siirde, M. Krunk, A. Öpik and T. Uustalu were heard and principles for forming the Division's position were agreed.

October 1 – hearings of candidates for the Academy membership were continued. Presentations were given by J. Vilo. It was decided to support as a preference of the Division E. Lust's candidacy for the vacancy in energy technology and T. Uustalu's candidacy for the vacancy in computer technology. According to the unanimous opinion of the attending members the Academy was in urgent need for an expert of a younger generation in classical (thermal) energy.

Members of the Division organised several Academy events: a seminar "Feasibility of Conducting Complex Systems Analysis of the State" (J. Engelbrecht, L. Mõtus); a public academic lecture "The Race between Engineers and Technology in the Nanometer Distance" (R.-J. Ubar); the Nikolai Alumäe Memorial Lecture "Analysis and Optimization of Mechanical Engineering Products and Processes" (R. Küttner) was jointly organised by the Division and the Estonian National Committee for Mechanics; Academy's seminar-workshop "Model-based Software Engineering – High Technology in Software Manufacturing" (E. Tõugu). The Alexander von Humboldt colloquium "The Baltic Sea as a Bridge" (Academy/National Library, T. Soomere and J. Engelbrecht) was held mainly by virtue of teamwork by members of the Division. The Division participated in organising several other important scientific events, e.g. an international conference DAAAM Baltic 2010 "Innovative Industrial Technologies and Production Systems" (Chairman of organising committee R. Küttner), the 10th Glass Stresses Summer School (chief organiser H. Aben) and a series of anniversary events "Institute of Cybernetics 50" (J. Engelbrecht), an Euro-project DIAMOND seminar, an international workshop of the Centre for Integrated Electronic Systems and Biomedical Engineering (CEBE) and an international Biennial Baltic Electronics Conference BEC (R.-J. Ubar).

The Division participated in the work of the editorial boards of several journals, e.g. "Estonian Journal of Engineering" (editor in chief J. Engelbrecht), "Applied Mechanics Reviews", "Oil Shale", "Thermal Science", "Thermal Engineering", "Applied Mechanics", "Journal of Marine Systems", "Oceanology", "Academy", etc.

Members of the Division continued their activities in relation to organisation of science, incl. in various organisation and assemblies for administration and

funding of R&D activities on Estonian as well as European level (see “Membership” and “International Scientific Relations”).

#### DIVISION OF BIOLOGY, GEOLOGY AND CHEMISTRY

In 2010, two extended meetings of the Board of the Division, two electronic meetings or votes of the Division and two meetings of the assembly of the Division were held.

January 7 – the activity and annual report of the Division for 2009, the working plan for 2010, preparations for the assembly meeting of the Division and other issues were discussed at the extended meeting of the Board.

January 13 – assembly of the Division discussed and approved the report for 2009 and the working plan for 2010, elected a new Board of the Division, including M. Ustav, M. Karelson, A.-E. Kaasik and I. Koppel, decided to nominate I. Koppel for the W. Ostwald Memorial Medal.

February 15 and May 16 – matters relating to vacancies for the Academy membership were discussed at the extended meetings of the Board, attended by, either in person or by e-mail, practically all members of the Division. It was decided to submit to the Board of the Academy a proposition to open/fill 4 vacant seats allocated to the Division in the following specialties: ecology, medicine, biotechnology and chemistry.

October 19 – assembly of the Division had on agenda, as proposed by Professor U. Tartes, renewal of the composition of the Academy’s Committee on Nature Conservation and filling of 11 vacancies for the Academy membership. The latter item brought about a lively discussion, followed by a preliminary ballot. Additionally to 10 attending members, 7 absent members were also participating in the ballot by means of previously filled in/mailed sealed envelopes. At the advisory ballot on filling the vacancies, the Division’s favour was won by E. Oja and E. Saar in the Division of Astronomy and Physics, T. Uustalu and E. Lust in the Division of Informatics and Engineering, M. Zobel, A. Metspalu, E. Vasar and I. Leito in the Division of Biology, Geology and Chemistry and M. Kalm in the Division of Humanities and Social Sciences. A proposition was made to the Board to renew the composition of the Academy’s Committee on Nature Conservation.

December 8 – General Assembly elected new Members of the Academy to the Division – M. Zobel in ecology, E. Vasar in medicine and A. Metspalu in biotechnology. The vacancy in chemistry went unfilled.

November 17 – seminar “International Year of Biodiversity 2010” was held by organisation and moderation of Members of Academy E. Parmasto and A. Raukas.

Members of the Division represented the Academy or Division at several decision-making bodies for science administration (see “Membership”). The

Committee on Nature Conservation and the Committee on Meteoritics proceeded with their activities under the auspices of the Division.

#### DIVISION OF HUMANITIES AND SOCIAL SCIENCES

The Division held two meetings and a polling on nominating Member of Academy Huno Rätsep for the Paul Ariste Memorial Award. The nomination was made by Members of Academy Arvo Krikmann and Haldur Õim. The candidacy won a unanimous support of the Division. The meeting held on May 25 discussed determination of candidates for the Academy membership vacancies. A position was reached to present to the Board candidates in three specialties: psychology, history sciences and art history. In the five year perspective, it was decided to proceed with complementation of the personnel of the Division in the following specialties: linguistics, philosophy, law, political science and administration, communication. At the meeting held on October 26, Jüri Allik was elected as a candidate for the Academy membership in psychology, Valter Lang in historical sciences and Mart Kalm in art history. It was decided to support the candidates proposed by other Divisions. The same meeting heard an overview on meeting with Editor in Chief of the journal *Trames* Urmas Sutrop, given by Head of Division Urmas Varblane and decided to delve further into the immediate future plans of the journal. Members of the Division undertook, using their expertise, to draft a list of potential candidates for membership of the Academy considering a longer perspective and succeeded in yielding a thorough future vision in the form of a preferential list of scientists.

February 11 – members of the Division participated in a visit to the Estonian Literary Museum.

February 19 – celebration of the 125th anniversary of the first President of the Academy Karl Schlossmann at his birthplace in Pikknurme, Jõgeva County. On the same day, a meeting with representatives of the Estonian Economic Association on the premises of the Institute of Technology at the University of Tartu to discuss its potential association with the Academy and an idea of establishing the Committee on Economic Development at the Academy.

March 6 – celebrations of the 90th anniversary of the Mother Tongue Society were attended by Urmas Varblane and Haldur Õim.

March 17 – upon organisation of the Division, Members of Academy Richard Villems and Jaan Einasto delivered papers at Paldiski gymnasium, where both Estonian and Russian are used as languages of instruction.

May 21 – upon organisation of the Division, the Science Day was held in Räpina and Värskä, Põlva County with speeches given by Urmas Varblane and Jaan Undusk. Within the programme of the same day Haldur Õim delivered a

paper at the Youth Internet conference in Põlva “Internet Language and Related Matters”.

June 11 – Peeter Tulviste spoke in the programme “The Falling Apple” on Radio KUKU, casting light on the background and continuity of the Academy Science Days.

August 26-28 – ACES 11th annual conference “Comparing Responses to Global Instability” whose organising committee was attended by Urmas Varblane, was conducted at Tartu Dorpat conference centre.

September 22 – seminar “Problems of Siberian Estonians” was held in cooperation with the University of Tartu, Tallinn University and the Estonian Literary Museum.

October 20 – Jaan Undusk delivered an academic lecture “Oxymoron as figure of Thought in the Intellectual History of Europe (2)”.

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

## **COUNCILS, COMMITTEES**

### **ENERGY COUNCIL**

Chairman Member of Academy E. Lippmaa

In 2010 four meetings were held by the Energy Council: March 16, April 15, September 30 and December 2 with a summarizing discussion on January 18, 2011.

March 16 – meeting was attended as guests by Minister of Economic Affairs and Communications Juhan Parts, Deputy Permanent Secretary Einari Kisel and Chairman of the Management Board of Eesti Energia Sandor Liive as well as by President of the Academy Richard Villems. The Minister spoke about the energy development plan adopted by the Government of the Republic and the state investments programme under elaboration. For making conclusive decisions the Government of the Republic additionally wanted to have the opinion and support of the Estonian Academy of Sciences. Sandor Liive presented the government procurement for building of two new oil shale blocs. Under consideration were perspectives for the development of liquid fuels. The Energy Council decided to support the building of two oil shale blocs, deeming reasonable and fair to fund the building of the blocs without increasing the state’s loan burden, and to perform a detailed economic-technical analysis for adding value to the liquid fuel produced from oil shale and to produce hydrogen necessary for that.

April 15 – meeting with perspectives for the use of Estonian oil shale on the agenda was attended by representatives of Eesti Energia Group Sandor Liive and Indrek Aarna, Head of R&D. Sandor Liive spoke about the strategy of Eesti Energia for oil industry development. The goal of Eesti Energia is to expand oil shale production by using a new generation of solid heat carrier technology Enefit280. Indrek Aarna presented the experience of producing from shale oil the motor fuel elsewhere in the world, e.g. Parachute Creek shale oil post-processing plant (USA) and the problems relating to Estonian shale oil production. Leevi Mölder spoke about the potential bottlenecks in the plans of Eesti Energia and urged the audience to analyse efficiency figures. Endel Lippmaa presented the history of electrolysis and differences in the process of electrolysis at low and high temperatures in industrial production of hydrogen.

September 30 – directions of Estonian energy generation were under consideration. Deputy Permanent Secretary of the Ministry of Economic Affairs and Communications Einari Kisel, Member of Academy Tarmo Soomere and Executive Editor of the magazine “Horisont” Rein Veskimäe were participating as guests. An exchange of thoughts was dedicated to the future of Estonian energy industry taking into consideration the national interests of Estonia. In this connection answers were sought to the questions previously posed by Chairman of the Council: whether the undergoing process affecting the Earth in this century is global warming or chilling; what role in the process is acted by the cyclic activity dynamics of the Sun; is the Gulf Stream currently weakening or strengthening; whether ozone holes are a cause for or a consequence of stratosphere chilling; is the temperature of the surface layer in the world’s oceans presently rising or falling; can human activity altogether be an actor to trigger climatic changes and whether setting limits to CO<sub>2</sub> emission is altogether possible against the background of the birth rate; whether Estonia is facing very hot or very cold decades; how long will the warm Holocene last and when does a new large-scale Ice Age start.

Problems directly affecting the energy policy and the critical issues of green energy were also discussed as well as the more than doubtful benefit from energy-related cooperation with Latvia and Lithuania; the opportunities for Estonian energy policy: whether oil shale + nuclear energy or wind turbines + gas turbine plants; what benefit could Estonia attain from the Finnish-Latvian natural gas pipeline belonging to Gazprom; the rationality of Estonian participation in the virtual nuclear station of Lithuania. Other issues under consideration were: Jordan’s shale oil, Estonian shale oil in the light of the new EU chemicals law and creation of a new expensive monopolist electricity distribution network. The consumer must have the possibility to abstain from more expensive green recoverable energy.

After Endel Lippmaa’s introductory explanations, the interlocutors discussed at length the issue of the Earth’s global temperature change. On the evidence

of research results from decades-long investigations an opinion was reached that in all probability chilling is the process underway for now. However everything depends on Sun's conduct (of which we do not know much) and human activity has no considerable impact on the climate change processes. Hence Arvo Ots posed a question, whether Estonia can in any way actually influence the problems of CO<sub>2</sub> quotas and carbon leak. Explanations regarding the concepts of Brussels and the Ministry of Economic Affairs and Communications CO<sub>2</sub> were delivered by Einari Kisel.

The issue of electricity price, raised by Mihkel Veiderma was tackled in greater detail. Are electricity prices for small consumers substantiated? The components for the consumer price formation were found to be inadequately clarified. The necessity and share of green energy are calling for a separate study. More detailed explanations were delivered by Anto Raukas and Tarmo Soomere with regard to the Gulf Stream. In their opinion, the fears of weakening or stoppage of the stream are groundless and in the nearest future the impact of the stream will not subside. Another issue considered in greater detail was the shale oil in Jordan. According to the opinion expressed by Leevi Mölder in this regard the thermal processing of the local shale oil to liquid fuel was doubtful and his estimate to the project pessimist. Perspectives for the use of and adding value to Estonian shale oil was also considered. The question about the Finnish-Latvian gas pipeline was answered by Einari Kisel, who explained that the Finnish-Estonian gas pipeline project (Baltic Connector) was currently in the stage of discussion and the results should become clear within 2011 together with building of a liquid gas terminal, the latter was supported by attending parties. Building of the Estonia's own (two-bloc) nuclear station was found to be absolutely necessary in a longer perspective.

December 2 – on agenda of the meeting was: providing Estonia's energy independence, laying down energy connections and new nuclear energy structures and a liquid gas terminal, cancellation of the restorable energy support, adding value to shale oil, competition and possibility of free choice of the consumer in energy market with the right to refuse from expensive eco-energy, as well as cooperation between several ministries.

Decisions of that meeting were approved with amendments at the meeting of January 18, 2011, when by a unanimous decision of all those attending it was recommended to appoint Dr. Arvi Hamburg, Chairman of the Estonian Union of Engineers and an outstanding specialist in energy technology, as a new Chairman of the Energy Council of the Estonian Academy of Sciences.

Under discussion were issues relating to the Cancun climate conference held in Mexico from November 29 to December 10, which initiated another endeavour to compose a new global climate agreement to avert climate changes. The Kyoto protocol, whereby legally binding measures were specified for reducing waste quantities of greenhouse gases (except ozone and water va-

pour), will expire in 2012. The new financial rules established by the UN (United Nations FCCC/KP/CMP/2010/L.6 of December 9, 2010 and the United Nations FCCC/AWGLCA/2010/CRP.2 of December 4 2010) are showpieces of “transparent opacity”, which have already declined by Russia and China of the veto-states in the UN as well as by several other larger countries like Japan, Canada and Turkey. Consequently the battle against carbon dioxide with everything concomitant will come to an end in 2012.

#### COMMITTEE ON MARINE SCIENCES

Chairman Member of Academy T. Soomere

Priority goals of the Committee on Marine Sciences at the Estonian Academy of Sciences include representing Estonian marine sciences at the Marine Board of the European Science Foundation and the activity as an advisory panel in Estonia. In the reporting year one special meeting and three electronic discussions were held.

The special meeting of the Committee was conducted on March 30 as a follow-up event of the conference on the concept of legislation on the use and protection of sea environment called upon the initiative of the Sea Environment Department of the Ministry of the Environment. On the agenda of the meeting was the request for conducting environmental monitoring in the Estonian economic zone submitted to the Estonian Ministry of Foreign Affairs by the Nord Stream. T. Soomere provided an overview of the request for survey permit presented by the Nord Stream AG and the relating deadlines. The topic range of the Nord Stream gas pipeline has bifurcated into two groups of questions: (i) the ongoing dispute over the impact of the gas pipeline sea environment and positions of different countries with respect to that issue and (ii) the need to solve the problems relating to preparation and building of the gas pipeline. Within the first range of problems Estonian position is unequivocal (the risk to sea environment is extensive and in some aspects inadequately assessed) and therefore grounded for reassessment. Within the second range of problems, contrarily a number of solutions are available. Estonia is interested in high quality sea monitoring, which should however take place subject to Estonian legislation and comprise monitoring at all the stages: pre-works, works-in-process and post-works. Estonian respective laws have been harmonized with legislation of the European Union. A monitoring programme for Estonian waters should be approved and its fulfilment supervised by the Estonian Ministry of the Environment. Since surveys carried out in the Gulf of Finland by the Nord Stream have heretofore been incompetent in several aspects, it provides reason for claiming that monitoring be carried out by institutions authorized by Estonia, on developer's expense. There was a unanimous agreement that dispute on impact of gas pipeline on sea environment should definitely be carried on, while providing high quality adequate monitoring of the Estonian economic zone, territorial

waters and sea bottom should in the first place performed with Estonian own specialists and, if possible, at the developer's expense.

In August, the Academy of Sciences and the Committee were addressed by Mr. Viktor Smeritshevski with a proposal to consider, in cooperation with the Russian Academy of Sciences the building of a non-magnetic small vessel for the needs of geomagnetic measurements. In the process of electronic discussion held in August/September an opinion was reached that the quality of the proposed research programme fell short of the standard and that Estonia has neither the means, nor the possibilities, nor a direct need to carry out the proposed surveys.

In October, the topic of electronic meeting of the minds was limnology and the issues of harmonising and coordinating syllabi and modules of oceanography in the Estonian higher education landscape. Upon the request drawn by Kalle Olli and submitted through the Department of Natural Sciences and Engineering of the University of Tartu, a monetary subsidy was assigned by the PRIMUS programme.

In 2010, Chairman of the Committee T. Soomere participated in two plenary sessions of the Marine Board of the European Science Foundation: June 3-4 in Istanbul (Turkey), on October 14 in Ostend (Belgium) and in the work of the EASAC Environmental Panel. At the "Baltic Conference on Intellectual Cooperation" organised by the Lithuanian Academy of Sciences, T. Soomere delivered a joint paper together with a member of the Committee on Nature Conservation I. Puura.

#### COMMITTEE ON NATURE CONSERVATION

Chairman of the Board Professor Urmas Tartes

In 2010, the composition of the Committee on Nature Conservation was renewed. The new 28-member composition of the Committee was approved by the Board of the Academy at its meeting on November 9, 2010 according to the proposition of Chairman of the Committee.

Celebrations of the jubilee year of nature conservation in Estonia and the Year of Biodiversity were conducted in close cooperation by the Committee and the Ministry of the Environment. Several members of the Committee, namely Urmas Tartes, Enn Pirrus, Vaike Hang and others participated as authors and Ann Marvet as an editor in publishing of the anniversary collection "Estonian Nature Conservation 100". U. Tartes and a naturalist Arne Ader composed a nature protection briefcase for schools on the order of the Environmental Board. As an anniversary event, the Baer House hosted an exposition "Who is Who in Nature Conservation". Chairman of the Committee delivered papers at the seminar organised by the Academy "International Biodiversity Year 2010" and the 44th national meeting of the Estonian Naturalists' Society on the island of Naissaar.

Several discussions were held in connection with the Red List, with representatives of the Ministry of the Environment. Ivar Puura continued to participate in the work of a panel for the Nord Stream environmental impact assessment.

On September 17, to celebrate the 95th anniversary of Endel Varep (1915-1988), Professor of Geography at the University of Tartu, a portrait-painting of him was opened in the building of the once famous Pärnu Boys Gymnasium. E. Varep was the founding member of the Committee on Nature Conservation and its long-time Vice-Chairman, who had prepared the draft Nature Conservation Act 1957. He was compiler of the statutes of conservation areas and preserves, author of nature conservation collections, albums and hundreds of nature conservation articles. A review exhibition on Varep's nature conservation and areal study works was simultaneously arranged by the Committee and an album with Varep's pieces of writing and photos was donated to the school (presently that building houses the Kuninga Street basic school).

The Committee organised a memorial exhibition of its long-time member and laureate of the Kumari Prize, Member of Academy Loit Reintam (1929-2010) "The Plant-Soil System is the Basis of Life", a memorial exhibition of the well-known entomologist Asta Vilbaste (1923-2010) and an exposition of book plates of nature-conservation orientation.

Professor Rein Einasto, Doctor in Geology was elected as laureate of the Kumari Prize 2010. The Committee organised an exposition to introduce earlier laureates of the Kumari Nature Conservation Prize as well as the works of R. Einasto, which was displayed simultaneously with the conferral of the Prize in the Tallinn Botanic Garden.

#### THE COMMITTEE ON METEORITICS

Chairman Jüri Plado, PhD

The Committee on Meteoritics was chaired by Member of Academy Anto Raukas up to March 9, 2010 and from then on the work of the Committee has been continued under leadership of Jüri Plado, Senior Researcher of the University of Tartu, PhD.

In 2010 the main objects researched were:

- Osmussaar's sediment-vein analysis, incl. chromite grains with shock properties of veins and the enclosing rock (Kalle Kirsimäe), detailed micro-paleontological and shock trace (PDF) analyses (Leho Ainsaar), paleomagnetic surveys of breccias and enclosing rock (Jüri Plado);
- Neugrund shock crater – naval geo-physical (seismic) surveys (Kalle Suuroja);
- Bosumtwi (Ghana) and Ries (Germany) crater rock – mineralogical-geochemical research (Kalle Kirsimäe);
- Kaali meteorite field – geophysical (georadar) research (Jüri Plado).

Under supervision of Kalle Kirsimäe two bachelor theses in meteoritics were defended in the University of Tartu and under supervision of Juho Kirs – one master thesis was defended.

The Committee continued active participation in the study programme NIR (Network on Impact Research) funded by NordForsk. In January 2010, Jüri Plado and Ulla Preeden delivered papers at a scientific session at a Nordic geology conference, held within framework of the programme in Oslo, with by. In August-September, doctoral students of the University of Tartu Kairi-Linda Põldsaar, Mario Mustasaar and Kristian Rooni attended a course designed for doctoral students of the Nordic countries “Impact Cratering in the Planetary System – Cratering Mechanisms and Shock Metamorphism”, organised within the framework of the programme in Finland.

August 6 – the Meteoritics Day in Saaremaa at Kaali. The topics of the science day were bedrock geology of Saaremaa, Saaremaa’s cliffs, the world’s largest meteorite craters, geoparks in the world and establishment of the Saaremaa geopark. The participants watched films on meteoritics and organised a tour to present the history of Kaali craters. Presentation of the book “Meteorite Impact Structures – Geotourism in the Central Baltic” (authors Sebastian Willman, Jüri Plado, Anto Raukas and Heikki Bauert), published in the framework of the project “Fostering Geotourism on Central Baltic Islands” by Department of Geography at Uppsala University, the Department of Geology at the University of Tartu and the NGO Geoguide Baltoscandia in the cooperation programme INTERREG IV.

During the whole tourist season R. Tiirmaa offered guided tours to visitors of the Kaali meteorite field, presenting the local craters and providing information about the fall of meteorites. All in all the Kaali meteorite field was in that period visited by nearly 58 000 people.

## ACADEMY EVENTS

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### CONFERENCES

April 30 – Academy House was the venue for the CONCLUDING CONFERENCE OF THE SECOND FRENCH – ESTONIAN SCIENCE MONTH jointly organised by the Estonian Academy of Sciences, the French Embassy, the French Cultural Centre, the Ministry of Education and Research, the Estonian Science Foundation and the Archimedes Foundation. The theme of the conference was “Bioenergetics and Medicine: from Cellular Bioenergetic Systems in Heart to Cardiologic Investigations”. Papers were delivered by Member of Academy Valdur Saks and Professor Pierre Dos Santos (INSERM Bordeaux, France).

November 4-5 – 12th Baltic Conference on Intellectual Co-operation “Science and Society” was this time organised by the Lithuanian Academy of Sciences in Vilnius. The conference was attended by a seven-member Estonian delegation: President of the Academy Richard Villems, Vice President Jüri Engelbrecht, Secretary General Leo Mõtus, Member of Academy Ain-Elmar Kaasik, Ivar Puura, Margus Maidla and Galina Varlamova. Richard Villems delivered his inaugural lecture as Foreign Member of the Lithuanian Academy of Sciences. Several papers were presented by members of the Estonian delegation: “Science in Society: ALLEA Role in Uniting Academies” by Jüri Engelbrecht, “Complex Systems in a Society” by Leo Mõtus, “Factors Influencing Research Behaviour and Integrity” by Ain-Elmar Kaasik, “Science, Society and Environment: the Case of Nord Stream” by Ivar Puura and “Representation of Science to Society – Relevant & Irrelevant Issues” by Margus Maidla. The conference adopted a resolution regarding problems and challenges, which modern scientific society and society at large are facing dialogue between science and various interest groups within society. Renewal of the Agreement on Cooperation between the Baltic Academies of Sciences was jointly signed by the parties.

November 9 – ACADEMIC CONFERENCE OF THE STUDENT RESEARCH PAPER CONTEST WINNERS and subsequent award ceremony were held at the Academy House. The Academy has established monetary awards to reward outstanding research results of talented students and in the same way to stimulate their independent research work in the future. The conference was opened by President of the Academy Richard Villems and moderated by Member of Academy Georg Liidja.

The following prize-winning papers were delivered:

*T. Minnik* Tallinn University, Terror and repressions during the period of the Estonian War of Independence;

- K. Laas* University of Tartu, Functional *NOS1* and *MAOA* polymorphisms, platelet MAO activity and impulsivity;
- K. Alasoo* University of Tartu, Combining support vector machines to predict novel angiogenesis genes;
- M. Aavik* Estonian Academy of Arts, Postwar private houses in the “milieu valued area” of Nõmme.

## SEMINARS

April 20 – seminar in the series NEW TRENDS IN SCIENCE – FEASIBILITY OF CONDUCTING COMPLEX SYSTEMS ANALYSIS OF THE STATE was organised by the Academy. The keynote speech “Is half-reckoning adequate for securing sustainability?” was delivered by Leo Mõtus. The following panel discussion was moderated by Jüri Engelbrecht and attended by Mart Ustav, Jaak Aavik-soo, Ain-Elmar Kaasik and Urmas Varblane.

The major purpose of the speech presented by Leo Mõtus was to deliberate over various analyzing methods of the past and for the future that are applicable to the (emergent) behaviour, focusing on the study of concurrence with regard to multiple models in a range of abstraction levels as well as on the expediency assessment towards application of agent-based models. The efficiency of agent-based models in the study of complex systems was illustrated by numerous examples of currently existing self-organising agent-based models and their actual application at various institutions in the USA. The question concerning the relevance of all those factors for Estonia was the basis for successive discussion.

A great number of issues regarding the state as an entity and the importance of analyzing it as a complex system had been posed to participating parties at a preparatory stage of the seminar. The discussion highlighted a multitude of problems related to: analysis of potential similarities between a social and a biological system, modelling of subsystems (be it either a stock exchange, university, research group or an economic sector), data mining for subsystems and their interdependence, etc. It was declared on the example of economy that the processes of Estonia as a small country were extremely nonlinear. Attention was likewise called to the primary purpose of a social system – survival. Therefore, as such a system at its basic level was involved with individuals and their decisions, value judgments turned out to be of critical impact as well. Several speakers emphasized in their comments the necessity for establishing an independent centre for analysis.

The conclusions of the seminar can be summarized in the following points. Although establishing a model for a state as a complex system is not an end in itself, nevertheless it is essential to understand the behaviour principles of complex systems, e.g. feedback between models in a range of abstraction levels (subsystems), significance of interdependencies between the system and its subsystems, necessity for intentional alteration of the system’s (global) behaviour reckoning with the susceptibility of the system towards minor alterations of the initial conditions, etc. Enhancement of the analyzability of a state definitely expects intensification of systematic education and thorough interdisciplinary scientific studies (especially in the context of complex systems) as its preconditions and on top of that, furtherance of concepts towards e-governance by taking into consideration new research results obtained in the

study of complex systems throughout the world. Favourable conditions for all the aforesaid factors are actually available in Estonia, if only those (hopefully occasional) mental barriers, which are currently observable in the spheres of research coordination and management of governmental structures, could be pushed aside.

September 22 – seminar PROBLEMS OF SIBERIAN ESTONIANS was held at the Academy House, moderated by Member of Academy Urmas Varblane. The opening speech of the seminar was given by Vice-President of the Academy Jüri Engelbrecht. The floor was taken by: Aivar Jürgenson of Tallinn University “Creating home country. The example of Siberian Estonians”, Astrid Tuisk of the Estonian Literary Museum “The stories of nowadays Siberian Estonians relating to expatriation of their forebears”, Anu Korb of the Estonian Literary Museum “From a Siberian village to Estonia. The stories of repatriates” and Aadu Must of the University of Tartu “Siberia: archives are telling a different story”. Watching a documentary about Siberian Estonians produced by “Tallinnfilm” was followed by discussions.

October 27 – TUT Institute of Cybernetics was the venue for a seminar-workshop MODEL-BASED SOFTWARE ENGINEERING – HIGH TECHNOLOGY IN SOFTWARE MANUFACTURING organised by the Estonian Academy of Sciences. Papers were delivered by:

- E. Tõugu* Model-based software engineering;
- P. Grigorenko* Survey of CoCoViLa;
- M. Harf* Simulation of hydro systems;
- A. Ojamaa* Simulation of cyber defense;
- R. Maigre* Web service synthesis for the governance portal.

The following CoCoViLa workshop – hands on! Was supervised by Pavel Grigorenko. The attendants of the workshop had an opportunity to create a model-based software prototype on their laptops.

November 17 – seminar INTERNATIONAL YEAR OF BIODIVERSITY organised by the Academy was moderated by Member of Academy Erast Parmasto and Anto Raukas. Papers were presented by:

- E. Parmasto* Biodiversity and value judgments of a human being;
- U. Tartes* The Red List and species preservation;
- R. Annus* The activities of the Ministry of the Environment aimed at biodiversity conservation;
- U. Kõljalg* What is the influence of biodiversity informatics and molecular biology upon species recognition under natural conditions?
- O. Hints* Fossils and biodiversity evolution;
- M. Kaal* Biodiversity and zoological gardens.

Material from the seminar was published as a booklet.

## PUBLIC ACADEMIC LECTURES

The traditional Public Academic Lecture Series of the Estonian Academy of Sciences were continued with two lectures in 2010:



October 20  
Member of Academy *Jaan Undusk*  
“Oxymoron as a Figure of Thought in  
the Intellectual History of Europe (2)”



November 10  
Member of Academy *Raimund Ubar*  
“The Race between Engineers and  
Technology in the Nanometer Distance”

Nikolai Alumäe Memorial Lecture  
(5th, since 2000) jointly organised  
by the Estonian Academy of Sci-  
ences and the Estonian National  
Committee for Mechanics at the In-  
stitute of Cybernetics on September  
13 was delivered by:

Member of Academy  
*Rein Küttner*  
“Analysis and Optimization of  
Mechanical Engineering Products  
and Processes”



## MEETINGS-DISCUSSIONS

February 19 – 125th anniversary of the birth of Karl Schlossmann, the first president of the Academy was celebrated at his birthplace in the village of Pikknurme, Jõgeva County. The opening speech at the memorial plaque was made by Vice-President Mart Ustav. Karl Schlossmann as a renowned scientist, microbiologist, investigator of Estonian curative sea-muds and scholar was memorialized by Professor Marika Mikelsaar. The following speeches were given by Jõgeva County Governor Viktor Svjatõšev and Professor Lembit Allikmets. Ille Palm on behalf of the Schlossmann family demonstrated and commented on materials pertaining to Karl Schlossmann that had been accumulated by her. The event was attended by Members of Academy Leo Mõtus and Urmas Varblane.

February 19 – members of the Board had a meeting with representatives of the Estonian Economic Association (EMS). The issues under discussion included association of the EMS with the Estonian Academy of Sciences and possible formation of a committee on economic development at the Academy. Secretary General Leo Mõtus gave an overview of co-operation agreements between the Academy and various societies. Representatives of the EMS presented the activities of the society. Initiation of the Academy's committee on economic development was discussed as the second item on the agenda. The objectives and areas of activity of the intended committee were under consideration as well as its possible membership. The EMS was represented by professors Jüri Sepp and Toomas Haldma from the University of Tartu and Rando Värnik from the Estonian University of Life Sciences. Richard Villems, Mart Ustav, Leo Mõtus, Ilmar Koppel and Urmas Varblane were attending on the side of the Academy's Board.

May 21 – traditional Academy Science Day was held in Põlva County (the 11th, started in 2000).

The Science Day started in the building of the Environmental Board of Rāpina, where the following papers were delivered:

- Põlva County Governor *Priit Sibul*, A glimpse of Põlva County;
- Member of Academy *Richard Villems*, Academies at large and the Estonian Academy of Sciences in more detail;
- Member of Academy *Urmas Varblane*, Estonian economy on the road out of crisis;
- Professor Emeritus of Tallinn University *Viive-Riina Ruus*, Visible *versus* invisible education.

County Governor Priit Sibul gave an overview on the administrative division and population of Põlva County as well as its natural and cultural resources, principal spheres of activity and production. He offered the audience a closer look into the current competencies, problems and potentialities of larger rural

municipalities, their leading enterprises and the condition of schools. During question time the presenter was joined by Rāpina Rural Municipality Mayor Teet Helm, who helped to provide answers to numerous questions. President of the Academy Richard Villems spoke about the earliest academies and further about the establishment, activities and ever-changing role of the Estonian Academy of Sciences. Urmas Varblane presented an analysis of the current status and perspectives of Estonia's economy in conditions of the world economic crises, illustrated by ample statistics-based charts and figures. Professor Emeritus Viive-Riina Ruus deliberated over setting of educational objectives, various theories, reforms, learning output options as well as dilemmas, myths and metaphors related to them.

The second half of the Science Day continued at the community cultural centre of Värskä. After a short introduction made by Värskä Rural Municipality Mayor Raul Kudre, the audience was shown a video film about Setumaa "Hüä olõmisõ kotus", completed in 2004. President of the Academy gave a brief overview of the Academy. Member of Academy Jaan Undusk spoke about uncensored Tuglas, whereas Member of Academy considered Põlva County as a border region of the European Union and headed further to a broader and more philosophical approach of the theme involved with boundaries and borderline areas.

At the end of the day, a quick visit was made to one of the largest infrastructural complexes of Estonia – the development area of the Koidula Railway Border Station, where participants of the Science Day had a good look at the construction works underway. The Science Day was attended by Members of Academy Jaak Aaviksoo, Ain-Elmar Kaasik, Rein Küttner, Agu Laisk, Georg Liidja, Udo Margna, Leo Mõtus, Arved-Ervin Sapar, Raivo Uibo, Jaan Undusk, Urmas Varblane, Richard Villems and Haldur Õim.

November 26 – representatives of the Academy paid a visit to the 65-hectare premises of the BLRT Group. The delegation was met and shown around by Mark Berman, Chairman of the Supervisory Board of the BLRT Group and Rene Arikas, Board Member of one of the subsidiary companies, BLRT Marketex Ltd.

Members of the Academy were introduced to the structure of the multi-profile holding company nowadays and its intended large-scale assignments in the near future – the task of constructing pylons for drillers that would enable to relaunch the existing drilling platforms of the oil and gas industry, capable of extracting a major part of the remaining reserves from formerly exploited oil and gas wells. From technological point of view construction of such a drill operating horizontally and also at an elevation angle is unique, therefore members of the academy were invited to come and see the outstanding achievement of science and technology with their own eyes during the final completion stage of the ship in May 2011.

During the visit it was possible to watch the production flow of catamarans and fish feed vessels equipped with an exceptional technology programme. The BLRT Group concern, which is based on Estonian capital and incorporates 65 subsidiary companies (some of them located in Lithuania and Finland), is by all means a flagship of Estonian industry. Similarly to other industrial enterprises of specific nature, it is grappling with acute deficiency of well-educated and highly skilled workers. Expressly for that reason it is compelled to purchase training from abroad at great expense.

The factory museum, initiated with a view to dignify the workers of the company, provided a matter-of-fact and inspiring overview reflecting the continuous operation of the shipyard for nearly a hundred years – the centenary anniversary will be celebrated in 2012.

The visit was attended by Leo Mõtus, Peeter Saari, Arved-Ervin Sapar, Ülo Jaaksoo, Georg Liidja and Agu Laisk.

## **POPULARISATION OF SCIENCE**

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

“The Falling Apple” (first transmitted in 2008 upon the initiative of Radio KUKU and the Estonian Academy of Sciences) has been broadcast as a weekly science programme by Radio KUKU, from 2010 onward in close collaboration with the Estonian Academy of Sciences, the University of Tartu and Tallinn University of Technology, presenting and popularizing science and scientists. During the time it has been on the air, the programme has won renown and acknowledgment among the regular audience and scientific community alike, as testified by growing ratings of listening. The editor and promoter of the programme is Margus Maidla.

The subject fields of the programme can be divided into the following larger thematic blocks:

- Science policy and organisation of science;
- Presentations of Estonian research institutions and scientists;
- Laureates of National Science Prizes;
- Participation in the EU framework programmes and other international programmes – projects, people and outcome;
- Centres of excellence in research;
- Development centres of technology and other researches of applied orientation;
- Successful Estonian researchers at foreign scientific institutions;
- Comments by scientists on topical problems that have attracted a wide interest in the world – whether and how they are affecting our daily life.

Predominantly the programmes embraced the following thematic blocks:

#### **SCIENCE POLICY AND ORGANISATION OF SCIENCE**

Interviews were held with the Minister of Education and Research Tõnis Lukas, Head of the Research Department of the Ministry of Education and Research Indrek Reimand, President of the Estonian Academy of Sciences Richard Villems, Members of Academy Jüri Allik and Peeter Saari, Vice-Rector for Research of the University of Tartu Kristjan Haller, Vice-Rector for Research of Tallinn University of Technology Rein Vaikmäe.

#### **PRESENTATIONS OF ESTONIAN RESEARCH INSTITUTIONS AND SCIENTISTS**

The Estonian Academy of Sciences was represented among guests on the programme by Vice-Presidents Mart Ustav and Jüri Engelbrecht, Secretary General Leo Mõtus, Members of Academy Arvi Freiberg, Andres Metspalu, Martin Zobel, Raimund Ubar, Tarmo Uustalu, and Urmas Varblane.

The University of Tartu: Director Leho Ainsaar and Prof. Ülo Mander of the Institute of Ecology and Life Sciences; Dean of the Faculty of Natural Science and Technology, Prof. Peeter Burk; Director Martin Hallik and Development Director Liisi Lembinen of the UT Library; Professor of pharmacology Allen Kaasik; Associate Professor of the Faculty of Law Enn Kasak; Doctoral Student of the Genome Project Tõnu Esko; Dean of the Medical Department, Prof. Joel Starkopf; Professor of evolutionary ecology of plants Kristjan Zobel; Researcher Extraordinary of the Estonian Genome Center, Doctoral Student Riin Tamm; Professor of the Faculty of Philosophy Rein Vihalemm.

Tallinn University of Technology: Professor of the Department of Materials Engineering Priit Kulu; Lead. Research Scientist of the Faculty of Chemical of Materials Technology Rein Kuusik; Dean of the Faculty of Power Engineering Tõnu Lehtla; Professor of the Department of Mechanical Engineering Tauno Otto; Director of the Department of Thermal Engineering, Prof. Aadu Paist; Professor of the Department of Gene Technology Peep Palumaa; Professor of electronics design Toomas Rang; Researcher of the Department of Electrical Drives and Power Electronics Indrek Roasto; Professor of the Chair of Automatic Control and Systems Analysis Ennu Rüstern; Professor of the Department of Gene Technology Erkki Truve; Dean of the Faculty of Chemical and Materials Technology, Professor Andres Öpik, Director of the Institute of Cybernetics at TUT, Prof. Andrus Salupere.

A few of the guests were affiliated with other research institutions.

Professor of Agricultural and Environmental Sciences Institute Ülo Niinemets, historians of science Ken Kalling and Erkki Tammiksaar with the Estonian University of Life Sciences.

Director, Prof. Urmas Sutrop and Dictionary Department Head Margit Lange-mets with the Institute of the Estonian Language.

Director Maris Jesse and Research Director, Prof. Toomas Veidebaum with the National Institute for Health Development.

Director Arvo Kullapere with the Vilsandi National Park.

Presentations dedicated to LAUREATES OF NATIONAL SCIENCE PRIZES were in studio attended by:

Member of Academy Arvo Ots; Professor of the Institute of Molecular and Cell Biology at UT Maris Laan; Senior Researcher of the Institute of Veterinary Medicine and Animal Sciences at the Estonian University of Life Sciences, Professor Tõnu Püssa; Professor Emeritus of the Institute of Physics at UT Hannes Tammet; Leading Researcher Rein Kuusik and Senior Researcher, Prof. Andres Triikkel of the Inorganic Materials Laboratory at TUT; Senior Researcher of the Institute of Psychology at UT Anu Realo; Professor of the Department of Microbiology, Faculty of Medicine at UT Irja Lutsar; Director Jüri Järs and Deputy Director Gerda Koidla of the Library of TUT; Professor

Irina Belobrovtsseva and Senior Researcher Svetlana Kuljus of the Institute of the Slavonic Languages and Cultures at TLU; Senior Researcher of the Institute of Technology at UT Hannes Kollist and Researcher of Helsinki University Triin Vahisalu.

The total number of broadcasts in 2010 amounted to 52.

Broadcast times:

- Originally on the air on Sundays at 3-4 p.m.;
- Repetition on Sunday at 9-10 p.m.

The weekly listening ratings of the programme gained an average of 27 thousand listeners, Podcast downloading – *ca.* 710 downloads per broadcast.

## **RESEARCHERS' NIGHT 2010**

Estonia participated for the fifth year in the series of the European Researchers' Night activities, aimed at presenting researchers and science related issues to the wider public. The events of the Researchers' Night 2010 on September 24 were coordinated by the Science Centre AHHAA. The Estonian Academy of Sciences as a project partner was co-responsible for the activities in Tallinn brought in other involved parties: the Tallinn Botanic Garden, the Institute of History at Tallinn University, the magazine "Tarkade Klubi" (Club of the Wise) as well as researchers from the Estonian Academy of Music and Theatre, the National Institute of Chemical Physics and Biophysics, Tallinn University and Tallinn University of Technology.

In the course of the day fascinating events were organised for public at large regardless of age and scientific background. The Nature House of the Tallinn Botanic Garden provided an opportunity to have a look at the most mind-boggling fruit of the world, the herbarium had an open-house day and display of wood and cones, the greenhouse engaged those interested in nature-educational games, the Palm House had on stand an exposition "The Autumnal Graces from Garden and Fields", practical activities "Water and Soil" were carried out and landscape games were played. In cooperation of the magazine "Tarkade Klubi" with the Academy, the cafe "Little Paris" beneath the Liberty Square had opened a science cafe "A penny for the dreams of researchers", with Prof. Erkki Truve of Tallinn University of Technology and Dr. Andi Hektor of the National Institute of Chemical Physics and Biophysics speaking. The Institute of History at Tallinn University held presentations of an invaluable Viking period silver treasure and tours of archaeological exposition. Speaking at a workshop on application of archaeological and technological research methods were Dr. Enn Kaup of the Institute of Geology at TUT and Lembi Lõugas of the Institute of History at TLU, contemplating on radioactive carbon, enabling to set the timeframe for events that had occurred

thousands of years ago – the cave life led by Tasmanian aborigines, the oldest human dwelling habitat in Estonia, the pharaoh's ship in ancient Egypt, the Christ's burial shroud and many more. Dr. Jüri Peets of the Institute of History presented the process and findings of the Salme boat obsequies (funeral ceremony), Dr. Ruth Agurauja of the Tallinn Botanic Garden deliberated on conservation of rare and endangered plant species of the world.

The night for exploring music at the Estonian Academy of Sciences was opened and moderated by Jaan Ross, with presentation of the Academy of Sciences and insights into its history. An expert of the Tallinn Botanical Gardens Helen Kösta delved into reactions of plants to sounds and music, frequency and pitch. Jaan Ross and Marju Raju of the Estonian Academy of Music and Theatre introduced an international comparative research project "How the Children Sing". The project scrutinized musical development of children. A test package elaborated within the project framework and preliminary study results were introduced to the audience.

The AHHAA Science Centre in Tallinn organised a broad range of demos and experiments for children on the Liberty Square. In addition to Tallinn a variety of events took place in Tartu, Narva, Pärnu, Rakvere, Türi, Viljandi, Valga, Saaremaa and Kihnu. The TV audience could watch a live broadcast delivered by the Estonian Public Broadcasting.

## **ACADEMY MEDALS, AWARDS**

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

The Board of the Estonian Academy of Sciences decided to hand out two memorial medals of the Academy in 2010:

PAUL ARISTE MEMORIAL MEDAL (first conferred in 2006)

Member of Academy *Huno Rätsep*

for furthering the studies on the origin of the Estonian vocabulary and the Finno-Ugric languages.

WILHELM OSTWALD MEMORIAL MEDAL (first conferred in 2006)

Member of Academy *Ilmar Koppel*

for outstanding achievements in chemistry.

Medals were awarded at the annual meeting of the General Assembly.

### **MEDAL OF THE ACADEMY**

In 2010 the Medal of the Estonian Academy of Sciences was conferred on Director of Tartu Observatory

*Laurits Leedjärv*

for efficient management and development of the Observatory in 1999-2010.

### **STUDENT RESEARCH PAPER PRIZES**

In 2010 the Estonian Academy of Sciences received 84 research papers for the contest of the Student Research Paper Prizes. The papers were examined by the Appraisal Panel of the Academy including: Georg Liidja (Chair), Arvo Krikmann, Udo Margna and Enn Tõugu, whereas Jaan Ross, Peeter Tulviste and Haldur Õim were engaged as experts. The Panel decided to award five 10 000 kroons first prizes and five 5 000 kroons second prizes.

The first prize of the Estonian Academy of Sciences was awarded to:

*Kaur Alasoo* (University of Tartu) Bachelor's Thesis "Combining support vector machines to predict novel angiogenesis genes";

*Allar Lepa* (University of Tartu) Master's Thesis "Reflection of the April riots of 2007 in Estonia on the homepage of the Russian youth organisation Nashi";

*Taavi Minnik* (Tallinn University) Master's Thesis "Terror and repressions during the period of the Estonian War of Independence";

*Mihkel Pajusalu* (University of Tartu) Master's Thesis "Temperature dependence of the exciton area of photosynthetic antennae";

*Annika Valdmets* (University of Tartu) Master's Thesis "Formation and use of Mõne modal particles in the Estonian literary language from 1890 onwards".

Assessed as meriting the second prize were:

*Mariette Aavik* (Estonian Academy of Arts) Master's Thesis "Postwar private houses in the "milieu valued area" of Nõmme";

*Kariina Laas* (University of Tartu) Master's Thesis "Functional *NOS1* and *MAOA* polymorphisms, platelet MAO activity and impulsivity";

*Eva-Liisa Linder* (University of Tartu) Master's Thesis "The dramaturgy of Witold Gombrowicz. A form-based theoretical analysis";

*Mehis Rohtla* (University of Tartu) Master's Thesis "Investigating the migrations of Matsalu Bay pike (*Esox lucius L.*) by the means of otolith microchemistry";

*Marja Vaba* (Tallinn University) Master's Thesis "English-Estonian code-copying on the example of two conversation groups of Skype Tallinn office".

Research prizes together with corresponding diplomas were handed over at the conference of the Student Research Paper Contest winners on November 9 whereat four prize-winning papers were presented by the authors.

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

In 2010 the Prize for Popularisation of Estonian Science was for the fifth time granted as a joint award of the Estonian Academy of Sciences, the Ministry of Education and Research and Archimedes Foundation. The purpose of the prize is to highlight popularisation of science, promote activities towards communicating research to the public and to recognize for their outstanding efforts individual as well as groups of researchers, who have succeeded in presenting research, science achievements and research efforts of scientists in a generally fascinating form as well as rendering research understandable to a wider public, have achieved to arouse interest towards research and the researcher's profession, especially among young people.

This time 37 candidates in six categories were presented to the competition for the prize. The Appraisal Panel of the competition headed by Georg Liidja decided to confer prizes as follows:

The Lifetime Achievement Award for longstanding systematic communication of science and technology

*Rein Veskimäe.*

#### Popularising science through audiovisual and electronic media

- Grand Prize: Estonian interactive historical online-environment HISTRODAMUS, author of the idea Jaanus Vihand,
- Motivation Prize: television series “Teaduse helisõnastik” (tone vocabulary) started by the Estonian Public Broadcasting (ERR), its reflections in the ERR news portal and the social network Facebook, editor Priit Ennet.

#### Popularising science through the written word

- Grand Prize: Popular science books authored by Tiit Kändler, published in 2009 and 2010,
- Motivation Prize: “Maailma ravimtaimede entsüklopeedia” (encyclopedia of herbs from around the world), author Ain Raal.

#### Actions/series of actions for communication of science

- Grand Prize: Opening of a virtual half-dome planetarium at the Discovery Centre Energy and its operation in 2009, Director of the Centre Kertu Saks,
- Motivation Prize: Mathematics competition *Känguru* (kangaroo), Gifted and Talented Development Centre at the University of Tartu, project manager Raili Vilt.

#### Best scientist, journalist, teacher, etc. popularising science and technology

- Grand Prize: Aare Baumer, Research and Development Manager of the Discovery Centre Energy,
- Motivation Prize: Svetlana Variku, Director of Palupera Basic School.

#### Best innovative action popularising science and technology

- Grand Prize: Interactive location finders of natural features on the Internet and in smart phones, Head of WG Tiina Randlane,
- Motivation Prize: E-course on information competency entitled “Infopädevus ehk miks Google’st ei piisa” for high school students, University of Tartu Library, Director Martin Hallik.

In 2010 the prize fund of the competition amounted to 235 thousand kroons: Lifetime Achievement Award – 60 thousand kroons, First Prize – 30 thousand kroons and Second Prize – 5 thousand kroons.

Results of the competition were announced and prizes conferred at the science media conference entitled “Teadusrikkuse levialas”, held at the conference centre of the Nordic Hotel Forum on October 28.

## **PUBLICATIONS OF THE ACADEMY**

Books published by the Academy in 2010:

- “Estonian Academy of Sciences Yearbook XV (42)” in Estonian\* and in English\*;
- The fourteenth book in the series “National Science Prizes” (in Estonian), providing an overview of the award-winning researchers in 2010 and their studies.

Booklet:

- “International Year of Biodiversity 2010: Estonian Academy of Sciences seminar materials, November 17, 2010” (in Estonian).

For information about scientific and scholarly journals published by the Estonian Academy Publishers, see p. 87-89.

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

## INTERNATIONAL SCIENTIFIC RELATIONS

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The Estonian Academy of Sciences represents Estonia in several INTERNATIONAL SCIENTIFIC ORGANISATIONS bringing together science community on issues that cross specialties at the level top researchers and science policy makers. The following developments in 2010 are worth mentioning.

The European Federation of National Academies of Sciences and Humanities “ALL European Academies” (ALLEA) is headed as President for a second three-year period by Vice-President of the Estonian Academy of Sciences Jüri Engelbrecht. ALLEA was conducting dynamic activities reckoning with the interests of its member academies, pursuing for more efficient collaboration with various decision-making bodies and other pan-European and worldwide scientific organisations (ESF, EASAC, EUA, IAP/IAC, ICSU, etc.) and continuing the performance of its standing committees and ad-hoc working groups as well as counselling of political institutions in the traditionally established spheres of activity, e.g. science education, intellectual property rights, science evaluation, problems relating to the establishment of the European Young Academy, science policy, research integrity, etc. The Academy has presented Member of Academy Raivo Uibo as a member of the standing committee on science and ethics. Under the auspices of ALLEA the Academy gains an opportunity to have a more powerful voice in various science strategy and science policy issues on a broader scale, as a representative of ALLEA J. Engelbrecht furthermore participates in the steering bodies of EASAC and the ESF.

The Academy participates in the European Science Foundation (ESF) together with the Estonian Science Foundation. Payment of the membership fee is executed through the Academy, funding of participation in programmes through the Estonian Science Foundation. Representatives of the Academy and the Science Foundation, commonly appointed, act both in the Governing Council and the Standing Scientific Committees. For instance, Member of Academy Raivo Uibo represents Estonia on the ESF European Medical Research Councils.

The Academy has participated in the person of Assistant Secretary General Galina Varlamova in the work of the ESF Member Organisation Forum “Science in Society Relationships”. In 2010 Estonian researchers participated through funding of the Estonian Science Foundation in 18 ESF Research Networking Programmes. The Estonian Science Foundation has joined several programmes of the ESF EUROCORES (*European Collaborative Research*) and it additionally participates in the work of the member organisation forums.

The ESF has up to the present day undertaken to unite both science funding organisations and academies of sciences. Recently the EUROHORCs (European Heads of Research Organisations) have taken an initiative towards a conceptual restructuring. A principally new association, the so-called *ScienceEurope* is designed to be formed on the basis of the ESF and the EUROHORCs that would exclusively incorporate the major science-funding organisations of member states and whose primary objective shall be actual involvement in science policy matters. As organisations that are not funding science would no longer be eligible as members of the new ESF, the Estonian Academy of Sciences has decided to terminate its membership in the ESF.

The Estonian Academy of Sciences is a member of the Marine Board operating under the umbrella of the ESF, where it is represented by Chairman of the Committee on Marine Sciences Tarmo Soomere. T. Soomere participated in two plenary sessions, of which the October session was combined with a high-level marine science policy conference EurOCEAN2010. The conference adopted the so-called Ostend Declaration of groundbreaking impact, which through the argumentation made by members representing scientific organisations was appended with a clause, which points out a persistent need for basic research in order to fill enormous gaps in basic expertise with regard to coasts, seas and oceans.

The European Academies' Science Advisory Council (EASAC) is constituted by individual members authorized by the national science academies of the EU Member States, whereas Estonia is represented by Secretary General Leo Mõtus. EASAC is drawing on the competence of the academies as assemblies of top researchers with the goal of influencing decision-making processes of the major European Union institutions (the European Parliament, the European Council, the European Commission), by urging policy-makers to realize the necessity for independent expert assessment while preparing to take influential strategic decisions and providing relevant, evidence-based counselling for decision-making. The activities of EASAC are primarily focused on three areas: energy, life sciences (incl. health related issues) and environment. The Academy sends Estonian scientists-experts to EASAC working groups and co-finances their participation expenses. The main output resulting from the activities of task forces, which as a rule are initiated for a couple of years is constituted by publications, offering an analysis for a range of problems in the EU member states with regard to a specific discipline together with appropriate recommendations for improving the situation. For instance, the most recent publication "Realising European potential in synthetic biology: scientific opportunities and good governance", which was by the agency of the Academy distributed in Estonia as well. In planning its activities EASAC makes a special point of timeliness in order to afford entering the decision-making processes as well as establishing contacts between high-level policy-makers and EASAC experts. Chairman of the Committee on Marine Sciences at the Estonian Academy of Sciences Tarmo Soomere is a

member of the EASAC Environmental Steering Panel, who is additionally in the capacity of facilitating exchange of information and harmonization of activities between the Environmental Steering Panel and the ESF Marine Board.

Union Académique Internationale (UAI) unites academies involved in the so-called “soft” sciences and focuses its activity mainly on the humanities. The Academy is represented by Member of the Board Peeter Tulviste, who belonged to the Bureau of UAI in 2007–2010. P. Tulviste participated in the annual meeting of UAI in Budapest (May) and in December represented UAI at the General Assembly meeting of the International Social Science Council (ISSC) convened in Nagoya (Japan). The General Assembly emphasized the need for drawing together natural and social sciences and to apply methods of both fields for study of global processes (e.g. climate change) in order to estimate human impact on those processes and to analyze opportunities for co-ping.

The Academy also takes part in the work of several other worldwide science organisations such as International Council for Science (ICSU), InterAcademy Panel on International Issues (IAP), etc. Participation of the Academy affords to make Estonian science visible on a broader scale and to bring the scientific approach to issues vital for Estonia to the international level.

The Academy continued supporting contacts of the Estonian scientific community with international scientific unions, giving preference to ICSU member organisations. By means of a targeted allocation from the Ministry of Education and Research the Academy organised payment of membership fees and supplied the Ministry with a review on the activities of respective national contact organisations (see the list in Appendix 2, p. 185-186). National organisations disseminated information materials, participated in science forums conducted by scientific unions (rather moderately, though, due to economical reasons) and organised them in Estonia. Estonian scientists participated in working groups, networks and research projects of scientific unions. By virtue of being elected to the steering bodies of scientific unions they are empowered to influence the policies and strategies of those organisations.

The Estonian Academy of Sciences similarly to multiple other European academies supports and finances international mobility of researchers through a SCIENTIFIC EXCHANGE PROGRAMME. Bilateral cooperation agreements (full list of partners is presented in Appendix 3, p. 187) serve as the formal basis for exchange of scientists. For the purpose of renewing the cooperation programme for the following years, in November 2010 a supplementary agreement to their trilateral cooperation agreement was signed by the Estonian, Latvian and Lithuanian academies of sciences in the course of the 12th Baltic Conference on Intellectual Co-operation held in Vilnius.

The activity of the programme is supervised by the Council for International Exchanges, comprising of representatives of the Divisions of the Academy

and four major public universities – the University of Tartu, Tallinn University of Technology, the Estonian University of Life Sciences and Tallinn University. The Academy acts upon the traditional cost-sharing principle (living expenses in the host country are covered by the receiving party) and gives preference over individual research to reciprocal visits within bilaterally accepted joint projects. As a rule, scientists to be nominated to the receiving Academy for funding are selected by the sending Academy. The Estonian-Finnish exchange of scientists is an exception to the rule, whereby a Finnish scientist has to apply to “his/her” Academy for covering the reception costs of an Estonian colleague (and vice versa).

Last year the quantitative dimension of scientist exchange was affected by economic recession, notably the total sum of money in the budget of the Academy allocated for reception of visiting scientists was by approx. 40% less than in 2009. For that reason the Academy was compelled to involve in the selection of scientists nominated to Estonia by making suggestions to partner Academies towards cutting down both the number and the duration of visits. The understanding attitude of our partners in its turn subjected the Academy to make an ethical decision to keep the sending of Estonian scientists in acceptable limits for partners, regardless of the quantity rates provided by agreements. Whereas at the same time, the economic situation of partner academies was also among the influence factors to be considered – for instance, the Bulgarian Academy of Sciences was in absolutely no position to cover the living expenses of Estonian scientists, which in its turn implicated our decision with regard to receiving Bulgarian visiting scientists.

In 2010 Estonian scientists made 65 study and conference visits, using the total of 527 days. Although the number of outbound visits did not indicate a distinct reduction in comparison with 2009, the number of used days, however, decreased by 30%. The total sum of 307.6 thousand kroons was expended to cover the living expenses of visiting scientists – by 38% less than in 2009; the average daily expense was kept at the level of 2006. On that ground it was possible to receive 69 visiting scientists working at Estonian universities and research institutions, in total of 488 days – eventually only by 26% less than in 2009.

As ever, the University of Tartu is the most frequent user of the scientist exchange scheme (39% share in receiving visits and 29% in application for trips) and Tallinn University of Technology (with respective shares of 30% and 36%). The prevailing majority (54%) of visiting scientists is involved in exact and natural sciences, the greatest majority (48%) of dispatched Estonian scientists is similarly subject to those fields. The last mentioned is a manifestation of a new tendency – so far the most frequent users of scientist exchange in the outbound direction from Estonia have been constituted by scholars in the humanities and social sciences. Still, the exchange of scientists has been more dynamic with the Eastern and Central European academies of sciences. Meanwhile it should be noted that the exchange of scientists is

emanated from the initiative of researchers as well as practical needs for cooperation, whereas the cooperation opportunities of Estonian researchers have been substantially expanded. Funding may be applied from various sources (including FP7, programmes co-funded from structural fund, state incentives for mobility), which certainly have an explicit impact on the exchange of scientists between academies of sciences.

Representatives of the Academy traditionally visited partner academies, attended scientific events, delivered lectures at international scientific forums as invited speakers, among others the 12th Baltic Conference on Intellectual Cooperation in Vilnius (see p. 38).

The Academy for a number of years has supported direct contacts of young scientists with top actors in the world of science – in 2010 the Academy dispatched Els Heinsalu, PhD in theoretical physics (National Institute of Chemical Physics and Biophysics) and Anneli Kruve, PhD student at the University of Tartu to participate in the interdisciplinary Lindau Meeting of Nobel Laureates with highly talented young scientists in Germany. The young talents numbering 680 from 72 countries were delivered lectures and personally encountered by as many as 59 Nobel Laureates, among others by Foreign Member of the Estonian Academy of Sciences Richard Ernst, who gave a speech under the title of “Concepts for a Beneficial Global Future”. In the autumn of 2010 the Academy held a contest for participation in the Lindau Meeting in 2011 (dedicated to medicine and physiology) and selected three best candidates to be presented to the organising committee.

A natural part of the European Research Area, Estonia lays the expected emphasis on COOPERATION WITH THE EUROPEAN UNION RESEARCH INSTITUTIONS and on active participation in EU structures, programmes and projects. For instance, Vice-President Jüri Engelbrecht belongs to the Advisory Board of the FP7 project NETWATCH. The goal of NETWATCH is to create the information platform and searching environment, which would allow analyzing cohesion of national programmes implemented through the ERA-NET scheme to cross-border development and funding of collaborative research, to monitor the impact and efficacy of the scheme as compared to other cooperation programmes. J. Engelbrecht also belongs to the Advisory Group of the FP7 specific programme “People”.

In 2010 the Estonian Academy of Sciences was directly involved in two EU FP projects: Complexity-NET and Researchers’ Night.

Empowered by the Ministry of Education and Research the Academy acted as a partner in the FP6 project “Complexity-NET” (“Coordination of National Complexity Research and Training Activities”) initiated for coordination of and providing transnational access to studies in complexity science and complex systems. The project within the ERA-NET scheme, which was effective through 01.09.2006–30.11.2010, incorporated 11 states: Great Britain (as co-

ordinator), Belgium, Estonia, Spain, the Netherlands, Ireland, Italy, Greece, Denmark, Portugal and Hungary. For greater detail on the project see [www.complexitynet.eu](http://www.complexitynet.eu).

The major output of the project was constituted by a pilot call for two-year multilateral research co-operation projects, which accepted applications from working groups incorporating researchers from not less than three Complexity-NET member states. Scientific topics of the call were specified as enfolding complex systems and complexity science in a broad sense. The first round of preliminary applications received 117 Expressions of Interest, among them 6 with Estonian participation. The Scientific Council of Complexity-NET selected 28 best applications, incl. one with Estonian participation (“Complexity of Interdependent Epigenetic Signals in Cancer Initiation”, acronym CIESCI, headed on the Estonian part by Jaak Vilo from the University of Tartu). Presenters of selected applications were invited to submit their Full Proposals in the second round. The assessment results given by outside experts and the Scientific Council were deliberated by partners in the Complexity-NET Consortium. According to the final decision through negotiations it was resolved to offer funding to 9 projects that had been thoroughly weighed through a tight competition, among them the CIESCI. Estonian participation in the project executed in collaboration with the Irish and Spanish researchers will be funded by the Estonian Science Foundation.

As a partner in the FP7 project “Researchers’ Night 2010” the Estonian Academy of Sciences participated, for the fifth year in succession, in the Europe-wide project series aimed at enhancing public recognition of researchers and scientific careers. For greater detail see p. 48-49.

The European Union regards as a matter of high importance to provide scientists with better occupational and mobility opportunities as well as favourable conditions for moving from country to country for the purpose of research or study. Together with the Archimedes Foundation (coordinator in Estonia), the University of Tartu, Tallinn University of Technology, the University of Life Sciences and Tallinn University the Academy has since 2004 participated in the European Services Network EURAXESS. The Network was initiated by the European Commission with a view to advising researchers moving to another country, including those proceeding to work and/or embark on a doctoral programme as well as their family members on administrative and practical issues. The Network includes over 200 organisations from 35 countries; the range of topics covered by service centres is comprehensive, covering areas like visas, residence and work permits, recognition of qualifications, vacant jobs in the scientific sphere, taxation, social insurance, availability of medical aid, local everyday utilities, etc. The European Commission organises to members of the Network trainings and conferences at the European level as well as working group activities, attended among others by officers of the Foreign Relations Unit of the Academy. For greater detail see <http://euraxess.ee>.

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

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## **NATIONAL SCIENCE PRIZE**

By the Ordinance of the Government of the Republic of Estonia, upon proposition by the National Science Prize Committee, No. 33 of February 11, 2010

SCIENCE PRIZE FOR LONG-STANDING ACHIEVEMENTS IN RESEARCH AND  
DEVELOPMENT



was awarded to Member of Academy *Arvo Ots*

“...I consider that in the process of becoming a researcher, a more significant factor than higher education as such for me was represented by teachers of the university, who succeeded in moulding me into an engineer. ... I became involved in research while still an undergraduate. ...

... I would be delighted if my life’s work in the sphere of oil shale has been of benefit to Estonian research and to Estonia as a whole.”

National Science Prizes, 2010.

## ANNIVERSARIES

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Anniversaries in 2010:

80th birthday

Member of Academy *Endel Lippmaa*

75th birthday

Member of Academy *Anto Raukas*

Member of Academy *Tõugu*

Foreign Member of Academy *Jaak Peetre*

70th birthday

Member of Academy *Ilmar Koppel*

Member of Academy *Rein Küttner*

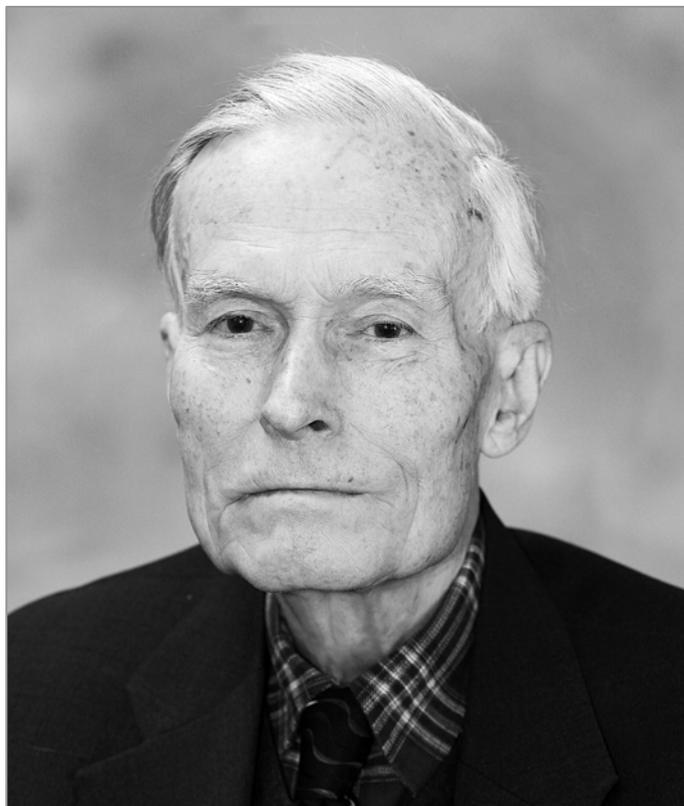
Member of Academy *Jüri Martin*

65th birthday

Member of Academy *Enn Mellikov*

Member of Academy *Peeter Saari*

Member of Academy *Peeter Tulviste*



Member of Academy *Endel Lippmaa*

Endel Lippmaa was born on 15 September 1930 in Tartu, to the family of a renowned geobotanist and member of the Estonian Academy of Sciences Teodor Lippmaa. In 1948 he graduated from Nõmme Gymnasium and in 1953 Tallinn University of Technology majoring in oil shale technology; in 1956 he defended at the same University his Candidate's thesis on the topic "Dynamics of the products of Estonian oil shale obtained by way of thermal disintegration". Thereby his research in oil shale chemistry ended and he proceeded to doing research in a totally novel area – nuclear magnetic resonance spectroscopy, with which he has been concerned about half of a century. In 1969, Endel Lippmaa defended his Doctor's thesis in Physics and Mathematics on the topic "Overhauser's nuclear effect and structure of organic compounds" at the Institute of Chemical Physics of the USSR Academy of Sciences. In 1971 he was awarded Professorship in chemical physics and physical chemistry.

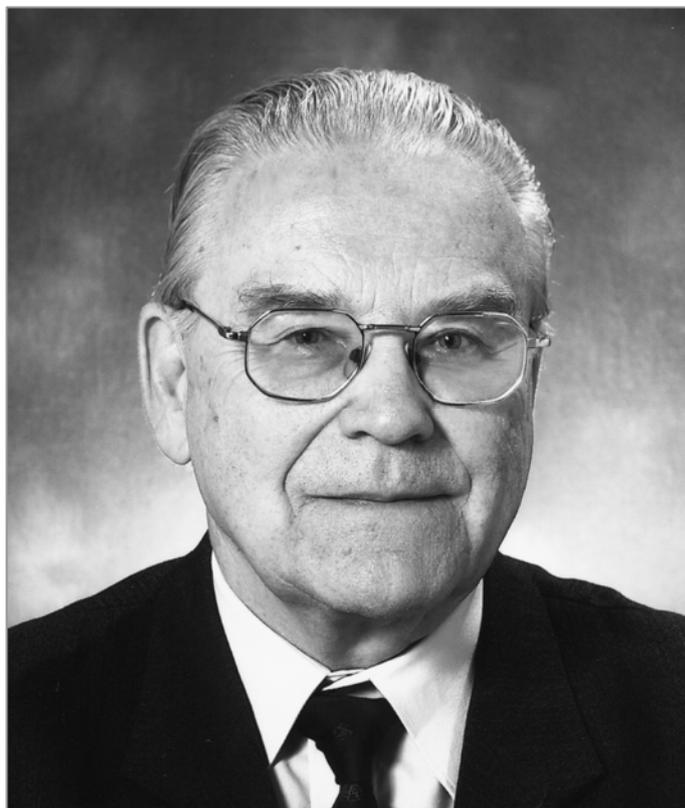
In the years 1956-1961 Endel Lippmaa was Senior Lecturer and Docent at Tallinn University of Technology, in 1961-1980 Head of the Division of Physics at the Institute of Cybernetics and since 1980 his activities have been related to the National Institute of Chemical Physics and Biophysics, as its founder and Director (until 2001), Head of the Laboratory of Chemical Physics (until 2005). In 2001-2006 Endel Lippmaa was Head of the Centre of Excellence of Analytical Spectrometry. Presently he is meeting the challenges posed at CERN – Organisation Européenne pour la Recherche Nucléaire.

In 1972 Endel Lippmaa was elected Member of the Estonian Academy of Sciences and has been member of the Board of the Academy since 1975. In 1977-1982 he was Secretary-Academician of the Division of Physics, Mathematics and Engineering, in 1999-2004 Head of the Division of Astronomy and Physics, in 2007-2010 Chairman of the Energy Council of the Academy.

Endel Lippmaa has also been active as a political figure. He was a delegate to the Moscow Congress of People's Deputies 1989-1991, has participated in the activities of the Popular Front, been a member of the Estonian Congress, the founding member of the Coalition Party. In 1990-1991 Endel Lippmaa was Minister for the Eastern Affairs of the Republic of Estonia, in 1995-1996 Euro-Minister of the Republic of Estonia and in 1996-1999 member of the Riigikogu.

Endel Lippmaa is a member of numerous professional unions and assemblies both in Estonia and abroad, *Doctor Honoris Causa* of many universities. In 1999 Endel Lippmaa was elected by the Estonian public among the 100 Great Estonians of the 20th C. In 2000 his research was given recognition with the National Science Prize for long productive research and development work. In the same year he was awarded the Order of the National Coat of Arms 2nd Class. In 2006 he was granted the Prize for National Thinking.

Endel Lippmaa is a top expert in many domains of science: chemical physics, physical chemistry, chemical technology, electronics, nuclear and particles physics, energy, ecology. He is a scientist in the broad meaning, implementing the same principles both in science and politics.



Member of Academy *Anto Raukas*

Anto Raukas was born on 17 February 1935 in Tartu to a school teacher's family. The adventurous childhood of a suburb boy and outstanding achievements in several branches of athletics were followed by graduation with a gold medal from the Hugo Treffner Gymnasium in 1953. He continued his studies at the University of Tartu and in 1958 graduated from the Faculty of Geology. In 1962 he was awarded a Candidate's degree Geology and in 1973 a Doctor's degree in Geology and Mineralogy at the Estonian Academy of Sciences. In 1977 Anto Raukas was elected Member of the Estonian Academy of Sciences; in 1980 he was granted Professorship.

Since graduation from the University to date, Anto Raukas has been related to the Institute of Geology, holding various positions and being for a long time Head of the Quaternary Geology Division. In the years 1993-2009 he was also Professor of the present Marine Academy. Anto Raukas has compiled and edited over one hundred monographs, brochures and an omnibus collection

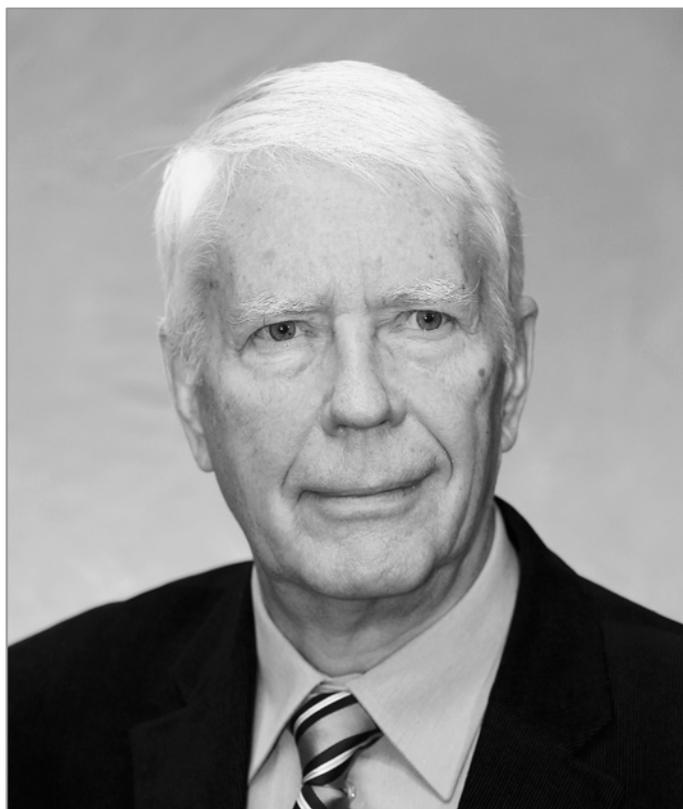
and he has written over a thousand articles, of which half are serious science published in about 30 countries. Of note too is his pedagogical activity. He has supervised 15 Candidate's and several Doctoral theses.

In the years of 1977-1989 Anto Raukas was a member of the Presidium of Academy of Sciences of the ESSR, in 1982-1989 he was Secretary-Academician of the Division of Chemical, Geological and Biological Sciences of the Academy. He has been Scientific Counsellor to the Government of Estonia and Chairman of the Joint Judging Committee of the Baltic Assembly Prizes for Literature, the Arts and Science. He belongs as a regular or honorary member to many science organisations and is sitting on the editorial boards of several scientific publications both in Estonia and elsewhere in the world.

The main avenues of research of Anto Raukas have been quaternary geology, environmental geology and meteoritics. For decades he has studied formation of Estonian relief and composition of matter of quaternary sediments, with special focus on glaciers and sediments of thawing water of glaciers. His favourite topics have also been research into boulders, elucidation of the issues of development of the Baltic Sea and the matters relating to the Kaali meteorite. Close to the heart of Anto Raukas are environmental problems, in the first place excavation of mineral resources and their rational use, and the questions relating to building a nuclear station. He is involved in disputes related to global climate warming and he is an expected speaker in mass media.

His successful research work has been thrice bestowed recognition with the National Science Prize (1991, 1996 and 2003), he has been granted the Karl Ernst von Baer Prize, the Member of Academy Artur Luht Prize, the Eerik Kumari Nature Conservation Prize and he has been elected by the Estonian public among the 100 Great Estonians of the 20th C. In 1998 his work merited the Order of the White Star 3rd Class.

The amazing youthfulness of Anto Raukas has been warranted by his close relation to competitive sports and mountaineering. Colleagues appreciate him as a joyous, witty, diplomatic and forthcoming person.



Member of Academy *Enn Tõugu*

Enn Tõugu was born on 20 May 1935 in Tallinn to a jurist's family. In 1941 the whole family was deported to Russia, where his parents deceased prior to the end of the war. In 1946 he repatriated alone. In 1953 he graduated from Tallinn Secondary School No. 20 and in 1958 from Tallinn University of Technology majoring in engineering. As a student Enn Tõugu already proceeded to work at Tallinn Excavator Plant, providing him a good engineer's practice.

Keen interest in research guided him to study computer science. Thanks to Member of Academy Aleksander Voldek, a promoter of the establishment of the Tallinn Electrical Engineering Institute, sending several young engineers to study in Leningrad and Moscow, Enn Tõugu also got an opportunity for professional development at Leningrad Polytechnic Institute. Further on, he worked at Tallinn Electrical Engineering Institute, involved with elaboration of the original minicomputer STEM. In 1965 Enn Tõugu defended at the

Academy of Sciences of the Belarus SSR his Candidate's thesis "Methods of computation of technology elements by electronic computer" and in 1973 at Leningrad Electrical Engineering Institute his Doctoral thesis "Application of computation models in engineering design software".

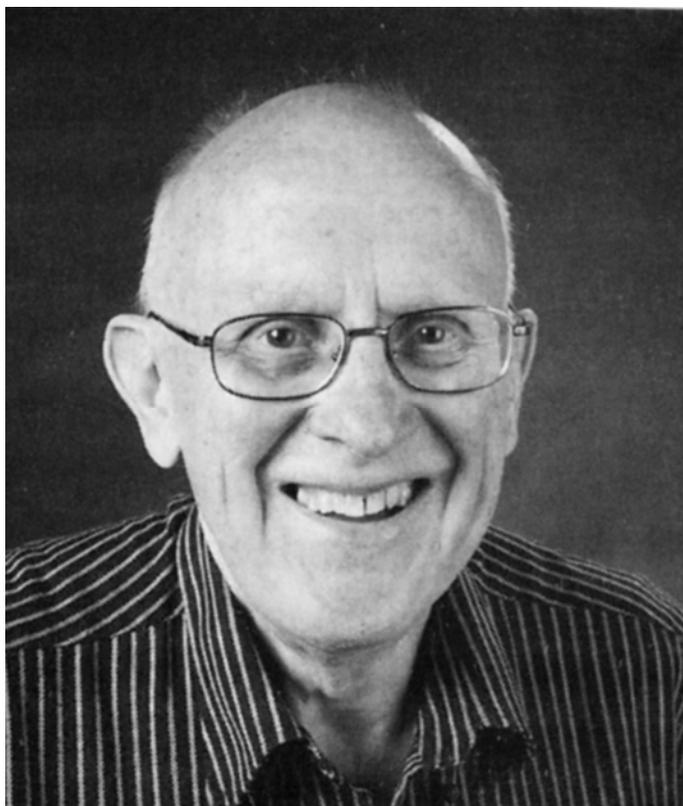
Since 1976 Enn Tõugu has been related to the Institute of Cybernetics, working as Head of Department and Senior Research Scientist. His main areas of research used to be automatic synthesis of programs, declarative languages and artificial intellect. Presently he works at the same institute as Leading Research Scientist, handling reliable software and human language technology based projects.

In 1981 Enn Tõugu was elected Member of the Estonian Academy of Sciences in informatics. In 1985-1991 he was Secretary-Academician of the Division of Informatics and Engineering of the Academy. In 1992-2000 Enn Tõugu was Professor in Software Engineering of the Royal Institute of Technology in Sweden, in 2000-2007 Professor of the Estonian Business School and in 2008-2010 Researcher-Counsellor of the Co-operative NATO Cyber Defence Centre of Excellence.

A groundbreaker of Estonian computer science, Enn Tõugu has worked as a faculty member at Tallinn University of Technology for decades, has also been a scientific supervisor at the Institute of Cybernetics, and every so often just a good counsel in expertise. His students can be encountered across the whole world. He has been supervisor of numerous Master's and a score of Doctoral theses. Enn Tõugu has published six monographs and over two hundred scientific articles.

Enn Tõugu's research has twice been given recognition by National Science Prizes (1967, 1987). In 2001 he was granted the Order of the White Star 3rd Class.

Yachting is a long-time hobby for Enn Tõugu and as a yacht captain he has sailed near and far. Among other things he has taken joy in tennis, mountain and cross-country skiing, found great pleasure in reading especially thanks to his impressive knowledge of languages.



Foreign Member of Academy *Jaak Peetre*

Jaak Peetre was born on 29 July 1935 in Tallinn to a family of attorney at law. His childhood and adolescence passed in Pärnu. In 1944 he expatriated with parents, out of the war's way to Sweden and continued his education at Lund Allhelgona (All Saints) School. In 1954 Jaak Peetre proceeded to study mathematics at Lund University, in which he had developed keen interest already at school. He graduated from the University in 1956, in 1958 he defended the degree of Licentiate in Philosophy and in 1959 the thesis of Doctor in Philosophy on differential equations with partial derivatives. In the years 1960-1962 he worked as a visiting fellow at New York and Maryland Universities. In 1963 Jaak Peetre was granted Professorship at Lund University (one among three mathematicians in Sweden to become Professors under 30 years of age). Having moved as a visiting fellow to Madrid University in 1988, he continued in 1988-1992 at Stockholm University as Professor in Mathematics. Subsequently Jaak Peetre returned to Lund University and worked as Professor until 2000, when he became Emeritus.

In research Jaak Peetre has been concerned with many domains of mathematics, among others ordinary and partial derivatives differential equations, operators' interpolation spaces, singular integrals and Besov spaces, differential geometry, Clifford analysis, Fock space and Hankel operators, Fourier' and harmonic analysis. In cooperation with French mathematicians Bernhard Malgrange and Louis Lions he laid the foundation to the contemporary interpolation theory. At the beginning of the 1990ies he became engaged mainly in research of multi-linear forms, especially tri-linear forms. With his more than 230 published scientific works Jaak Peetre is the most prolific mathematician of Estonian nationality. Under his supervision, 8 doctoral and 8 licentiate theses have been completed. He is a Member of the Royal Swedish Academy of Sciences and an Honorary Member of the Swedish Mathematical Society (in 1984-1987 President). He also belongs to editorial boards of several international scientific journals.

Of notable significance is Jaak Peetre's contribution to development of mathematics in Estonia. Thanks to him, the Estonian Mathematical Society is among collective founding members of the European Mathematical Society. He has repeatedly visited Estonia and delivered lectures here, he has long been a member of the editorial board of the Proceedings of the Estonian Academy of sciences. Physics. Mathematics (currently titled Proceedings of the Estonian Academy of Sciences), etc.

Since 1994 he is Honorary Member of the Estonian Mathematical Society. In 2001 Jaak Peetre was granted the Order of the White Star 3rd Class.

In 2008 he was elected a Foreign Member of the Estonian Academy of Sciences.

Besides mastering Estonian, Swedish, English, French and German Jaak Peetre is also pretty fluent in Spanish, Latin, Finnish and Russian. He has run 19 marathons and, last but not least, is reputed among his colleagues as an excellent baker and gardener.



Member of Academy *Ilmar Koppel*

Ilmar Koppel was born on 16 January 1940 at Võru. In the summer of that year the family moved to the small town of Puurmani in Jõgeva County. In 1958 he graduated from the Puurmani Secondary School and in 1963 the Faculty of Chemistry at the University of Tartu, majoring in organic chemistry. The post-graduate programme in 1963-1967 was followed by defence of the Candidate's thesis in 1969 on the topic "Solvent's (reaction media) impact on  $S_{\text{n}}1$  type kinetics and mechanism of solvolysis reactions". The degree of Doctor in Chemistry was awarded to Ilmar Koppel in 1986, for submitting the thesis with Institute of Chemical Physics at the USSR Academy of Sciences on the topic "The structural impact on proton-affinities and ionisation potentials of organic compounds". The jubilarian was granted the Professorship in 1990 and in 1993 he was elected Member of the Estonian Academy of Sciences in natural sciences (physical chemistry).

Ilmar Koppel's activity has inside-out been related to the University of Tartu, where he worked in the years from 1967-2005 as senior research scientist, Head of the Laboratory of Chemical Kinetics and Catalysis, Head of the Department of Analytical Chemistry, Head of the Institute of Chemical Physics and Professor of analytical chemistry. In 2005-2008 Ilmar Koppel was research professor at the University of Tartu and since 2008 he has been Director for Research of the Institute of Chemistry of the University of Tartu and leading researcher of physical and analytical chemistry.

Ilmar Koppel's domain of research is interdisciplinary, ranging from design and research of super-acids and super-alkali to neutrino-physics, from processes occurring in solutions and concomitant media (solution) effects in gaseous phase to reactions in progress in high vacuum, from sophisticated generalisations and fundamental research aspiring to chemical hardware to works seminal to high-tech application.

A scientist of repute, he has been a steering committee member of several international conferences, Estonian representative in many international organisations, executive investigator and coordinator of a number of international and national scientific projects. He is member of Board of the Estonian Academy of Sciences and Head of the Division of Biology, Geology and Chemistry of the Academy. Under supervision of Ilmar Koppel, over 30 Doctoral theses and Master's theses have been defended; he has published 5 monographs and over 300 scientific articles in internationally recognised science journals, being one of the most highly cited researchers in Estonia.

Ilmar Koppel's work has twice been given recognition with National Science Prizes – in 1998 in chemistry and molecular biology as head of a team and in 2005 for long and productive research and development work. In 2006 he was granted the Order of the White Star 3rd Class.



Member of Academy *Rein Küttner*

Rein Küttner was born on 25 November 1940 in Tallinn. His educational path started at the Nõmme 7-Year School No. 28 and continued at Tallinn Polytechnic School. After graduating as a qualified technician-electrician in 1959, he pursued his studies at Tallinn University of Technology, where in 1965 he was awarded a diploma in mechanical engineering. Simultaneously with his studies, Rein Küttner worked as Senior Laboratorian and Engineer at the Chair of Mechanical Engineering Technology. After graduation from the University he continued to work as Assistant at the same Chair.

During 1967-1970 Rein Küttner was enrolled in a post-graduate programme and in 1971 defended his Candidate's thesis in Engineering on the topic "Research and elaboration of methods for optimal mechanical processing modes" at Leningrad Institute of Precision Mechanics and Optics. He continued his career at Tallinn University of Technology as Senior Lecturer, Docent, Head of Chair and Scientific Supervisor at the Laboratory of Computer Design. In

1991 he became Professor of the Institute for Engineering and Vice-Rector for Research of Tallinn University of Technology. In 2001-2004 Rein Küttner was Head of the Department of Machinery and since 2004 Professor of Production Technology. Presently he works as Senior Research Scientist at the Department of Machinery.

In 1997 Rein Küttner was elected Member of the Academy of Sciences in engineering.

In 1965-1971 the topics of scientific work of Rein Küttner were related to modelling and optimising of technological processes of engineering, since 1971 with elaboration of computer design software and development of specialised software equipment. With his direct involvement and under his supervision, a strong and internationally known school of engineering computer design has developed in Estonia.

Rein Küttner has been active in organising and administering science. He is a member of several professional unions and societies, has belonged to various councils and committees of national importance; has been a steering committee member of international conferences. In 1999-2009 he was Head of the Division of Informatics and Engineering of the Academy.

Rein Küttner has published one monograph and over 130 scientific articles. He has entertained long-standing links of cooperation with universities of technology in Dresden, Stockholm, Darmstadt, Budapest, Helsinki and elsewhere. He has been an international research fellow at Kiel Institute of World Economics, New York Queens College and Trondheim University.

In 1979 the USA Society of Manufacturing Engineering granted Rein Küttner its Letter of Appreciation. He was twice (1986, 1990) awarded the Letter of Appreciation of the Presidium of All-Union Scientific-Technical Unions and in 1986 the Letter of Appreciation of the Presidium of the Supreme Soviet of the ESSR. In 1985 he was awarded the Science Prize of Tallinn House of Scientists, in 1987 the honorary title of Merited Engineer and in 2000 Medal of the Estonian Academy of Sciences. In 2003 he was granted the Order of the White Star 4th Class.

Rein Küttner has a wide variety of cultural interests. His favourite hobbies are travelling across Europe by car, fancy gardening and reading.



Member of Academy *Jüri Martin*

Jüri Martin was born on 29 September 1940 in Tallinn to a family of actors. In 1959 he graduated from Tallinn Secondary School No. 21 and in 1964 the Department of Biology of the Faculty of Mathematics and Natural Sciences at the University of Tartu. The post-graduate programme at Institute of Ecology of Plants and Animals of the Uralic Branch of the USSR Academy of Sciences was followed by defence at the same Institute of the thesis of Candidate in Biology on the topic "Dynamics of moss habitats on moraines of Polar-Urals glaciers" (1968) and the defence of his Doctoral thesis in Biology on the same topic entitled "Biochemical role of moss habitats in extreme environmental conditions" (1988). He was elected Member of the Estonian Academy of Sciences in ecology in 1990.

In 1969 Jüri Martin proceeded to work at the Tallinn Botanic Garden first as senior research scientist and afterwards as scientific secretary, Research Director and Director (in 1978-1988). During 1992-2000 he was Director of the

International Centre for Environmental Biology. Since 1997 he has been Rector of Euroacademy.

The main directions of his scientific work have been general ecology, biogeochemistry, ecology of mosses, protection of environment and nature. His leading area of research became the impact of air-borne pollutants on plant canopy, especially on forests as well as biochemical monitoring – bioaccumulation of sulphur, heavy metals and radionuclides in Estonia, the Arctic, industrial regions of the Urals, Eurasian volcanically active areas and national parks of the USA. Both for purposes of scientific research and as an inveterate globe-trotter Jüri Martin has participated in scores of expeditions in the Caucasus, the Polar Urals, the Western and Southern Siberia, the Far East, the Antarctic, Alaska, Greece, Kenya, Seychelles, Madagascar, Sri Lanka, India, the Maldives, Pennsylvania, the Great Smoky Mountains National Park in the USA and elsewhere. Jüri Martin has developed excellent cooperation with the scientists of the USA and has been a visiting research fellow at many American universities.

Jüri Martin is a member of the Estonian Polar Research Committee, Board of the NGO Estonian Euroinfo Society, Forum on Monitoring of the World's Forests, International Association for Lichenology and *Academia Ecologica Universalis*, since 1997 Co-President. He has published over a score of articles and is an author or co-author of several monographs. Under his supervision twelve Candidate's and one Doctoral theses have been defended.

In 1986 Jüri Martin was awarded the Karl Ernst von Baer Medal, in 1988 the UNESCO programme "Man and biosphere" (MAB) Medal, in 1990 the Great Nature Conservation Decoration, in 1998 the H. Ford European Nature Conservation Award and in 2005 the Socrates International Award.

Complement to positive frame of mind, and indulging in Nordic re-creative hobbies, Jüri Martin enjoys fiction as well as visiting the theatre, concerts and art-museums. He has a collection of rocks and mosses, featuring nearly 40 000 sample specimen from all over the world.

## **MEMBERS OF THE ACADEMY**

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As of February 2011\*

**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, olav.aarna@kutsekoda.ee. HOME ADDRESS Nooruse 1-45, 76901 Tabasalu, Harku vald, Harju maakond ESTONIA, Tel: +372 603 2060. Cohabitant, three sons and 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 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 tee 21, 12618 Tallinn ESTONIA, Tel: +372 620 4180, Fax: +372 620 4151, aben@cs.ioc.ee. HOME ADDRESS Hiiu-Maleva 30-2, 11619 Tallinn ESTONIA, Tel: +372 657 2407. Married, two sons.

**Jüri ALLIK**, born 3.03.1949, elected 2010, psychology. University of Tartu 1973. Professor of experimental Psychology, Head of the Institute of Psychology, University of Tartu (2002); Tiigi 78, 50410 Tartu ESTONIA, Tel: +372 737 5905, Fax: +372 737 6152, juri.allik@ut.ee. HOME ADDRESS Palu tee 20A, 61505 Tartu ESTONIA, Tel: +372744 2119. Married, three children.

**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, son and daughter.

**Jaan 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: +372 741 0205, einasto@aai.ee. HOME ADDRESS Observatooriumi 6-3, 61602 Tõravere, Tartu maakond ESTONIA, Tel: +372 741 0151. Widower, 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, j.engelbrecht@akadeemia.ee. HOME ADDRESS Trummi 34J, 12617 Tallinn ESTONIA, Tel: +372 672 6045. Married, son and daughter.

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\* Research institutions and universities 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, ene.ergma@riigikogu.ee. HOME ADDRESS Aleksandri 35-14, 51004 Tartu ESTONIA, Tel: +372 738 1874. Single.

**Arvi FREIBERG**, born 28.06.1948, elected 2009, exact sciences. Tallinn University of Technology 1971. Professor of biophysics and plant physiology, University of Tartu (2003); Riia 142, 51014 Tartu ESTONIA, Tel: +372 737 4612, arvi.freiberg@ut.ee. HOME ADDRESS Aardla 154-5, 50415 Tartu ESTONIA, Tel: +372 5645 3175. Married, daughter and son.

**Raimund HAGELBERG**, born 7.02.1927, elected 1981, economics. Tallinn University of Technology 1950. Professor emeritus, University of Tartu (1995). HOME ADDRESS Uus-Tatari 16-39, 10134 Tallinn ESTONIA, Tel: +372 646 1253, hage2@hotmail.ee. Widower, daughter

**Vladimir HIZHNYAKOV**, born 25.05.1938, elected 1977, physics. University of Tartu 1960. Senior Researcher, Institute of Physics at University of Tartu (2004); Riia 142, 51014 Tartu ESTONIA, Tel: +372 737 4759, Fax: +372 738 3033, hizh@fi.tartu.ee. HOME ADDRESS Aardla 154-6, 50415 Tartu ESTONIA, Tel: +372 747 5290. Married, son and two daughters.

**Ülo JAAKSOO**, born 16.04.1939, elected 1986, informatics. Tallinn University of Technology 1962. Chief Executive Officer, Cybernetica AS (1997); Akadeemia tee 21, 12618 Tallinn ESTONIA, Tel: +372639 7991, Fax: +372 639 7992, ulo.jaaksoo@cyber.ee. HOME ADDRESS Mägra 6, 10917 Tallinn ESTONIA, Tel: +372 672 6009. Married

**Jaak JÄRV**, born 05.11.1948, elected 1997, natural sciences. University of Tartu 1972. Professor of organic chemistry, University of Tartu (1992); Ravila 14a, 50411 Tartu ESTONIA, Tel: +372 737 5246, Fax: +372 737 5247, jaak.jarv@ut.ee. HOME ADDRESS E. Wiiralti 1, 51011 Tartu ESTONIA. Married, son and two daughters.

**Ain-Elmar KAASIK**, born 2.08.1934, elected 1993, neurology. University of Tartu 1959. Professor emeritus, University of Tartu (1999); L. Puusepa 2, 51014 Tartu ESTONIA, Tel: +372 731 8538; ain-elmar.kaasik@kliinikum.ee. HOME ADDRESS Ülase 14, 50412 Tartu ESTONIA, Tel: +372 742 5426. Married, son.

**Dimitri KALJO**, born 12.10.1928, elected 1983, geology. University of Tartu 1953. Senior Researcher, Institute of Geology at Tallinn University of Technology (2008); Ehitajate tee 5, 19086 Tallinn ESTONIA, Tel: +372 620 3016, Fax: +372 620 3011, kaljo@gi.ee. HOME ADDRESS Raja 7A-6, 12616 Tallinn ESTONIA, Tel: +372 672 6551. Married, son and daughter.

**Mart KALM**, born 3.09.1961, elected 2010, art history. University of Tartu 1984. Professor (2000), Dean of the Faculty of Art and Culture (2007), Estonian Academy of Arts; Suur Kloostri 11, 10133 Tallinn, ESTONIA, Tel: +372 611 7651, kalm@artun.ee. HOME ADDRESS Ravi 19-13, 10138 Tallinn, ESTONIA, Tel: +372 644 0846. Married, son and daughter.

**Mati KARELSON**, born 27.12.1948, elected 2007, natural sciences and medicine. University of Tartu 1972. Professor of molecular technology, University of Tartu, Tallinn University of Technology (2004); Ravila 14a, 50411 Tartu ESTONIA, Tel: +372 737 5255, Fax: +372 737 5264, mati.karelson@ut.ee, HOME ADDRESS Mõisatamme 27, Vahi, 60534 Tartumaa ESTONIA, Tel: +372 734 8399. Married, two sons.

**Ilmar KOPPEL**, born 16.01.1940, elected 1993, natural sciences (physical chemistry). University of Tartu 1963. Lead. Researcher, Ass. Director of Research, Institute of Chemistry at University of Tartu (2008); Ravila 14a, 50411, Tartu ESTONIA, Tel: +372 737 5263, Fax: +372 737 5264, ilmar@chem.ut.ee. HOME ADDRESS Kaunase pst 16-10, 50704 Tartu ESTONIA, Tel: +372 748 4351. Married, son.

**Arvo KRIKMANN**, born 21.07.1939, elected 1997, humanities. University of Tartu 1962. Senior Researcher, Estonian Literary Museum (2000); Vanemuise 42, 51003 Tartu ESTONIA, Tel: +372 742 0079, Fax: +372 742 0426, kriku@folklore.ee. HOME ADDRESS Kastani 59-2, 50410 Tartu ESTONIA, Tel: +372 742 0079. Married, three sons.

**Lembit KRUMM**, born 20.07.1928, elected 1987, power engineering. Tallinn University of Technology 1952. Senior Reasearcher, Institute of Electrical Power Development, Tallinn University of Technology (2004); Ehitajate tee 5, 19086 Tallinn ESTONIA, Tel: +372 620 3759, lembitkrumm@gmail.com. HOME ADDRESS Trummi 4-19, 12616 Tallinn ESTONIA, Tel: +372 672 6513, +372 564 4706. Married, two sons and two daughters.

**Valdek KULBACH**, born 6.04.1927, elected 1986, mechanics. Tallinn University of Technology 1951. Professor emeritus, Tallinn University of Technology (1998); Ehitajate tee 5, 19086 Tallinn ESTONIA, Tel: +372 620 2408, Fax: +372 620 2405, valdek.kulbach@gmail.com. HOME ADDRESS Rõõmu 14-9, 10921 Tallinn ESTONIA, Tel: +372 677 8207. Married, two daughters.

**Arno KÖÖRNA**, born 2.02.1926, elected 1972, economics. University of Tartu 1955. Professor emeritus, Euroacademy (2005); Mustamäe tee 4, 10621 Tallinn ESTONIA, Tel/Fax: +372 650 5120. HOME ADDRESS A. Kapi 9-22, 10136 Tallinn ESTONIA, Tel: +372 662 0628, arno.koorna@mail.ee. Widower, son and daughter.

**Rein KÜTTNER**, born 25.11.1940, elected 1997, technical sciences. Tallinn University of Technology 1965. Professor emeritus, University of Tartu (2010); Ehitajate tee 5, 19086 Tallinn ESTONIA, Tel: +372 620 3265, Fax:

+372 620 3250, rein.kyttner@ttu.ee. HOME ADDRESS Mooni 107-58, 13424 Tallinn ESTONIA, Tel: +372 652 5503. Married, son.

**Hans KÜÜTS**, born 20.12.1932, elected 1994, agricultural sciences. Estonian University of Life Sciences 1956. Senior Researcher, Jõgeva Plant Breeding Institute (1999); Aamisepa 1, 48309 Jõgeva alevik, Jõgeva maakond ESTONIA, Tel: +372 776 6914, Fax: +372 776 6902, ylle.tamm@jpb.ee. HOME ADDRESS Tihase 11, 48309 Jõgeva alevik, Jõgeva maakond ESTONIA, Tel: +372 772 1375. Married, three daughters.

**Agu LAISK**, born 3.05.1938, elected 1994, natural sciences. University of Tartu 1961. Senior Researcher of plant physiology, University of Tartu (2005); Riia 23, 51010 Tartu ESTONIA, Tel: +372 736 6021, Fax: +372 742 0286, agu.laisk@ut.ee. HOME ADDRESS Haagejärve 2, 61401 Tähtvere vald, Tartu maakond ESTONIA, Tel: +372 749 3228. Married, three sons.

**Valter LANG**, born 26.01.1958, elected 2010, historical sciences. University of Tartu 1981. Professor of archaeology (1999), Dean of the Faculty of Philosophy (2006), University of Tartu; Lossi 3, 51003 Tartu ESTONIA, Tel: +372 737 5340, Fax: +372 737 5345, valter.lang@ut.ee. HOME ADDRESS Kuu 12A-2, 50114 Tartu ESTONIA, Tel: +372 730 4286. Divorced, son and daughter.

**Ülo LEPIK**, born 11.07.1921, elected 1993, mechanics. University of Tartu 1948. Professor emeritus, University of Tartu (1996); J. Liivi 2-426, 50409 Tartu ESTONIA, Tel: +372 737 5443, ulo.lepik@ut.ee. HOME ADDRESS Lunini 3, 50406 Tartu ESTONIA, Tel: +372 738 0023. Married, two sons and daughter.

**Georg LIIDJA**, born 4.08.1933, elected 1987, physics. University of Tartu 1957. Senior Researcher, National Institute of Chemical Physics and Biophysics (1982); Akadeemia tee 23, 12618 Tallinn ESTONIA, Tel: +372 639 8328, Fax: +372 639 8393, gli@kbfi.ee. HOME ADDRESS Kärberi 41-43, Tallinn, ESTONIA, Tel: +372 635 5878. MAIL ADDRESS Nimekast 3216, 10505 Tallinn ESTONIA. Married, son and daughter.

**Ülo LILLE**, born 16.09.1931, elected 1983, biotechnology. Tallinn University of Technology 1955. Senior Researcher, Institute of Chemistry at Tallinn University of Technology (1997); Akadeemia tee 15, 12618 Tallinn ESTONIA, Tel: +372 620 4383, Fax: +372 620 2828, lille@chemnet.ee. HOME ADDRESS Trummi 32P, 12617 Tallinn ESTONIA, Tel: +372 672 6032. Married, two daughters.

**Endel LIPPMAA**, born 15.09.1930, elected 1972, chemical physics. Tallinn University of Technology 1953. Laboratory of Chemical Physics, National Institute of Chemical Physics and Biophysics (1980); Kohtu 6, 10130 Tallinn ESTONIA, Tel: +372 644 1304, elippmaa@nicpb.ee. HOME ADDRESS Sõbra 14, 10920 Tallinn ESTONIA, Tel: +372 677 7975. Married, two sons.

**Ülo LUMISTE**, born 30.06.1929, elected 1993, mathematics. University of Tartu 1952. Professor emeritus, University of Tartu (1996); J. Liivi 2-427, 50090 Tartu, ESTONIA, Tel: + 372 737 6419, ulo.lumiste@ut.ee. HOME ADDRESS Turu 19-28, 51004 Tartu ESTONIA, Tel: +372 734 4280, +372 515 1664. Married, two sons.

**Enn LUST**, born 22.10.1956, elected 2010, Energy technology. University of Tartu 1980. Professor of physical chemistry (1997), Director of the Institute of Chemistry (2008), University of Tartu; Ravila 14a, 50411 Tartu ESTONIA, Tel: +372 737 5165, Fax: +372 737 5264, enn.lust@ut.ee. HOME ADDRESS Leesika 8, 50304 Tartu ESTONIA. Married, two daughters and son.

**Cheslav LUSHCHIK**, born 15.02.1928, elected 1964, solid state physics. St. Petersburg State University 1951. Senior Researcher, Institute of Physics at University of Tartu (1994); Riia 142, 51014 Tartu ESTONIA, Tel: +372 742 8946, Fax: +372 738 3033, tseslav.lustsik@ut.ee. HOME ADDRESS Aardla 130-7, 50415 Tartu ESTONIA, Tel: +372 747 6608. Married, son.

**Udo MARGNA**, born 18.11.1934, elected 1987, plant physiology. University of Tartu 1957. Lecturer of Pharmacy Department, Tallinn Health Care College (2008); Kännu 67, 13418 Tallinn ESTONIA, Tel: +372 671 1725, udo.margna@tk.ee. HOME ADDRESS Instituudi tee 16-10, 76902 Harku alevik, Harju maakond ESTONIA, Tel: +372 656 0630. Married, two daughters.

**Jüri MARTIN**, born 29.09.1940, elected 1990, ecology. University of Tartu 1964. Rector, Euroacademy (1997); Mustamäe tee 4, 10621 Tallinn ESTONIA, Tel: +372 611 5804, jmartin@euroakadeemia.ee. HOME ADDRESS Liiva tee 2, Rohuneeme, Viimsi vald, 74012 Harju maakond, Tel: +372 503 1794. Married, three sons and daughter.

**Enn MELLIKOV**, born 1.04.1945, elected 2003, technology of materials. Tallinn University of Technology 1968. Director, Department of Material Science at Tallinn University of Technology (2002); Ehitajate tee 5, 19086 Tallinn ESTONIA, Tel: +372 620 2798, ennm@staff.ttu.ee. HOME ADDRESS Silla 2-5, Saku 75501 Harjumaa ESTONIA, Tel: +372 604 1076. Married, two sons.

**Andres METSPALU**, born 11.03.1951, elected 2010, biotechnology. University of Tartu 1976. Professor of biotechnology, University of Tartu (1992), Director of the Estonian Genome Center (2008); Riia 23, 51010 Tartu ESTONIA, Tel: +372 737 5066, Fax: +372 744 0221, andres.metspalu@ut.ee. HOME ADDRESS Kalevi 65, 50103 Tartu ESTONIA, Tel: +372 734 3256. Married, four sons.

**Leo MÕTUS**, born 15.12.1941, elected 1993, informatics. Tallinn University of Technology 1965. Secretary General, Estonian Academy of Sciences (2004); Professor of Realtime Systems, Tallinn University of Technology (1992); Kohtu 6, 10130 Tallinn ESTONIA, Tel: +372 644 5810, Fax: +372 645 1805, leo.motus@akadeemia.ee. HOME ADDRESS Rooski 7, 10922 Tallinn ESTONIA, Tel: +372 672 4024. Married, two daughters.

**Eve OJA**, born 10.10.1948, elected 2010, mathematics. University of Tartu 1972. Professor of functional analysis, University of Tartu (1992); J. Liivi 2, 50409 Tartu ESTONIA, Tel: +372 737 6407, Fax: +372 737 5863, eve.oja@ut.ee. HOME ADDRESS Ropka 19-25, 50111 Tartu ESTONIA, Tel: +372 747 0795. Married, son.

**Arvo OTS**, born 26.06.1931, elected 1983, power engineering. Tallinn University of Technology 1955. Extraordinary Senior Researcher, Tallinn University of Technology (2003); Kopli 116, 11712 Tallinn ESTONIA, Tel: +372 620 3904, +372 620 3900, Fax: +372 620 3901, aots@sti.ttu.ee. HOME ADDRESS Metsa 62B, 11620 Tallinn ESTONIA, Tel: +372 657 6034, +372 501 2217. Married, son and daughter.

**Erast PARMASTO**, born 23.10.1928, elected 1972, botany. University of Tartu 1952. Extraordinary Senior Researcher, Institute of Agricultural and Environmental Science at Estonian University of Life Sciences (1991); Riia 181, 51014 Tartu ESTONIA, Tel: +372 731 1885, eparmasto@yahoo.com. HOME ADDRESS Uus 3-85, 50603 Tartu ESTONIA, Tel: +372 740 2772. Married, two sons and three daughters.

**Anto RAUKAS**, born 17.02.1935, elected 1977, geology. University of Tartu 1958. Senior Researcher, Institute of Ecology at Tallinn University (2010); Uus Sadama 5, 10120 Tallinn ESTONIA, Tel: +372 619 9833, Fax: +372 619 9801, anto.raukas@mail.ee. HOME ADDRESS Trummi 32N, 12617 Tallinn ESTONIA, Tel: +372 672 6031. Married, two daughters.

**Jaan ROSS**, born 5.04.1957, elected 2003, humanities. Estonian Academy of Music and Theatre 1980. Professor of Musicology Department, Estonian Academy of Music and Theatre (1995); Rävälä pst 16, 10143 Tallinn ESTONIA, Tel: +372 522 6886, jaan.ross@gmail.com. HOME ADDRESS Koidu 122-61, 10139 Tallinn ESTONIA, Tel: +372 648 1544. Married, daughter.

**Huno RÄTSEP**, born 28.12.1927, elected 1981, Estonian language. University of Tartu 1951. Professor emeritus, University of Tartu (1994). HOME ADDRESS Uus 36-74, 50603 Tartu ESTONIA, Tel: +372 742 3974, hunoratsep@gmail.com. Married, son and daughter.

**Enn SAAR**, born 04.03.1944, elected 2010, astronomy. University of Tartu 1967. Senior Researcher, Tartu Observatory (1995); Observatooriumi 1, Tõravere, 61602 Tartumaa ESTONIA, Tel: +372 5344 0899, saar@aai.ee. HOME ADDRESS Tiigi 2-2, Tõravere, 61602 Tartumaa ESTONIA, Tel: +372 741 0462. Widower, daughter.

**Peeter SAARI**, born 2.06.1945, elected 1986, physics. University of Tartu 1968. Professor of wave optics, University of Tartu (1997); Riia 142, 51014 Tartu ESTONIA, Tel: +372 737 5856, +372 737 4611, Fax: +372 738 3033, peeter.saari@ut.ee. HOME ADDRESS Fortuuna 1-45, 50603 Tartu ESTONIA, Tel: +372 510 9018. Married, two daughters.

**Mart SAARMA**, born 29.06.1949, elected 1990, molecular biology. University of Tartu 1972. Academy Professor (2009), Director of the Finnish Centre of Excellence in Molecular and Integrated Neuroscience Research, Institute of Biotechnology, University of Helsinki (2008); P.O. Box 56 (Viikinkaari 9), FIN-00014, Helsinki, FINLAND. Tel: +358 9 191 59378, Fax: +358 9 191 59366, mart.saarma@helsinki.fi. HOME ADDRESS Kulosaaren puistotie 38A-4, FI-00570 Helsinki, FINLAND, Tel: +358 9 684 5721. Cohabitant, son and daughter.

**Valdur SAKS**, born 3.09.1943, elected 1993, biochemistry. Moscow State University 1967. Head of Laboratory of Bioenergetics, National Institute of Chemical Physics and Biophysics (1993); Akadeemia tee 23, 12618 Tallinn ESTONIA Tel: +372 639 8363, Fax: +372 639 8313, saks@kbfi.ee. HOME ADDRESS Rävåla pst 13-3, 10143 Tallinn ESTONIA, Tel: +372 644 8643. Married, daughter.

**Arved-Ervin SAPAR**, born 7.02.1933, elected 1990, astrophysics. University of Tartu 1957. Senior Researcher, Department of Astrophysics, Tartu Observatory (2004); 61602 Tõravere, Tartu maakond ESTONIA, Tel: +372 741 0465, Fax: +372 741 0205, sapar@aai.ee. HOME ADDRESS Tiigi 6-6, 61602 Tõravere, Tartu maakond ESTONIA, Tel: +372 741 0335. Married, son and daughter.

**Karl SIILIVASK**, born 20.01.1927, elected 1977, history. University of Tartu 1951. Senior Researcher, Estonian Union of the History and Philosophy of Science (2004); Luise 1/3, 10142 Tallinn ESTONIA, Tel: +372 645 4594. HOME ADDRESS Ilmarise 23-7, 11613 Tallinn ESTONIA, Tel: +372 651 4107. Married, son.

**Tarmo SOOMERE**, born 11.10.1957, elected 2007, engineering. Moscow State University 1980. Leading Research Scientist, Head of Wave Engineering Laboratory (2009), Institute of Cybernetics at TUT, Professor of coastal engineering (2005), Tallinn University of Technology; Akadeemia tee 21, 12618 Tallinn ESTONIA, Tel: +372 620 4176, Fax +372 620 4151, soomere@cs.ioc.ee. HOME ADDRESS Trummi 30g, 12617 Tallinn ESTONIA, Tel: +372 632 8011. Divorced, two sons.

**Martin ZOBEL**, born 25.02.1957, elected 2010, ecology. University of Tartu 1980. Professor of plant ecology, University of Tartu (1992); Lai 40, 51005 Tartu ESTONIA, Tel: +372 737 6223, Fax: +372 737 6222, martin.zobel@ut.ee. HOME ADDRESS Vikerkaare 36, 51006 Tartu ESTONIA. Cohabitant, son and three daughters.

**Hans-Voldemar TRASS**, born 2.05.1928, elected 1975, botany and ecology. University of Tartu 1952. Professor emeritus, University of Tartu (1994); Lai 38, 51005 Tartu ESTONIA, Tel/Fax: +372 737 6222. HOME ADDRESS Riia 13-39, 51010 Tartu ESTONIA, Tel: +372 742 0481, +372 529 6835, hans.trass@mail.ee. Married, son and daughter.

**Peeter TULVISTE**, born 28.10.1945, elected 1994, humanities and social sciences. Moscow State University 1969. Professor of cultural psychology, University of Tartu (1992); Tiigi 78, 50410 Tartu ESTONIA, Tel: +372 503 3659, peeter.tulviste@ut.ee. HOME ADDRESS Sihi 25, 50411 Tartu ESTONIA, Tel: +372 730 4706. Married, son and daughter.

**Enn TÕUGU**, born 20.05.1935, elected 1981, informatics. Tallinn University of Technology 1958. Leading Researcher, Institute of Cybernetics at Tallinn University of Technology (2005); Akadeemia tee 21, 12618 Tallinn ESTONIA, Tel: +372 620 4212, tyugu@cs.ioc.ee. HOME ADDRESS Lossi 18/Soone 3-18, 12616 Tallinn, ESTONIA, Tel: +372 672 6526. Married, son and two daughters.

**Raimund-Johannes UBAR**, born 16.12.1941, elected 1993, computer science. Tallinn University of Technology 1966. Professor of computer engineering and diagnostics, Tallinn University of Technology (2005), Raja 15, 12618 Tallinn ESTONIA, Tel: +372 620 2252, Fax: +372 620 2253, raiub@pld.ttu.ee. HOME ADDRESS Õismäe tee 45-77, 13514 Tallinn ESTONIA, Tel: +372 657 4732. Married, daughter.

**Raivo UIBO**, born 21.12.1948, elected 2003, medicine. University of Tartu 1973. Professor of immunology, University of Tartu (1992); Ravila 19, 51014 Tartu ESTONIA, Tel: +372 737 4231, Fax: +372 737 4232, raivo.uibo@ut.ee. HOME ADDRESS Taara pst 28, 51006 Tartu ESTONIA, Tel: +372 742 1150. Married, son and two daughters.

**Jaani UNDUSK**, born 14.11.1958, elected 2007, humanities. University of Tartu 1982. Director, Under and Tuglas Literature Centre of Estonian Academy of Sciences (2000); Roosikrantsi 6, 10119 Tallinn ESTONIA, Tel: +372 644 3147, Fax: +372 644 0177, jaan@utkk.ee. HOME ADDRESS Lätte 5-10, 10116 Tallinn ESTONIA, Tel: +372 644 7565. Married, three daughters and son.

**Mart USTAV**, born 16.07.1949, elected 2001, biomedicine. University of Tartu 1972. Assistant President, Estonian Academy of Sciences (2009); Kohtu 6, 10130 Tallinn ESTONIA, Tel: +372 645 2528; +372 737 5047, Fax: +372 645 1805, mart.ustav@ut.ee. HOME ADDRESS Jaama 58A, 50604 Tartu ESTONIA, Tel: +372 740 3312. Married, son and three daughters.

**Tarmo UUSTALU**, born 19.01.1969, elected 2010, computer science. Tallinn University of Technology 1992. Lead. Researcher, Institute of Cybernetics at Tallinn University of Technology (2009); Akadeemia tee 21, 12618 Tallinn ESTONIA, Tel: +372 620 4250, Fax: +372 620 4151, tarmo@cs.ioc.ee. HOME ADDRESS Kalda 60A-5, 10922 Tallinn ESTONIA, Tel: +372 672 1215. Married, son and two daughters.

**Gennadi VAINIKKO**, born 31.05.1938, elected 1986, mathematics. University of Tartu 1961. Professor emeritus, University of Tartu (2006); Liivi 2, 50409 Tartu ESTONIA, Tel: +372 737 5490, gennadi.vainikko@ut.ee. HOME ADD-

RESS Kivi 23-19, 51009 Tartu ESTONIA, Tel: +372 510 7101. Widower, two sons and daughter.

**Urmas VARBLANE**, born 20.07.1961, elected 2009, economics. University of Tartu 1984. Professor of international business and innovation, University of Tartu (2001); Narva mnt 4, 51009 Tartu ESTONIA, Tel: +372 737 6361, Fax: +372 737 6327, [urmas.varblane@ut.ee](mailto:urmas.varblane@ut.ee). HOME ADDRESS A. Starkopfi 11-6, 51011 Tartu ESTONIA, Tel: +372 733 1006. Married, son and two daughters.

**Eero VASAR**, born 17.09.1954, elected 2010, medical sciences. University of Tartu 1979. Head of the Department of Physiology (1991), Professor of physiology, University of Tartu (1992); Ravila 19, 50411 Tartu ESTONIA, Tel: +372 737 4331, Fax: +372 737 4332, [eero.vasar@ut.ee](mailto:eero.vasar@ut.ee). HOME ADDRESS Hurda 27, 51005 Tartu ESTONIA. Married, four sons.

**Mihkel VEIDERMA**, born 27.12.1929, elected 1975, inorganic chemistry. Tallinn University of Technology 1953. Professor emeritus, Tallinn University of Technology (1997). [mihkel.veiderma@akadeemia.ee](mailto:mihkel.veiderma@akadeemia.ee). HOME ADDRESS Jääraku 54, 12015 Tallinn ESTONIA, Tel: +372 623 8757. Married, three daughters.

**Richard VILLEMS**, born 28.11.1944, elected 1987, biophysics. University of Tartu 1968. President, Estonian Academy of Sciences (2004); Kohtu 6, 10130 Tallinn ESTONIA, Tel: +372 644 2129, Fax: +372 645 1805, [richard.villems@akadeemia.ee](mailto:richard.villems@akadeemia.ee). HOME ADDRESS Pallase pst 126-3, 51013 Tartu ESTONIA. Married, son and daughter.

**Haldur ÕIM**, born 22.01.1942, elected 1994, humanities and social sciences. University of Tartu 1965. Professor emeritus, Extraordinary Senior Researcher, University of Tartu (2007); Ülikooli 18, 50090 Tartu ESTONIA, Tel: +372 737 5941, +372 737 6143, Tel/Fax: +372 737 5224, [haldur.oim@ut.ee](mailto:haldur.oim@ut.ee). HOME ADDRESS Hiie 12, 51006 Tartu ESTONIA, Tel: +372 742 2272. Married, son and two daughters.

## FOREIGN MEMBERS

**Richard R. ERNST** (Switzerland), born 14.08.1933, elected 2002, physical chemistry. Professor emeritus, Swiss Federal Institute of Technology, Zürich (1998). Laboratory of Physical Chemistry, ETH-Hönggerberg HCI, CH-8093 Zürich, Switzerland, Tel: +41 44 632 4368, Fax: +41 44 632 1257, [ernst@nmr.phys.chem.ethz.ch](mailto:ernst@nmr.phys.chem.ethz.ch). HOME ADDRESS Kurlistrasse 24, CH-8404 Winterthur, SWITZERLAND, Tel: +41 52 242 7807. Married, son and two daughters.

**Carl-Olof JACOBSON** (Sweden), born 24.04.1929, elected 1995, developmental biology. Professor emeritus, Uppsala University (1994). HOME ADDRESS N Rudbecksgatan 13, SE-75236 Uppsala, SWEDEN, Tel: +46 18 501 123, [carl-olof.jacobson@ebc.uu.se](mailto:carl-olof.jacobson@ebc.uu.se). Married, two sons and daughter.

**Antero JAHKOLA** (Finland), born 05.02.1931, elected 1998, energy research. Professor emeritus, Helsinki University of Technology (1994). HOME ADDRESS Hiisikuja 4 D 24, FI-00730 Helsinki, FINLAND, Tel: +358 9 724 9144; +358 400 102302, antero.jahkola@elisanet.fi. Married, son and daughter.

**Charles Gabriel KURLAND** (USA/Sweden), born 14.01.1936, elected 1991, biochemistry. Professor emeritus, Uppsala University (2001), kurland@tele2.se. HOME ADDRESS Munkarpsv. 21, SE-24332 Höör, SWEDEN, Tel: +46 41 322 856. Married, three daughters.

**Jaan LAANE** (USA), born 20.06.1942, elected 1995, chemical physics. Professor, Texas A&M University (1976); Department of Chemistry, College Station, TX 77843-3255, USA, Tel: +1 979 845 3352, Fax: +1 979 845 3154, laane@mail.chem.tamu.edu. HOME ADDRESS 1906 Comal Circle, College Station, TX 77840, USA, Tel: +1 979 693 5171. Married, two daughters.

**Gérard A. MAUGIN** (France), born 02.12.1944, elected 2002, mechanics. Director of Research at French National Centre for Scientific Research (1979); Head, Institute Jean Le Rond d'Alembert (Mechanics, Acoustics, Energetics), University of Pierre and Marie Curie (2007). Institut Jean Le Rond d'Alembert, Université Pierre et Marie Curie, Tour 65-55, Case 162, 4 Place Jussieu, F-75252 Paris Cedex 05, FRANCE, Tel: +33 1 4427 5312, Fax: +33 1 4427 5259, gam@ccr.jussieu.fr. HOME ADDRESS 6 Allée des Feuillantines, F-94800 Villejuif, FRANCE, Tel: +33 1 4958 2049. Married.

**Grigori MINTS** (USA), born 7.06.1939, elected 2008, computer science. Professor, Stanford University (1991). Department of Philosophy, Building 90, Stanford University, Stanford, CA 94305-2155, USA, Tel: +1 650 723 2964, Fax: +1 650 723 2964, gmints@stanford.edu. HOME ADDRESS 1045 McGregor Way, Palo Alto, CA 94306, USA, Tel: +1 650 493 7181. Married, daughter.

**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, oksaar@oksaar.com. Married, son.

**Jaak PEETRE** (Sweden), born 29.07.1935, elected 2008, mathematics. Professor emeritus, University of Lund (2000). 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 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, piiper@em.mpg.de. HOME ADDRESS Heinz-Hilpert-Str. 4, D-37085 Göttingen, GERMANY, Tel: +49 551 56 786. Married, 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, mrodd@btinternet.com. Married, son and daughter.

**Matti SAARNISTO** (Finland), born 11.11.1942, elected 2008, geology. Member, Finnish Academy of Science and Letters (1995). HOME ADDRESS Mikonkatu 22 D 46, FI-00100 Helsinki, FINLAND, Tel: +358 400 209 351, matti.saarnisto@saunalahti.fi; matti.saarnisto@acadsci.fi. Married, son and 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, helmut.schwarz@mail.chem.tu-berlin.de. HOME ADDRESS Patschkauer Weg 15, D-14195 Berlin, GERMANY, Tel: +49 30 832 5246. Married, son.

**Jānis 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, 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, 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, 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, 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. Widower, son and daughter.

## ESTONIAN ACADEMY PUBLISHERS

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Established in 1994  
Address: Kohtu 6, 10130 Tallinn, ESTONIA  
<http://www.kirj.ee> or [www.eap.ee](http://www.eap.ee)  
Director: Ülo Niine, Tel: +372 645 4504,  
Fax +372 646 6026, [niine@kirj.ee](mailto:niine@kirj.ee)



Estonian Academy Publishers continued in 2010 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.

In 2010 the journals were issued in the following volume:

Title	Number of issues per year	Total volume in printed sheet
<i>Acta Historica Tallinnensia</i>	1	12.5
Estonian Journal of Archaeology	2	11.0
Estonian Journal of Earth Sciences	4	38.8
Estonian Journal of Ecology	4	20.0
Estonian Journal of Engineering	4	21.3
<i>Linguistica Uralica</i> *	4	20.0
Oil Shale	4	22.9
Proceedings of the Estonian Academy of Sciences	4	47.8
<i>Trames</i>	4	26.8
Total	31	221.1

\* There appeared the Supplementary Series *Linguistica Uralica* Vol. 4, by Heinike Heinsoo "The Subject and the Predicate in Votic", delving into the main issues of Votic sentence patterns: semantic and formal links of subject and predicate and their coordination.

Journals are internationally peer-reviewed and have international editorial boards. They are recognised as such by Estonian Science Foundation and Science Competence Council. Seven journals belong to category 1.1 and two journals to category 1.2.

Information on journals is electronically available at website of the Estonian Academy Publishers; starting from 2006, the website of the Publishers offers

free access to full texts of all articles of all journals. Since earlier years, the full texts of journals have been available through mediation of well known electronic publishers EBSCO and C.E.E.O.L. Lately several new portals have been added thereto: The Gale Group Inc., ProQuest LLC, H. W. Wilson (four journals), Digital Publication with the Leading Asian Distributor (Airiti Inc.). The majority of journals are reviewed in Elsevier BV Bibliographic Database (SCOPUS®).

In this year, Google realised the agreement made with the Estonian Academy Publishers in 2008, digitising and placing in Internet the full texts of articles of earlier vintages of our journals. Respective links have been made from the Publishers' website.

Starting from 2008 all scientific articles of the journals have been supplied with the doi-indexes (Digital Object Identifiers).

Availability of full text in multiple places creates better opportunities for review 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 of the most authoritative.

As of now, 7 journals are reflected in the ISI Web of Science databases

*Acta Historica Tallinnensia*

Estonian Journal of Archaeology

Estonian Journal of Earth Sciences

*Linguistica Uralica*

Proceedings of the Estonian Academy of Sciences

Oil Shale (incl. Current Contents®)

*Trames*. A Journal of the Humanities and Social Sciences

Three journals are in the database ERIH:

*Acta Historica Tallinnensia*

Estonian Journal of Archaeology

*Linguistica Uralica*

Eight journals are in Elsevier BV Bibliographic Database (SCOPUS®) and elsewhere.

In 2010 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. There were the following special issues released:

1. Estonian Journal of Earth Sciences 59/2: Special issue dedicated to the INQUA Peribaltic Working Group symposium, Tartu, 13–17 September 2009. Guest editor Volli Kalm.

2. Estonian Journal of Engineering 16/1: Special issue on electronics: selected topics of the 11th Baltic Electronics Conference BEC2008. Guest editor Mart Min.
3. Estonian Journal of Engineering 16/4: Selected papers of the 7th International Conference of DAAAM Baltic, Industrial Engineering. Guest editors Rein Küttner and Tauno Otto.
4. *Linguistica Uralica* 46/4 Topical issue, dedicated to Votic.
5. Proceedings of the Estonian Academy of Sciences 59/1: Special issue on interpolation, inequalities, invariants, operators, and related topics. Guest editors Sergei Silvestrov, Lars-Erik Persson, Jaak Peetre and Michael Cwikel.
6. Proceedings of the Estonian Academy of Sciences 59/2: Special issue devoted to the International Conference on Complexity of Nonlinear Waves. Guest editors Jüri Engelbrecht, Arkadi Berezovski and Tarmo Soomere.
7. Proceedings of the Estonian Academy of Sciences 59/4: Special issue devoted to the 4th Baltic-Nordic Workshop “Algebra, Geometry and Mathematical Physics”, Tartu 2008. Guest editors Viktor Abramov, Eugen Paal, Sergei Silvestrov, and Alexander Stolin.
8. *Trames* 14/4: Special issue Revisiting time in cultural research. Guest editors Halliki Harro-Loit and Ene Kõresaar.

In 2010, in total 255 pieces of writing were released in 31 issues of nine journals, of them 218 scientific articles and 37 short pieces of writing. All journals (in hard copy) appeared under schedule. The electronic version appeared not less than one month prior to the date set for the hard copy.

The number of authors totalled 535, of whom 278 were Estonian authors and 257 foreign authors.

Besides journals, there appeared as commissioned works four more works.

The preparatory work dragging on for years came to a head successfully, completed was

“History of the Estonian school since the 1860s until 1917” Vol. 2 (hard cover, 774 pp.); authors Aleksander Elango, Endel Laul, Allan Liim and Väino Sirk; editors Endel Laul and Veronika Varik;

“Excerpts from the path trodden. Anto Raukas” (hard cover, 380 pp., incl. 8 pages of coloured illustrations);

“Reversal to private ownership 1991-2009. The story of privatisation still underway – specifications, recollections and estimates”, author Tiit Ulas (hard cover, 172 pp. incl. 4 pages of coloured illustrations).

Continued the release of the series “Natural heritage”. Appeared the 20th issue “Raplamaa. Rapla, Märjamaa, Raiküla parish” on the domain of meadow woods. Compilers: Hella Kink and Tiit Petersoo.

Pending solution as yet is the problem, how to release in Estonia the research monographs and omnibus volumes so that they would be recognised as works of category 2.1 and 3.1. Seemingly a problem pertaining to academic publishers, it is a matter of a more general nature, with authors-scientists bearing the brunt.

Judging by achievements, the year of 2010 was successful. However, by reason of scarce funding, the Publishers stretched to the breaking point in their publishing effort, in jeopardy are acquisitions of soft- and hardware and other equipment.

# **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, postcolonial 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 process 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, events of the Scientists' House etc.). The Museum Department of the Literature Centre in Nõmme administrates the legacy of the writer Friedebert Tuglas, Member of Academy, and other collections, (incl. F. Tuglas' library and art collection, and the library and art

collection of Artur Adson and Marie Under, which arrived in Estonia in 1996, the art collection of the Estonian Cultural Foundation in the USA (donated to the Literature Museum in 2007), 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. Tuulas, 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 (spontaneous 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: Formation 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 in the field of autogenesis (spontaneous creation) and cultural transfers. The theoretical background is created by theory of cultural transfers, postcolonial studies and analyses, researching the retarded modernity of small populations. It is shown that the roots of national identity of Estonia are hybrid and are hidden ethnically, linguistically and geographically in “alien” communities: in Baltic German culture, in international modernism, in global exile, in the Soviet imperial cultural transfer etc. Under consideration are transfers between different types of art (literature-theatre). The key problems are convertibility of relations between 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).

In 2010 the Literature Centre organized numerous scientific events.

On 22-23 October the conference “Plants and Environment” took place in Tallinn in the Hall of the Estonian Academy of Sciences. The conference was organised by the Network of Science and Literature Studies founded in 2010 by the Literature Centre and the Science Centre of the University of Tartu Library with the aims to enhance dialogue between the science and the humanities, arts and technology. The conference explored the role of plants in culture, arts and science from the 17th century onwards. At the conference 18

scholars from Austria, Germany, France, Lithuania and Estonia presented their research.

On 14-15 January the Literature Centre organised the conference “Drinking of Coffee and Taking Walks. Madis Kõiv and Estonian Cultural History” dedicated to Madis Kõiv’s texts about cultural history.

On 2-3 July the Literature Centre together with the Estonian Literary Museum coorganised the 25th Nüpli Spring School “The Literature from 2000 to 2010”.

In 2010 the Literature Centre continued with its series of monthly research seminars. During the year 6 seminar took place on the topics: “Identity Construction in Baltic Literatures” (29.03., A. Mihkelev), “Plants in Estonian Cultural History” (16.04., U. Plath), “Discourse of Decadence and its Manifestations” (19. 05., M. Hinrikus), “Discourse Analysis” (21.06., U. Plath, M. Hinrikus), “Estonian Theatre at the 20th century. Theatre and Literature” (4.11., P. Kruuspere), “The Problem of Infinity in the Thought of Middle Ages” (25. 11., R. Undusk).

In 20 October the Director of Literature Centre, Member of the Estonian Academy of Sciences J. Undusk gave a public lecture “Oxymoron as trope in European History of Ideas” at the Academy.

In 2010 the Literature Centre published the research catalogue “Under the Changeful Rainbow” (The Collections of Cultural History of the Under and Tuglas Literature Centre, Vol. 4. 112 p.), which introduces the art collection of Literature Centre to a wider audience. The catalogue includes the contributions from Jüri Hain, Jüri Kuuskemaa, Alar Nurkse ja Heide Peets and was presented at Adamson-Eric Museum on 14 January.

The Literature Centre is continuously preparing its research result for publishing. In 2010 the work on three manuscripts was concluded. The collection of articles “Love and Sociology: A. H. Tammsaare’s “I Loved a German”” edited by M. Hinrikus and J. Undusk includes 14 peer-reviewed contributions, based on the papers presented in the seminar series “Seminar on Modern Estonian Literature”. In collaboration with the Estonian Literary Museum the Literature Centre edited the third volume of the collected works by F. R. Fahlmann. J. Undusk participated in the project as one of the editors and the translator. In the Museum Department A. Eelmäe, Ü. Kurs and Õ. Kepp prepared the critical edition of the correspondence between A. Adson and F. Tuglas in 1917-1944.

In 2010 researchers of the Literature Centre delivered 35 scientific papers, of which 15 at international scientific events, among others the conference “Mimesis, Ethics, Style: International Conference on Literary Representation” (Helsinki), “High and Low. European Network for Avant-Garde and Modernism Studies Conference” (Poznan), “Metamorphoses of the Absolute. 3rd In-

ternational Metamind-Conference” (Riia), “Semiotics’ Creativity: Unifying Diversities, Differences, Divides” (Iasi), “Culture in Meditation: Total Translation, Complementary Perspectives“ (Tartu), “Spaces in Between. 4th International Conference of the European Society for the History of Science” (Barcelona), “Baltisches Historikertreffen der Baltischen Historischen Kommission“ (Göttingen), “22. Baltisches Seminar der Carl-Schirren-Gesellschaft” (Lüneburg).

In 2010 the researchers of the Literature Centre published 5 scientific articles in foreign language and 21 scientific articles in Estonian.

In 2010, the cooperation of the Literature Centre with other research institutions widened its scope. In collaboration with the Science Centre of the University of Tartu Library the Literature Centre founded the above mentioned Network of Science and Literature Studies.

In order to maximize our input to the postgraduate studies in Estonia the Literature Centre joined as a partner in the Graduate School of Culture Studies and Arts and participated in organisation of the Winter School “Time and Temporality: Categories, Models and narratives” of that Graduate School at the University of Tartu.

In the first half of 2010 the Literature Centre successfully passed the science evaluation.

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 as well as these of the Estonian National Library.

Within the framework of the state programme “The Estonian language and national memory”, the Museum Department is fulfilling the scientific project “Intellectual heritage of Marie Under and Friedebert Tuglas” (2009-2013, supervisor of project Õne Kepp). The goal of the project has been to mediate the legacy of Elo and F. Tuglas and M. Under and A. Adson to the public, doing it by way of academically edited issues, art exhibitions etc., as a historical and cultural asset. 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 2010 the researchers worked on volumes 11 and 12 of the “Collected Works”. The volume 11 includes the volumes 9 and 10 of Tuglas’s “Criticism”. The critical edition and the afterword will be prepared by M. Jõgi. The volume 12 includes Tuglas’s monograph “Juhan Liiv”. In 2010 the correspondence between A. Adson and F. Tuglas in 1917-1944 was edited to be published.

Since 2009 the works with collections have been funded directly from budget of Ministry of Education and Research. The goal is streamlining the collec-

tions of scientific and historical value, improvement of the maintenance conditions and optimising the opportunities of use. In 2010, 1120 entries of the archival library were added to the database. Altogether the data of 14294 holdings have been entered. The database is available through server of the Ministry of Culture.

In the first quarter of 2010 the exhibition “Under the Changeful Rainbow” opened on 6 November 2009 remained open in Adamson-Eric Museum. The exhibition comprised 83 works of the art collection of the Literature Centre numbering over one thousand works of art. Featuring among them was also the oil painting “Konrad Mägi’s portrait” (1908) by Nikolai Triik recently restored by Alar Nurkse. Furthermore, set on display have been 32 books, the originals of cover designs and illustrations of which come from the art collection of the Literature Centre.

The exposition was accompanied by a cultural programme, aimed at presenting the authors having lived in the house of the Museum Department of the Literature Centre and their work. On 14 January M. Jõgi presented the lecture “Elo Tuglas, the Women At the Side of the Writer”, talking about Elo Tuglas in the memoirs by Elsbet Parek, Andrus Roolah, Paul Ariste and Daniel Palgi. On 11 February Õ. Kepp talked about Marie Under and A. Adson. On 11 March the actress K. Mihkelson read the correspondence between F. Tuglas and M. Under and the singer Lea Eermann performed songs written on the poems of Estonian female poets.

During the year the holdings of the Museum Department were used for research work by 72 people, with respect to altogether 2183 holdings.

The House and the events organised by the Museum Department were visited by 3 747 people. All study groups were delivered a lecture “On life of M. Under, A. Adson and the Tuglases at Nõmme. Literary and cultural-historic background”; book expositions were staged, with altogether 632 works put on display.

## FINANCIAL ACTIVITIES

The budget of the Estonian Academy of Sciences for 2010 and its execution  
(thou kroons)

	Budget	Implement- ation
<b>INCOME</b>		
<b>ALLOCATIONS TO THE ACADEMY OF SCIENCES FROM</b>		
<b>THE STATE BUDGET</b>	18 916.00	18 916.00
incl. basic activities of the Academy	13 061.00	13 061.00
fees to Members of Academy	3 960.00	3 960.00
fees to research professors	1 575.00	1 575.00
effecting National Science Prizes	320.00	320.00
<b>OTHER REVENUE</b>	3 305.31	3 277.30
Target allocations of Ministry of Education and Research (MER)	587.00	587.00
incl. membership fees	587.00	587.00
Income from rent of rooms	400.00	371.99
Income from the analysis ordered by MER	1 428.31	1 428.31
Receipts from sale of printed matter and commissioned works (Academy Publishers)	890.00	890.00
<b>ALLOCATIONS TO UNDER AND TUGLAS LITERATURE</b>		
<b>CENTRE</b>	3 585.02	3 585.02
Through Ministry of Education and Research	3 525.72	3 525.72
incl. targeted financing of research	2 043.00	2 043.00
for infrastructure expenses	591.30	591.30
basic funding	305.60	305.60
for fulfilment of the state programme	572.42	572.42
for study loan	13.40	13.40
Appropriations for specific purposes	36.00	36.00
From sale of printed matter	23.30	23.30
<b>TOTAL INCOME</b>	<b>25 806.33</b>	<b>25 778.32</b>

## EXPENDITURES

### GENERAL BREAKDOWN

Main activities of the Academy (through Academy Office)	8 906.00	8 924.27
Estonian Academy Publishers	4 245.00	4 245.00
Fees of Members of Academy	3 960.00	3 777.95
Fees of research professors	1 575.00	1 575.00
Prizes, grants and medals	100.00	100.80
Prize for the students' research papers	100.00	100.80
Scientific Societies	1 100.00	1 120.00
incl. Estonian Naturalists' Society	420.00	420.00
Mother Tongue Society	105.00	105.00
Estonian Geographical Society	91.00	91.00
The Society of Estonian Regional Studies	80.00	80.00
Estonian Union of the Philosophy and History of Science	76.50	76.50
Estonian Literary Society	96.50	96.50
Learned Estonian Society	76.50	76.50
Estonian Musicological Society	76.50	76.50
Estonian Physical Society	76.50	76.50
Estonian Association of Engineers	21.50	21.50
Membership fees to internat. science organisations	587.00	587.00
National Science Prize Committee	320.00	320.00
Analysis ordered by MER	1 428.31	722.11
Under and Tuglas Literature Centre	3 585.02	3 366.41

TOTAL EXPENDITURES 25 806.33 24 738.54

MAIN ACTIVITY OF THE ACADEMY (THROUGH ACADEMY OFFICE)		
Wages	4 154.50	4 146.53
Social tax and unemployment insurance premium	1 426.50	1 400.73
Office expenses	330.00	346.03
Maintenance expenses of the property and premises	1 600.00	1 645.94
Investments	180.00	177.20
Transport	130.00	132.96
Mission expenses	300.00	289.57
Representation and entertaining expenses	135.00	133.11
Young scientists and popularisation of science	250.00	246.93
Continuing education expenses	10.00	10.08
Expenses for committees and divisions	20.00	18.11
Expenses for Foundation for International Exchanges	300.00	307.63
Juridical service, accounting and auditing	50.00	49.45
Publications, etc.	20.00	20.00
TOTAL EXPENDITURES OF THE OFFICE	8 906.00	8 924.27
ESTONIAN ACADEMY PUBLISHERS		
Wages	2 155.00	2 200.00
Social tax	741.00	757.00
Administration expenses	237.00	275.00
Printing expenses	307.00	335.00
Expenses related to commissioned work	805.00	678.00
TOTAL EXPENDITURES OF THE PUBLISHERS	4 245.00	4 245.00
UNDER AND TUGLAS LITERATURE CENTRE		
Wages	2 390.32	2 335.80
Social tax	821.02	802.27
Research and administration expenses	360.28	226.25
Study loan	13.40	2.09
TOTAL EXPENDITURES OF LITERATURE CENTRE	3 585.02	3 366.41

## **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.

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 2010 activities of the institutions associated with the Academy have been presented in the chronological order of their association date:

Tartu Observatory .....	100
Institute of Ecology at Tallinn University .....	103
Academic Library at Tallinn University .....	107
Institute of the Estonian Language .....	111
Estonian Literary Museum. ....	115
Institute for International and Social Studies at Tallinn University. . .	118
Estonian National Museum .....	120
Jõgeva Plant Breeding Institute.. ..	125

## **TARTU OBSERVATORY**

Associated with the Estonian Academy of Sciences  
8.05.1998



Founded 1808

Personnel: 79, of whom 47 researchers

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Tartu Observatory as a centre of Estonian space research has launched modernisation and upgrading of its main building situated in Tõravere. There is truly a pressing need for it, because on 22 September 2010, signed in Paris was The Plan for European Cooperating States (PECS) between European Space Agency (ESA) and the Republic of Estonia. Preparation of the agreement and concluding thereof was a long-winding process, but it is an impressive token of acknowledgement of technological capacity of Estonian companies and research institutions. In the first PECS schedule of Estonia, ESA has approved 12 space research and technology development projects, including also two in Tartu Observatory.

National importance of the space area is also testified by the fact that in 2010 Minister of Economic Affairs and Communications called the Council of Space Affairs (KAN), aimed to coordinate the developments of Estonian space area and provide the most expedient use of respective applications. Beside representatives of the Ministries, KAN's membership includes also Director of Tartu Observatory.

Tartu Observatory has stood up to provide that Estonian space research would also in the long perspective be supplied with contemporary infrastructure and access to international networks. The list of objects included in the Estonian Research Infrastructures Roadmap was approved by Government in June 2010 as Supplement to the Implementation Plan for the Estonian Research, Development and Innovation Strategy 2007-2013 "Knowledge-based Estonia".

Among twenty objects of the roadmap are four, which directly or indirectly support space research, use of Earth Observation applications and development of international cooperation. They are the Estonian Environmental Observatory and participation in the following international organisations: European Space Agency, ESA; European Southern Observatory, ESO; European Organisation for Nuclear Research, CERN.

Funded from the European Union structural subsidies sub-programme “Modernisation of scientific apparatus and equipment of R&D institutions” the modernisation in Tartu Observatories 1.5m telescope is started. The second project under this scheme is “Elaboration of complex laboratory of remote sensing etalons”. In 2010 upon initiative of the team of plant canopy monitoring the reflector etalon of aircraft and satellite measurements was established in Järvelja forest test area.

In 2010, fulfilment of three target-financed research topics continued in Tartu Observatory:

- “Dark energy, dark matter and formation of structure in the Universe” (principal investigator Enn Saar).
- “Observational and theoretical investigation of stars and their envelopes during evolutionary phases” (principal investigator Tõnu Kipper)
- “Remote monitoring of optically complex natural environments” (principal investigator Andres Kuusk).

Besides that, the Estonian Science Foundation supported the research work of Tartu Observatory with 5 research grants in astronomy and 4 grants in remote sensing and atmospheric physics. In 2010, there were two young astronomers, one remote sensing specialist and one atmospheric physicist in the Observatory supported by post-doctoral mobilitas grants of Estonian Science Foundation.

Altogether published were 44 peer-reviewed research articles in international journals, plus 11 in conference volumes.

Regardless of reduced budgetary financing as compared to the past year, it was possible to promote scientific ideas with the help of EU 7th Framework Programme projects. In 2010, continued the EU project EstSpace (Expose capacity of Estonian space research and technology through high-quality partnership in Europe).

Two new projects WaterS were launched – “Strategic partnership for improved basin-scale Water quality parameter retrieval from optical Signatures” and ESAIL “Electric sail propulsion technology”. For expansion of remote monitoring methods, applications and cooperation network there were in progress 9 smaller Estonia and international agreements and projects.

It is pleasant to mention that in that year, two young researchers defended their theses: researcher of Star Physics Department Mari Burmeister on 1 October 2010 in the University of Tartu and researcher of Theoretical Astrophysics Department Indrek Vurm on 22 October 2010 in the Oulu University in Finland.

Great recognition to us is the election of Member of Academy Jaan Einasto the Doctor Honoris Causa of the University of Tartu and election of Head of Cosmology Department of Tartu Observatory, senior researcher Enn Saar

Member of Academy of the Estonian Academy of Sciences in astronomy. Estonian Institute of Meteorology and Hydrology decorated Viivi Russak for long high-level cooperation with the Institute medal and Estonian University of Life Sciences awarded to Tiit Nilson the medal for services.

Continuously the Observatory was visited by many excursions – 257 groups with over 6 300 persons interested in astronomy. Popularising science through articles and over Internet has always been close to heart of personnel of the Tartu Observatory. A thorough overview of activity of the Tartu Observatory is contained in Yearbook 2010 and also in the traditional Observatory calendar.

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

Associated with the Estonian Academy of Sciences  
16.06.1998



Founded 1992

Personnel: 33, of whom 24 researchers

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Scientific and administrative secretary: Ludmilla Krusta, Tel: +372 619 9829,  
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In 2010, scientific research was carried out within the framework of 52 topics of different levels and projects, incl. 2 target-financed projects by Ministry of Education and Research of Estonia, 5 Estonian Science Foundation grants (incl. 2 Mobilitas grants) and 35 applied co-operation agreements. Research work was also carried out within framework of 8 Doctoral theses.

The institute participated in international cooperation projects and programmes, of which of wider scope were

- COST Action FP0601: Forest Management and the Water Cycle (FORMAN). General project leader: Professor Michael Bredemeier, (Göttingen University, Germany). Professor Margus Pensa is member of working group WG1 (Expected changes in forest tree species composition and forest structures) and Elve Lode is member of working group WG3 (The different scales relevant in the assessment of forest-management-water relations) and moderator. Duration of Project: 2007-2011.
- COST Action 639: Greenhouse gas budget of soils under changing climate and land use (BurnOut). General Project leader: Doctor Robert Jandl (Austrian Forestry Federal Bureau and Research Centre). Elve Lode is member of working group WG 1 (Hot spots for effects of climate change on soil C and N). Duration of Project: 2006-2010.
- Project of the programme FOMA of Swedish University of Agricultural Sciences: Eco-hydrological conditions and study of man made disturbances of mires identified by inventory programs of VMI and NILS. General Project leader Elve Lode. Duration of Project: 2009-2011.

- Swedish Research Council (Vetenskapsradet Grant): Land cover-climate interactions in NW Europe 6000 and 200 year BP (LANDCLIM 6000-200) – a novel model-data comparison approach. (PI: M.-J. Gaillard, Co-PIs: Shinya Sugita, B. Smith, M. Rundgren, and E. Kjellström). Duration of Project: 2009-2011.
- National Science Foundation (USA): Improving reconstructions of open vegetation in North America: pollen productivity estimates for grassland plants. (PI: Kendra McLauchlan. Co-PI: Shinya Sugita.) Duration of Project: 2008-2010.
- NordForsk (Nordic Research Council and Nordic Researcher Network) on The past LANDcover-CLIMate interactions in Scandinavia and NW Europe over the last 10000 years – LANDCLIM 10000, (PI: M.-J. Gaillard, Co-PIs: Shinya Sugita, B. Smith, E. Kjellstrom). Duration of Project: 2009-2011.
- UK QUEST (Quantifying and Understanding changes in the Earth System) programme: PMIP Palaeoclimate Reconstruction. (PIs: S. Harrison, P. Bartlein, Shinya Sugita). Duration of Project: 2009-2010.
- UK QUEST (Quantifying and Understanding changes in the Earth System) programme: Reconstruction of Arctic Biomes and Tree line (PIs: M. Edwards, K. Willis, H. Binney, Shinya Sugita). Duration of Project: 2009-2010.
- IGBP (International Geosphere-Biosphere Programme) PAGES Focus4 PHAROS – Land Cover Working Group (leaders: M.-J. Gaillard, S. Mooney and Shinya Sugita). Duration of Project: 2008-2023.
- PostPOLLANDCAL. Participating the Project are Mihkel Kangur and Tiiu Koff. Duration of Project: 2009-2011.

The main research effort of the Institute was carried out within the framework of the following target financed projects:

“Lake-level fluctuations during the postglacial period: causes and impact on lake ecosystems”, project leader Jaanus Terasmaa. The main results of 2010: the analysis of lake sediments with several paleolimnological markers shows, that the development of small lakes and lake-level fluctuations in the North-Baltic has taken place similarly. Set apart as significant overlapping periods can be the Early Holocene variable conditions (before 8500 cal yr BP), manifestation of stable Mid-Holocene (8500–2000 cal yr BP) and the following impact, as indicated by high rate of zygotes of green algae *Chlamydomonas*, found in the sediments. The statistical data analyses showed that in some cases the changes in pollen and diatom profile correlate – the increase of the spruce pollen share in sediment of the Kõži lake is correlates with occurrence of acidophilous diatoms indicating natural acidification. Implementation of computer tomography confirmed, that it replaces as a non-destructive method the regular methods for determining the sediment density (LOI) ( $R=0,92$ ,  $p<$

0,001). The test carried out in littoral of the Kiruverve lake revealed the positive impact of high plants on disintegration of organic matter in the sediment. It was proved within international cooperation, that it is possible, on the basis of REVEALS model, to reconstruct on European scale the changes of landcover in Holocene and to show that anthropogenic changes in vegetation have affected the atmospheric CO<sub>2</sub> content and regional climate.

“Impact of disturbances on wetland ecosystems in Estonia” (project leader Margus Pensa) – the main results of 2010: measurement of carbon (CO<sub>2</sub>-based) emissions in bogs of different human impact level showed that in the areas of stronger human impact the C-emissions are spatially more variable than in natural areas. The largest difference in emission levels was observed during summer months, while the emission rates were similar in spring and autumn. That is caused by larger decline in water level in areas of stronger human impact, which is in positive correlation with more intensive growth of trees. Topohydrological GIS based modelling of Nigula bog based on Lidar-data showed the dependence of results on the pixel size in case of 3D models. Regardless of the differences in the distribution of the modelled catchment areas in Nigula bog, the obtained results transformed easily into four basic catchment area zones: S-SW, N-NE, E-SE and W orientation with area coverage respectively 58%, 23%, 11% and 8% of total bog area. In the process of coastal survey it was found that due to reduction in the number of storm days and weaker waves, the intensity of coastal processes in North Estonia has decreased during the past decade and coasts have stabilised. Simultaneously, in West Estonia the coastal processes have intensified and the difference between North and West Estonia is evidently caused by shift of cyclonic trajectories northward, accompanied by reduction of share of northern winds and increase of the share of western winds. Hence the conclusion - although the cyclonal activity has generally increased, that activeness has contrary influence on coasts, depending on the degree of exposure of coasts.

30 scientific articles were published by the staff members of the Institute in 2010, incl. 19 articles in peer reviewed international scientific publications. Besides, 15 abstracts of conference, plus 4 popular science articles came out. 18 papers were delivered at international conferences and meetings, 23 papers at national events and 30 papers at scientific seminars of the Institute.

The majority of applied researches were directed at analysing the state of environment and opportunities to improve it. To invigorate the research transfer, with several companies the innovation participatory interests offered by Enterprise Estonia Foundation were used. The Institute is one of the leading partners in preparatory works of three regional centres of competence. Of applied nature too, is the increasingly broader counselling provided for the Ministry of the Environment of the Republic of Estonia, in particular in issues concerning the fulfilment of the Water Framework Directive.

In autumn 2010, international seminar Linking Molecular Information to Environmental Sciences was held, organised by Institute of Ecology of Tallinn University in cooperation with Institute of Mathematics and Natural Sciences. Organisation of the seminar was supported by Doctoral School of Life Sciences and Ecology and ESF Mobilitas programme (MTT3).

Researchers of the Institute were actively involved in teaching at universities – by delivering lectures and supervising students and postgraduate students at Tallinn University as well as the University of Tartu.

## **ACADEMIC LIBRARY OF TALLINN UNIVERSITY**

Associated with the Estonian Academy of Sciences  
17.06.1998



Founded 1946

Personnel: 125, of whom 2 researchers

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Director: Andres Kollist, Tel: +372 665 9401, Fax +372 665 9400  
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Number of registered users 49 063

Number of copies in the circulating collection 2 534 148

The year of 2010 should be considered as overly successful for the Academic Library. One of the most impressive achievements to be highlighted is the decision of Foundation Archimedes, to allocate 4.9 million kroons for development of the digitizing centre of the Library. The hardware and software to be purchased within the framework of the project will enable the Library to digitize in a wide scope the information, thereafter accessible only on hard copy format, thereby enlarging both the availability and usability of scientific information. Project will create better possibilities to digitise to a wider extent the literature deposited at the Library, among others the most significant early printed book collection of Estonia – compendium of the Baltic and rare books. The digitizing will enable wider use of rarities with the help of modern devices, while creating a back-up copy from the original. Project will bolster up promotion of information in society and create prerequisites for more extensive cooperation with other libraries and archives in Estonia.

Of landmark significance for the Library was also the approval by the Government of the infrastructure road-map of Estonian science initiated by Ministry of Education and Research and the Estonian Academy of Sciences in 2010. The NGO Consortium of Estonian Library Network and the Council of Estonian Academic Libraries titled the road-map object as “Conservation of Estonian e-repository and collections”. The focal goal of creating the infrastructure is creation of a single e-environment, providing in Internet through one gateway the access to Estonian research literature, national documents, Estonia-centred history of culture and folklore collections, rare old books stored in national memory institutions, information lying hidden in archives and museums, heretofore displayed only in the hard-copy format or scattered on various Internet pages. Infrastructure provides prerequisites to digitize it and thereby make it better available to potential user, however also sustainably conserve both electronic and authentically existing spiritual assets of Estonian libraries, archives and museums.

The Library participates in the conservation-concerned project between national memory institutions “Providing preservation and availability of the Read Book of Estonian printed matter and source texts”, in the process whereof the books appeared in Estonia up to 1850 are digitised. Library earmarked from its collections for digitising 10 titles, either single preserved copies in Estonia or the best preserved copies. Digitizing takes place in National Library, the digitised files are preserved in repository of the Literary Museum. The Project is funded by the European Foundation for Regional Development.

The Library has become even more open to its readers and has made its abundant collections more available. The faculty of the Tallinn University has been opened access to the study and recreation zone of the 2nd floor of the Library, accommodating over 200 000 copies of books in Estonian, having appeared since 1945 to date, as well as literature in Russian.

In March, the Centre for Early Printed Book opened for one day the doors of the Baltic reading room to all those interested, offering for review the printed book rarities from 15th to 19th C. In the day, two excursions took place, in the course of which an exceptional opportunity was provided to make a short tour also about storage zones and Centre of Restoration and Digitization, depicting the rarities on conservator’s workbench, and acquainting the visitors with conservation and restoration works.

Jointly with Tallinn University Development Foundation, the May of 2010 witnessed the Night Library, already the sixth in succession, designed for students preparing for exams, providing them a chance to learn in-depth. The need for that project is evidenced by statistics too: the Night Library was visited by 594 people within four days, record-breaking as compared to 263 visitors of the previous year. The Night Library has developed into an all-city project – besides the Tallinn University students it was also visited by students of other higher schools located in Tallinn.

The Library is consistently aspiring to enhance the quality of library services, including the handicapped students. For instance, the reporting year witnessed the starting cooperation between the library of the Estonian Institute for Humanities in Narva Rd, and our specialist Subject Information Department and Service Department, aimed at providing handicapped students a flexible opportunity to use the Library. The handicapped students can order the documents through specialist reviewer; they obtain the orders from the Estonian Institute for Humanities and can also return them there. Deplorably, the lift of the Academic Library has inadequate space for carting in of a wheelchair. The people of impaired sight have been provided an opportunity to enter the Academic Library with a guide dog and to use the reading apparatus for the visually impaired.

In November, the Library held the survey of service quality. The poll was answered by 1 751 readers. The detailed summaries will be drawn in the first half of 2011.

Being an Academic Library, it must adjust to upheavals and developments in the society and to become continually more attractive to the youth, making recourse to all possibilities of the mass media. Consequently, the Library joined the presently largest international communication network Facebook. In autumn, the readers were advised to keep informed about the Library news through Facebook. Thereupon the number of beneficiaries of the Library's news flow spiralled up from 69 to 779. In cooperation with Tallinn University's Open University e-instruction Centre, a video presenting the Library was completed in 2010 combined with tasks, checking the degree of mastering of information heard from video.

In the reporting year, the availability of research information rose. Opened on website of the Library was the common search of databases of EBSCOhost Integrated Search (EHIS) in the Library computer network, before long to consolidate almost all databases of e-journals and e-books opened to the Library, allowing performance of search simultaneously in several databases.

Since September, open for users has been the Library's repository E-Ait – an electronic archives-database, collecting for safe-keeping the doctoral and master theses defended at Tallinn University. Repository E-Ait is linked to European e-dissertations' portal DART-Europe (<http://www.dart-europe.eu>), bringing together information on doctoral works enjoying free access. The aim of portal is to facilitate availability of existing scientific information and to disseminate the principle of freely shared scientific information. The portal features over 190 000 doctoral works as of now, and through E-Ait the portal the doctoral works defended at Tallinn University can be found too.

Hereafter the Library contemplates adding to repository also the articles of its staff, the instructive materials composed at the University and the Library's digital collections.

In December, the staff and students of Tallinn University got an access to web-based software RefWorks designed for collection, administration and distribution of information. The reference-administration software RefWorks enables transmission of references and data from databases and websites to its RefWorks account, adding of imported references to the Word-text being composed and formation of list of literature used on their basis. RefWorks enables selection between different reference systems or creating its own reference system. Employment of such software is expected to significantly reduce plagiarism in student works.

The year of 2010 was the Year of Reading in Estonia. Within its framework, the Library was accorded high recognition at the festive reception held in Riigikogu, for presenting in Russian of the work of Estonian authors. Letter of appreciation was awarded to Marina Lall, coordinating the completing work of the Library's Russian documents, her exceptionally professional work was acknowledged and the collection of Russian books was called magnificent.

In April 2010, the Centre of Estonian Exile Literature organised in Estonian National Library a conference "Estonian scientists in exile", with Estonian scientists from USA, Sweden and Canada speaking. There were delivered 8 papers, plus 6 posters. The speakers deliberated on Estonian scientists having been active abroad, as well as on their own scientific path in various locations of the world.

Intriguing findings continually come to light from Library's reserve collections. For instance, from January to March on display for those interested was the exposition of music printed outside Estonia in 19th C. and beginning 20th C., which were restored by the Library's conservators. The music collection of the Library's Baltica and Rare Books Department is multifarious. The oldest music in that collection dates from beginning 17th C., some also from end 16th C.

Workers of the Library's Centre of Restoration and Digitization completed the conservation of collection of illustrations of Friedrich Schiller's works. The oldest issue deposited in the Library's collections from Friedrich Schiller is the work issued in Berlin in 1783 titled "Die Räuber". Johann Heinrich Ramberg's (1703-1840) copper gravures to Schiller's works constituted the tenth's exhibit of the virtual expositions series Hortus Librorum organised by the Library's Centre for Early Printed Book.

In 2010, the Library carried on with the earlier started research topics, on the basis whereof several papers were delivered and publications released. Rene Haljasmäe continued her doctoral research work in the Estonian Art Academy on the topic "Incunables. Ratio of damage and restoration in books printed in 15th C." and 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".

**INSTITUTE  
OF THE ESTONIAN LANGUAGE**

Associated with the Estonian Academy of Sciences  
11.05.1999



Founded 1947

Personnel: 81, of whom 23 researchers

Lexicographers, terminologists and language planners 29

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Senior researcher – Academic Secretary: Hille Pajupuu, Tel: +372 617 7500,  
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Institute of the Estonian Language has six departments:

Department of Linguistics and Language Technology,

Head Dr. Phil. Urmas Sutrop

Department of Finno-Ugric Languages and Dialects,

Head M.A. Sven-Erik Soosaar

Department of Language Planning, Head Dr. Peeter Päll

Dictionary Department, Head Dr. Margit Langemets

Terminology Department, Head Tiina Soon

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

In 2010, DEPARTMENT OF LINGUISTICS AND LANGUAGE TECHNOLOGY fulfilled two target funded research topics: “Modelling intermodular phenomena in Estonian” (supervised by PhD Meelis Mihkla) and “Word and concept in the development of Estonian vocabulary and place names” (supervised by Dr. Phil. U. Sutrop). The first project aimed to study the relationships of prosody with other language levels, the speech rate of Estonian and the interrelationships between lexicon, grammar and semantics. The results were published in 19 scientific articles. The international conference “Emotions in & around language” was held, attended by three invited speakers (from Holland, Sweden, and Italy) and nearly 80 participants from 10 countries. Researched under another topic was the specificity of Indo-European loans in Finno-Ugric dialects, coming to use of secondary structures and their system in the Estonian literary language, as well as formation of place and colour names. Presented have been several new etymologies of the lexis of culture. The research outcome was published in 15 scientific works.

Ended were three projects of “The National Programme for Estonian Language Technology” (2006-2010”):

- The Estonian Emotional Speech Corpus, project leader H. Pajupuu;
- Corpus-based speech synthesis for Estonian, project leader M. Mihkla;
- Lexicographer’s workbench, project leader Ülle Viks.

For each project cf. <http://www.keeletehnoloogia.ee/projektid>.

DEPARTMENT OF FINNO-UGRIC LANGUAGES AND DIALECTS continued editing the last volume of the Dictionary of the Votic Language; released from print was the 6th volume of the Dictionary. In evidence with 21st and 22nd fascicles is substantial accretion to the Dictionary of Dialects. Ongoing was editing of the Etymological Dictionary and compilation of the Dictionary of the Udmurt language.

Under auspices of the Department, an international seminar was held at the Institute “History of Balto-Finnic lexicon: etymology in crossroads”, attended with papers by 10 etymologists from Estonia and Finland. The researchers scrutinized the perspectives for the future of etymological dictionaries and databases.

The Department continued digitising the archives of Estonian dialects and cognate languages. It started compiling the electronic database of the Livonian language, using the Institute’s lexicographer’s workbench EELEX by keying-in the Sjögren-Wiedemann Livonian-German-Livonian Dictionary.

#### DEPARTMENT OF LANGUAGE PLANNING

The language planners released 18 pieces of writing and other publications on the topic Language Care; they delivered over 40 individual lectures or papers. Over telephone, language advice was provided to 6793 referrals, supplied an answer was to 1935 e-mails and 15 regular letters. The language advice basis contains over 125 000 entries, of which over 6600 entries are public (Keele nõuvakk <http://portaal.eki.ee/keeleabi>). Conjointly with the Terminology Department, staff training of the EU translators was organised in Luxembourg and Brussels, one training programme being delivered to freelance translators in Tallinn. Updated has been the Euro Language Care website, continually featuring a selection of news, new terms and language advice, forum etc. (<http://eurokeelehoole.eki.ee>). Completed has been the third Euro-language collection “Et lugeja võiks tulla” (So that the reader could come). Pushed on too has been the dictionary work. Pending publication is the “Standard Estonian Dictionary for Russian School Students” complemented with an annex on orthography. In cooperation with the Valgus Publishers, “Lexicon of Foreign Words” is underway. In the process of preliminary work with the next following “Standard Estonian Dictionary“, the complementary lexis has been collected, and the architecture and orientation of the dictionary has been deliberated at a public seminar together with translators. In cooperation with

the Department of Linguistics and Language Technology, the Estonian Place Name Book is being compiled.

#### DICTIONARY DEPARTMENT

In the domain of dictionaries, compiling and editing of dictionaries of the Estonian general language has been continuing. In process is the one-volume Explanatory Dictionary of the Estonian Language, “The Basic Dictionary of Estonian” and the Estonian-Ukrainian dictionary, some editing has been done of the database of Estonian word-families. All lexicographic works are being carried out in the Institute’s lexicographer's workbench EELex.

Released has been the “Estonian-Russian Dictionary”, and within the frame of a joint project of the Valgus Publishers, the Institute of the Estonian Language and the Estonian Association for Applied Linguistics, the Oxford-Duden Pictorial English-Estonian Dictionary.

In April 2010, the 9th Applied Linguistics Conference was held (jointly with the Estonian Association for Applied Linguistics and Tallinn University) and second, the Estonian Papers in Applied Linguistics 6 (a peer reviewed serial issue) appeared.

At the University of Tartu, doctoral thesis was defended by Liivi Hollman on the topic “Basic Colour Terms in the Estonian Sign Language”.

TERMINOLOGY DEPARTMENT is working prevalently in the project-based mode. A large part of work takes place in terminology commissions or consists in processing material for commissions. The largest project has been streamlining and elaboration of the military and security & defence policy terminology in cooperation with Ministry of Defence: for instance, in 2010, at 27 meetings 1775 terms were considered.

Picking up were the follow-up projects: education terminology project in cooperation with Ministry of Education and Research and the aviation terminology project in cooperation with Ministry of Economic Affairs and Communications.

Links with the term-consumer became more intimate: within the frame of the project of military and security & defence policy terminology, the Department was engaged in cooperation with Tactics Department of the Estonian National Defence College for harmonizing the terms of tactics (total of 500 terms); as a matter of fact, representatives of Ministry of Defence and Ministry of Foreign Affairs have increasingly often referred to the Terminology Commission, to benefit of their counsel on terms, when drawing nationally or internationally vital documents or legal acts.

PERSONNEL AND ADMINISTRATION DEPARTMENT was concerned with goodwill development activity and image design. A cycle of management training was held for leaders of all levels of the Institute. In cooperation with AS

Emor, the survey of the Institute's repute and image was carried out in spring 2010. The outcome of the survey showed that although the impromptu acknowledgment of the Institute is low (19%), the Institute of the Estonian Language is nevertheless the best-known linguistic institution in Estonia.

A landmark project aimed to enhance the image and renown of the Institute was the contest of new words ("Sõnaus") carried out in cooperation with Office of the President. The word contest attracted enormous coverage in the mass media, the largest in the history of the Institute. Contemplated as a follow-up activity to "Sõnaus" is to create the environment of new words in the Institute's website, where those interested can present their lexical innovations and indulge in discussions over them.

## **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: 102, of whom researchers 39, librarians and bibliographers 13  
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Secretary-Information Manager: Krista Ojasaar, Tel: +372 737 7700,  
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Estonian Literary Museum consists 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 - head Vilve Asmer;
- Estonian Folklore Archives - head Risto Järv;
- Department of Folklore - head Mare Kõiva;
- Department of Ethnomusicology - head Triinu Ojamaa.

Besides that, formed as a trans-museum unit, has been the Estonian Literary Museum Publishing Team, with the main goal to provide, as inherent to scientific publishers, the existence of an international Collegium to publications and the peer-reviewing of the manuscripts, when needed.

Underlying the activity of the Estonian Literary Museum as a science and research institution in 2010, too were five target-financed topics, supported by 4 grants from the Estonian Science Foundation, the state programmes and other financing sources. When preparing for evaluation at the beginning of the year and critically reviewing the projects in progress, 32 projects were found to operate actively. That is our main research basis, sprouting new publications and researches.

In 2010 the researchers of the Museum authored 286 publications. The doctoral degree was defended at the University of Tartu by Renata Sõukand.

The highlight in 2010 of the Estonian science as a whole as well as of the Estonian Literary Museum was international evaluation, passed successfully with the experience gained allowing asserting of our sustainability.

The activity of major importance as per structural units affecting several departments was the two-year project launched in 2010 and funded by the EU “Providing preservation and availability of the Red Book of the Estonian printed matter and manuscript source texts of Estonian culture”. Within the

framework of the project there will be digitised 100 000 pages of rare printed matter and 140 000 pages of archival materials vital as regards the Estonian culture: Jakob Hurt's folklore collection, manuscript collection by pastor of Võnnu Eduard Philipp Körber incorporated in collections of the Estonian Learned Society and Ado Grenzstein's letter collection comprising 18 volumes. The work will be performed by digitisers and conservators of the University of Tartu, National Library and OÜ Mandragora, who were awarded the state procurement contract. In the process of work the printed matter and manuscripts needing restoration will be brushed up, the digitised printed matter will be archived in digital archives DIGAR and made available in electronic catalogue ESTER. For preservation of the files of manuscripts there will be a special repository created, to accommodate in the future all digitised material of the Museum.

Proceeding consistently in parallel with restoration and digitising of the older material was registration and making available of material deposited from this country and abroad. The highlight of the year for the Archival Library, the annual book history conference i.e. the Oskar Kallas Day was held, for the 23rd times in succession.

The most important output of the research of the Estonian Cultural History Archives was three monograph issues released in the year: Maie Kalda's "Debora and brothers", volume of articles compiled by Marin Laak and Aare Pilv "Juhan Viiding. Estonian poet" and a voluminous collection dedicated to Uku Masing composed in cooperation with Professor of the University of Tartu Arne Merilai "Son of Man on White Ship". The end of the year witnessed renovation of the cooperation agreement with the University of Tartu, and as a token of its sustainability, the Christmas Eve evidenced the release of the new twin-issue 5/6 of the joint follow-up publication "Methis" by Estonian Literary Museum and Institute of Cultural Sciences and Arts of the University of Tartu. The highlight of the year was celebration of Bernard Kangro's 100th anniversary with a conference in cooperation with the University of Tartu and Karl Ristikivi Society. The cultural theory team headed by Virve Sarapik developed fruitfully the analysis of interrelations of written texts and visual arts, yielding the pithy collection of articles on Mati Unt's "Autumn Ball" in the series "Etudes on Modern Culture".

As regards the collections of the Estonian Cultural History Archives, depositing and processing of new archives continued.

Organised by Estonian Folklore Archives, November witnessed the sixth in succession of conferences on folk poems with international participation. One of the goals of that event has been, as ever the dialogue on meaning of the folk poem within the academic and a wider circle. In the given case, within the framework of the conference the presentation of folk songs database was

carried out. Available in the Internet database presently to those interested are as many as over half of Estonian folk poems.

In 2010, the most important publications by the Estonian Folklore Archives were books by senior researchers Mall Hiimäe and Anu Korb. Mall Hiimäe authored in cooperation with the “Varrak Publishers” the “Holidays and Weekdays in Popular Calendar”, comprising various articles on popular calendar. The volume composed by Anu Korb “Lives and stories of Siberian Estonians” provides 15 fascinating insights into biographies of Siberian Estonians repatriated to Estonia. The book appeared by the 60th birthday of our merited researcher of East Estonians’ legacy Anu Korb; the compiler was also awarded the annual prize of the Cultural Endowment of Estonia. As an academic Opus Magnum, on Mother Tongue Day the readers obtained the new *Monumenta* – the first part of the anthology of miracle fairy tales composed by Risto Järv.

Department of Folklore continuously merits attention also due to international and interdisciplinary cooperation carried out in 2010, betokened by post doctor Lina Maksimova Gergova of Bulgaria, having been posted to work in the Department. Under supervision of Mare Kõiv, cooperation with Poland was furthered as well as the projects in progress “Medica” and “Ritual Year”. With involvement by researchers in folklore of the Museum, there was initiated the international network uniting the ethno-biologists, concerned with research of Eastern Europe and Far East environment.

Department of Ethnomusicology of the Museum continued to focus on the problem range of musical identity and open identity. Beside the articles, a substantial output was the voluminous collection of articles released by the 75th birthday of Ingrid Rüütel “Holding one’s own when transforming”, containing her most important research works as well as material of more personal nature.

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

Associated with the Estonian Academy of Sciences  
28.01.2003



Founded 1988

Personnel: 43, of whom 30 researchers

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Director: Airi-Alina Allaste, Tel: +372 619 9884, Fax: +372 619 9860,  
alina@iiss.ee

In the reporting year the Institute fulfilled 3 target-financed topics, 2 ESF grants and 15 applied cooperation agreements. It participated in several international programmes. Liis Ojamäe defended the doctoral thesis on the topic: "Making Choices in the Housing Market: Social Construction of Housing Value".

The Institute continued the target-financed topics "Changes in attitudes and life styles of Estonian residents in 1985-2013: horizontal stratification" (supervisor Professor Airi-Alina Allaste), "Consolidation of Democracy in Multicultural Society" (supervisor Professor Raivo Vetik). The topic "Impact of Lifelong Learning on Life Course and Social Cohesion in Estonian Society" (supervisor Doctor in Sociology Rein Vöormann) terminated in 2010.

In international cooperation programmes work continued with projects of the EU 7th Framework Programme "Sensitive Technologies and European Public Ethics", STEPE (supervisor Jüri Ruus) and "Family Platform" (supervisor Professor Ellu Saar)

Cooperation also continued within the framework of EU 6th Frame Programme project "Towards Life-long Learning Society in Europe: The Contribution of Educational System" (coordinator Professor Ellu Saar), as well as with EU 6th Frame Programme project "EUROSPHERE: Diversity and the European Public Sphere. Towards a Citizens' Europe" (supervisor Professor Mikko Lagerspetz); terminated the research "Standardizing Measurement of Alcohol Related Troubles" (supervisor Professor Airi-Alina Allaste).

Continued also participation in the European research networks: TIES (Integration in Europe of the second generation) and TransEurope, there was started preparation of questionnaire ESPAD 2011 (will provide an overview on consumption by school students of alcohol, tobacco and illicit drugs). The survey is being carried out already for the fifth time.

Researchers of the Institute released 80 scientific publications in the reporting year, among them twelve articles, notably:

Saar, Ellu (2010). Changes in intergenerational mobility and educational inequality in Estonia: comparative analysis of cohorts born between 1930 and 1974. *European Sociological Review*, 268(3), 367-383.

Roosalu, Triin; Pajumets, Marion; Hansson, Leeni (2010). Parenting Values as Reflected in Academic Discourse in Norway and Estonia, *Filosofija, Sociologija – Philosophy. Sociology*, 122-131.

Roosmaa, Eve-Liis; Saar, Ellu; (2010) Participating in Non-Formal Learning: Patterns of Inequality in EU-15 and the New EU-8 Member Countries. *Journal of Education and Work*, 23 (3), 179-206.

The researchers attended numerous scientific conferences, delivering papers, both in Estonia and abroad and they were energetically active in science organisation events.

In spring 2010 there was organised in cooperation with the Budapest Open Society Institute (Think Tank Fund) and Integration and Migration Foundation the international conference “Dialogue platforms to overcome inter-cultural isolation”. Conference brought together scientists, representatives of minorities, policy makers, who analysed the possibilities of inter-cultural dialogue in Estonia and other EU countries. Autumn witnessed the international Graduate School “Men and Masculinities, Genealogies and Current Debates.”

Released was the second issue of the journal “Studies of Transition States and Societies”, composed jointly by Institute for State Sciences and Institute for International and Social Studies of Tallinn University, containing articles by authors of East-Europe. Cooperation was also continued with several ministries of the Republic of Estonia (Ministry of Education and Research, Ministry of Social Affairs, Ministry of Internal Affairs) and institutions (Health Promotion Institute, Statistical Office).

## **ESTONIAN NATIONAL MUSEUM**

Associated with the Estonian Academy of Sciences  
21.12.2006



Founded in 1909

Personnel: 109, of whom researchers 17

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In 2010, Estonian National Museum was entrenched in developments, the impact and significance of which we will actually be able to appreciate years after. The buoyancy, resilience and level of the Museum's research, the motivation of the team to put in life the R&D activities and the unshakeable desire of being a reliable partner in international word of science were consummated by the status of an evaluated research institution, accorded to the Museum. Involvement of public as the creator of Museum expositions validated the belief of National Museum, that the direction to exposure of the museum work is right inside-out: people are committed to the Museum and wish to have a say in the options done by the Museum. Those two avenues of approach, enabling it to become a research institution, and significantly wider involvement of the public are arguably contradictory, nevertheless best reflecting the main goal of National Museum – to bolster up, through its basic activities the endeavour of the Museum to be protector of unsophisticated human values.

### **THE ESTONIAN NATIONAL MUSEUM AS THE GUARANTOR OF COHESION OF THE CIVIL SOCIETY**

Underlying a democratic state is the civil society, operating under free choice and communication of people. The association relations, amalgamating individual societies, organisations and other grass-roots unions, can pick up and recover vigour, provided the state structures give a hand to them (be it solely a moral support). It is this straightforward truth that National Museum has attempted to abide by in its activity as a large national centrepiece museum. National Museum wishes to be the fulcrum not only to societies, unions, organisations concerned with popular culture but also to every undertaking, aimed at bettering the life around us.

The Museum has already years ago brought under its aegis the Popular Art and Handicraft Union, the county of Tartumaa Popular Art Promotion Central Society with their many subunits. In 2010 we translated to that cooperation ever wider meaning – the jointly approved commitment to make headway in dialogue with the society, to commonly aspire to the status of a dependable

expert in issues of a speaker and the national culture. In fulfilment of that promise, National Museum is warranted staunchness and skill by Society of Friends of the Estonian National Museum (over 1300 members), the network of correspondents active since 1931, experience in work with volunteers (also volunteers from other European countries), activity as a stalwart partner of the Centre of Work *pro bono publico* (in cooperation with Tartu Prison) and Tartu School Students Host.

Museum will not sit back waiting for people to come to the Museum, however inviting them to act conjointly, offering different applications for common and joint work. In that respect the reporting year will stay historical: the Museum witnessed the first exhibition, the concept, design and also the substance matter (the items, photos, manuscripts etc. on display) whereof having been suggested by a person, whose daily life and work is remote from Museum and exhibition halls. The competition of the ideas of public exhibition was won by Maire Sala with her exposition "Estonian obsequies". With the help and support from the team of the Museum she put up in the exhibition house of the Museum, on the basis of her personal collection, an exposition carrying the same title, stirring enormous interest in visitors. The working plan of the Museum features for 2011 and for the years thereafter exhibitions, authored by private citizens.

#### NATIONAL MUSEUM AS PROTECTOR OF MEMORY

Estonian National Museum was created over a hundred years back by the intellectuals – cogniscenti and literati of the Estophilic frame of mind, with the goal of forming national self-consciousness: to provide to Estonians as compared to other nations, the means for comprehensive self-realisation as a cultural people.

In 21st C. the task of the Museum as protector of memory will be to give to an individual a hold that may be grasped as a support in the ever more globalising world and the awareness that there is a place in existence where the story of his or her country and nation has been deposited, where the change of times notwithstanding, the cultural consistency has been preserved. Prerequisite thereof is the especially professional fulfilment to date of all tasks of the Museum on the substance of the case (collection, preservation, providing and making easy the availability). The Museum-centred work must be performed proficiently, however with delicacy, without unnecessary emphasis. The collection policy, conservation methods, operative documenting of the information contained in collections and its unobstructed availability are the elementary features of a modern museum, no longer just the goals to aspire to.

As protector of memory, the contemporary obligations of National Museum are much larger and wider-scope; the obligation to preserve and remember the traditional values and to contribute to upholding the humanistic values and

human dignity in the whole society. Openness, tolerance, and trust are the hallmarks of the activity pursued by the Museum as protector of memory. It does so in relations with colleagues and communicating with visitors to the Museum.

Moreover, with regard to memory and culture of a nation its integrity is of essence. Aspiration to integrity is of major importance for the new department established with the Museum in summer 2010 – the Department of Ethnic Cultures. The said Department, the arising whereof being prompted by the need to nationwide, on the basis of present county museums, coordinate collection, conservation and conveying meaning to national culture, is supposed to evolve into a counselling and support entity also to other indigenous local ethnic cultures, regardless of whether it is the matter of village or parish culture or the ethnic cultures of minorities living in this country.

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

The Museum's museological study has for years been successful on the level of basic schools. In 2010 we managed to render the museological study suitable also to kindergarten children and adults. We did that largely thanks to the benchmark exhibition of the year ended – "Museum displays language". The said exhibition, focussed on the rise, development and specificity of the Estonian language, completed by the Museum in cooperation with linguists (Kristiina Ross of Institute of the Estonian Language and Tiit Hennoste of the University of Tartu), provides by its interactivity new opportunities for implementation of education and study programmes. We can now assert that the collective of the Museum can transform the expositions to classes without classroom, as part of life-long education. The Museum does that through experiential emotion obtained at the exposition, through communication taking place at the Museum. We acknowledge the notable success of audio-visual devices; we use them in our exposition activity and museological study, while not overlooking the need for personal communication and verbal address. From the changes in environment it follows that the personal communication can be primarily individual target-groups based, because the message addressed to single target groups is more precise and personal in our information-inundated time and due to that also more efficient.

In its exhibition work, teaching effort, explanations etc the Museum must be proper, trustworthy and adequate. That basis and security shall be provided to the Museum by up-to-date and ongoing research. Researchers of the Museum are involved in fulfilment of eleven target-financed scientific topics and research projects of the University of Tartu, the University of Life Sciences and the Estonian Literary Museum ("The land use in the past, its impact on mainland and water environment", "Memory spots and remembrance cultures in 21st C. Estonia", "Alteration of culture relation of the population in Estonia

from 1970s to date” etc.). The pivotal point of research works of scientists of the Museum however has been concentrated on history of Finno-Ugric cultures and that of Estonian and the country of Estonia from times immemorial to date. Such concentration is necessary and indispensable, because it is in the Museum where there are in process or completion, in cooperation with several other research institutions and expert specialists, two permanent exhibitions of the new building of the Museum: on Finno-Ugric cultures and the Estonian culture.

The importance of composing permanent exhibitions and the respectively preponderant responsibility cannot be overestimated. All items of printed matter of the Museum in 2010 (totalling 30 titles, including the traditional yearbook no 53 of the Museum, the scientific journal issued in cooperation with scientists of the University of Tartu and the Estonian Literary Museum Journal of Ethnology and Folkloristics, two electronic issues, those released on DVD “Peremikom’s autumn” and “Küübitegu” etc.) give an indication of developments of the concept of permanent exhibitions. The grants financed by science foundation of the researchers of the Museum (“Advent of nationalism. Ethnicity, science and politics in inner periphery of Russian Empire from beginning 19th C. until 1920s” and “Development of museum communication in the information society of the 21st C.”), and international cooperation projects (“A Taste of Europe” in cooperation with 8 European museums, the project providing insight into essence and functions of national museums European National Museums etc.) enlarge boundaries of research work and enhance essence and capability of the Museum as an institution.

#### THE ESTONIAN NATIONAL MUSEUM AS CULTURAL ENVIRONMENT

offered in 2010 to those interested in its cramped premises of worn appearance altogether 32 temporary exhibitions. Additionally, round the year permanent exhibitions were opened in Raadi exposition house, in Post Museum located in Rütli St and affiliate of the Museum in the county of Viljandimaa, Heimtal Local Lore Museum.

Simultaneously, the whole collective developed in all earnest the ideas of the Museum as an integral cultural environment, to rise and start working in a couple of years in Raadi. The new cultural environment to be laid down in Raadi will be one large “Field of remembrances”, constituted of several parts. Its centrepiece will be the new building of the Museum, landmark to the capacity of the people to learn from history and to mould its own history. Attached to it will also be the topical park “The Park of Lore”, close to nature and offering emotional and intellectual experience joining the Raadi manor and the new building, and the historical park of the Raadi manor together with the Raadi lake.

“The Park of Lore” will unite peoples, generations, social groups and activities. That environment is expected to offer to a visitor the chances for active

involvement (experimental archaeology, artistic culture etc.), but also to create opportunities for peaceful ruminations.

Employment of all those new opportunities, yet to arise, demands new skills, expertise and also the overbearing commitment to one's work. In 2010 the collective of the Museum worked with high load and it will continue doing so in further years, too. We obtained support and help from all well-wishing co-operation partners in Estonia and many other countries, as well as from many people, believing that there is no future without culture and memory, howsoever brilliant the achievements in economy.

## **JÕGEVA PLANT BREEDING INSTITUTE**

Associated with the Estonian Academy of Sciences  
23.09.2008



Founded 1920

Personnel: 104, including 22 researchers

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In 2010 Jõgeva Plant Breeding Institute marked the 90th anniversary of its activities. That event was celebrated by organisation of two scientific events. A seminar held in March was directed at Estonian agricultural scientists and users of research results – farmers, advisers and state officials. The seminar publication *Plant Breeding and Seed Production X* brings together in an omnibus volume the activities and results of the Institute activities of the past five years. International conference “Novel Tasks Posed on Plant Breeding Programmes to Scope with Climate Change” with participation of 64 researchers-plant breeders from 8 countries was held in July. Conference papers were published in a special issue of the journal *Agronomy Research*.

Two new varieties – field pea *Leili* and *Festuca ovina* *Vea* were registered in 2010. All together 287 plant varieties have been bred during 90 years of plant breeding in Jõgeva. Nine cereal, grass or potato breeding lines are in official trials for registration them as new varieties.

Major international collaboration is being carried out in frames of projects AVEQ and PACE-NET. Assessment of agronomic properties in field trials and laboratory quality analyses of oat genotypes (wild relatives, old varieties and breeding lines of different origin) is performed in frames of AGRI GENRES project AVEQ “*Avena* genetic resources for human consumption“. Our task in frames of INCO-NET project PACE-NET “Pacific Europe Network for Science and Technology” is collaboration in breeding of agricultural crops and applied research related to plant breeding. We participate in working out a common Nordic-Baltic Pre-breeding programme of cereals and fodder grasses, what has been initiated by Nordic Genetic Resource Centre. The programme is aimed to transfer valuable agronomic and quality traits from wild relatives and old cultivars into modern varieties. An agreement of mutual collaboration between the Jõgeva Institute and the Liaoning Academy of Agricultural Sciences of the People’s Republic of China was signed at the

end of the year. A framework agreement covers mutual exchange of genetic resources, research scientists and scientific information.

Institute participated in the call for compiling Estonian Research Infrastructures Roadmap in frames of research consortia consisting of plant biology research groups from the University of Tartu, Tallinn University of Technology and Estonian University of Life Sciences. The goal of the quest “Plant biology infrastructure – from molecules to crops” is the development of fundamental research in plant tolerance to biotic and abiotic stresses, and practical breeding of stress tolerant varieties.

Setting up a new laboratory of plant biotechnology and purchase of several new analyzers for laboratory of plant quality was supported by grant of the EU structural funds for upgrade of research infrastructure. All equipment and analyzers obtained were immediately taken into use for support of further development of research activities of the Institute.

## **ASSOCIATED ORGANISATIONS**

Organisations from outside the structure of the Academy, whose activities and objectives comply with the activities and objectives of the Academy, may associate with the Academy. Association is effected in the form of a bilateral agreement, specifying the purpose of association as well as the duties and commitments of both parties.

Reviews on the 2010 activities of the institutions associated with the Academy have been presented in the chronological order of their association date:

Estonian Naturalists' Society	128
Estonian Geographical Society	131
Society of Estonian Areal Studies	134
Estonian Mother Tongue Society	137
Estonian Union of the History and Philosophy of Science	141
Estonian Learned Society in Sweden	143
Estonian Literary Society	144
Estonian Learned Society	147
Estonian Musicological Society	148
Estonian Physical Society	149
Estonian Association of Engineers	152
Estonian Biochemical Society	157
Estonian Semiotics Association	159

## **ESTONIAN NATURALISTS' SOCIETY**

Associated with the Estonian Academy of Sciences 23.01.1998

Founded 1853

Membership: 749 active members,  
14 honorary members, 635 trustees

Subunits: 22

Location: Struve 2, 51003 Tartu, ESTONIA

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



Estonian Naturalists' Society (ENS) has 22 subunits. Subunits that work as sections are as follows: the section of amateur meteorologists, of anthropology, 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, the terms of ecology and plant names, botanical rarities. In addition, the Society has assemblies of ecology, of honorary members and the round table of nature conservation.

In 2010 nine general assemblies with scientific presentations and one special meeting were held:

- January 28 – Helle Mäemets: “About estimating the quality of lakes”.
- February 25 – “The Baer day”. Presentations by Erkki Tammiksaar: “K. E. von Baer and Russian espionage – myth and reality” and Maarja Öpik: “The diversity of fungi forming arbuscular mycorrhiza”.
- March 25 – Riinu Rannap: “Threatened amphibians in Estonia and their protection management”, review meeting of 2009.
- April 15 – special meeting, the board of ENS answers the members’ questions.
- April 29 – Silver Rattasepp: “About culture using evolutionary terms”.
- May 27 – Presentations by Ivo Leito: “About acids and bases: from different viewpoints” and Kai Reemann: “About the library and the electronic database of the library ENS”.
- September 30 – Peeter Olesk: “Strategy of writing textbooks and Professor Julius Tehver”.
- October 28 – Ain-Elmar Kaasik: “Multidimensional medicine”.

- November 25 – 100th anniversary of Neeme Mikelsaar in the Centre of Limnology. Presentations by Tarmo Timm: “Life with Neeme Mikelsaar”, Ain Järvalt, Ervin Pihu, Teet Krause: “The surveys of fishery of inland waters yesterday and today” and Ain Järvalt: “The overview of the activities of the Centre of Limnology”.
- December 16 – Olav Renno: “Revival of the nature conservation in Estonia after WWII (1944-1966)”.

In 2010 ENS was one of the organisers of XI Estonian conference on ecology “Biodiversity and ecosystems”, Tartu, April 8-9 (in the framework of the UN International Year of Biodiversity, together with the University of Tartu Centre of Excellence FIBIR, Institute of Ecology and Geosciences, Natural History Museum and the Estonian University of Life Sciences). The Naturalist’s Day XXXIII was held in Tartu and in landscape reserve of Vapramäe-Vellavere-Vitipalu, June 19. The subunits organised their traditional and other events: Science day dedicated to Karin Mark “Gender and gender roles”, Tallinn, April 9 (together with the Institute of History of Tallinn University and NGO Centre of Archaeology); Mushroom practice, island Vormsi, May 13-16; Spring School of Theoretical Biology “Theory of movement”, in Kopra farm, the Viljandi county, May 21-23 (together with Institute of Ecology and Geosciences of the University of Tartu, and the Natural History Museum); Gathering of the friends of mosses, on Kesselaid, May 22-23; Naturalist’s Day XXXIII, in Tartu and in landscape reserve of Vapramäe-Vellavere-Vitipalu, June 19; Summer School of Ecosemiotics with the Institute of Philosophy and Semiotics of the University of Tartu, at Nüpli, July 10-11; XXIII Conference-Expedition of the Baltic botanists “Semi-natural habitats”, Haapsalu, July 19-22; Gathering of amateur meteorologists and thunder observers, Tartu, July 24; Mushroom practice, on Vormsi, September 16-22; Autumn School of Teriology, Ähijärve, September 17-19; Autumn School of Geology VI “Global changes”, Roosta, Läänemaa, October 4-10; Conference commemorating Juhan Aul (1897-1994), October 14; Conference commemorating Neeme-Õnneleid Mikelsaar (1910-1990), the Centre of Limnology, November 25; Meeting of Mycological Society “Actiones”, Estonian Museum of Natural History, Tallinn, December 11.

The Society participated in fulfilling the projects funded by the Environmental Investment Centre, Tallinn Botanic Garden and the Ministry of the Environment. ENS and the Estonian Environment Information Centre developed the Nature Observation Database. The overview of 2010:

<http://eelis.ic.envir.ee/lva/LVA.aspx?type=Artikkel&content=607836056>.

The commission of plant names continued to complement the database of plant names. During 2010, altogether 226 records were entered. ENS with Estonian Fund for Nature and Estonian Green Movement made an accusation against Finnish governmental institutions in the case of Nord Stream pipeline.

In 2010 seven seminars from the series “From natural scientists to teachers of natural sciences” were held. Commission of botanical rarities made a summary about the need to change the categories of protected plants.

In December 2010 there were 16 1891 printed items in ENS library. Within a year library acquired 154 new books and items of 187 periodicals. The publications were exchanged in the reporting year with 54 institutions and organisations from 18 countries.

Publications:

- Öpik, M. and Puura, I. (eds.) 2010. *Scola Biotheoretica* 35 „Theory of movement“. 128 pp. (together with Institute of Ecology and Geosciences of the University of Tartu and the Natural History Museum).
- Preeden, U. and Laumets, L. (eds.) 2010. *Schola Geologica* 6 „Global changes“. 152 pp. (together with Institute of Ecology and Geosciences of the University of Tartu, Institute of Geology and the Department of Mining of Tallinn Technical University).
- *Folia Cryptogamica Estonica* 47. 107 pp. (with the University of Tartu)
- XXIII Conference-Expedition of the Baltic botanists. Abstracts and Excursion Guides. Haapsalu, Estonia, July 19-22, 2010. 92 pp. (University of Tartu, Estonian Naturalists' Society, Institute of Agriculture and Environmental Sciences of the Estonian University of Life Sciences).
- Internet journal: Ingerpuu, N., Vellak, K. (eds.) 2010. Friend of mosses 13. 24 pp. (<http://www.botany.ut.ee/bruuloogia/Samblasober13.pdf>)

## **ESTONIAN GEOGRAPHICAL SOCIETY**

Associated with the Estonian Academy of Sciences  
27.01.1998



Founded 1955

Membership 409 active members, 22 honorary members, 5 foreign members

Address: Kohtu 6, 10130 Tallinn, ESTONIA

President: Mihkel Kangur (from 11.04.2010) Tel: +372 619 9800,  
+372 534 52374, mihkel.kangur@tlu.ee

Vice-President: Anto Raukas (acting President until 11.04.2010)

Academic Secretary: Helve Kotli (until 01.09.2010),

Tiit Vaasma (from 01.09.2010) Tel: +372 619 9828, +372 645 2744,  
+372 525 8651, geograafiaselts@gmail.com

In 2010, three sections were active in the composition of the Estonian Geographical Society: section of school geography, section of natural geography and human geography and Tartu Department and the Youth Club. In the reporting year the plan of research of the Society featured four problems:

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

- Long-term changes in recurrence of wind directions in Estonia and their links with large-dimensional circulation of atmosphere (Jaak Jaagus, Ain Kull);
- Morphology and structure of meteorite craters of Estonian Holocene (Reet Tiirmaa);
- Structure and evolution of the coastal zone of lakes Peipus and Võrtsjärv (Elvi Tavast).

SCHOOL GEOGRAPHY with the following subtopics:

- Change of topics of treatment of environment in geography textbooks since 1970 to the present day (Sirje Siska);
- Techniques of methods used by master-teachers while teaching geography at gymnasium (Sirje Siska);

HISTORY OF ESTONIAN CARTOGRAPHY, Map collection by J. von Krusenstern of the Pacific Ocean (Heino Mardiste).

HISTORY OF GEOGRAPHY, Reception of the continent of Antarctic in the scientific literature and correspondence of the 19th C. and 20th C. (Erki Tammiksaar).

Released in print were:

- Kangur, M., Kraav, V., Palang, H, Punning, J.-M. (eds.) Yearbook of the Estonian Geographical Society 37. Tallinn: Estonian Geographical Society, 2010;

- Antso, K. (ed.) If there were no woods obstructing the view. Collection of articles of autumn symposium of young geographers. EGSN and EGEA-Tartu. Estonian Geographical Society, 2010. (Publications of Estonian Geographical Society XII).

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

April 11 – General Meeting of the Society. The members heard Kalev Kukkk's paper "Euro – whether and wherefore?" The new Board was elected: Mihkel Kangur, Anto Raukas, Arvo Järvet, Tiit Petersoo, Kalev Kukkk, Ulvi Urgard, Hannes Palang, Anu Printsman, Liisa Puusepp, Hanna Maran, Tiit Vaasma, Mart Reimann. Elected President was Mihkel Kangur.

March 12 – Estonian Geographical Society organised, jointly with Tallinn University, the legacy conference of the long-time President of the Society, Professor Jaan-Mati Punning, to celebrate his 70th anniversary. Delivered by the Estonian scientists of stature were papers on following topics: Contribution by J.-M. Punning to stratigraphy of Pleistocene (Anto Raukas); Isotope research of glaciers (Rein Vaikmäe); Radiocarbon dating method (Aivo Rajamäe, Enn Kaup); Developments in palaeographic research of Holocene (Tiiu Koff); Complex research at Kurtna jointly with J.-M. Punning (Martin Zobel); Time and space in palaeolimnology (Jaanus Terasmaa); The Department of Geo-Ecology at Tallinn University (Henn Kukkk); Sustainable development of Estonia (Jüri Kann).

November 17 – Public discussion upon initiative of geographers of the national plan "Estonia 2030 +". The topical paper was delivered by project leader of "Estonia 2030 +" Kaur Lass, who presented the vision and main tenets of spatial development, underlying the plan. The Society participated at the day with papers "90th anniversary of Department of Geography of the University of Tartu at Vanemuise Street". The Society also celebrated the 100<sup>th</sup> anniversary of the former member of faculty of the University of Tartu Leo Tiik by presentation of the book "Leo Tiik", published in the series "Estonian geographers" (compiled by Ott Kurs).

Estonian Geographical Society was 55 on 15 November 2010. To celebrate the anniversary, a day with papers was held in the Academy Hall, where the topics and research relating to the Society were reviewed.

Consistent character of the activity of Estonian Geographical Society is taken care of by EGS Youth Club (EGSN), which has developed traditional activities, designed to involvement of the youth to academic common activity and study of Estonian geographical conditions, in many cases complementing the practical sessions of work, which the universities have not been able to provide. The traditional county excursion of the Youth Club was held in January in the Läänemaa county. In spring the members visited on kayaks Pedassaare

and Koipsi. The regular summer bicycle tour was organised in South-Estonia. The members visited the exposition “Vulcan – creator and destroyer” and had meetings with student societies of Tallinn University of Technology.

October 1-3 – Tõstamaa was the venue of the autumn symposium, as a joint event of the Youth Club (EGSN) and young geographers of Tartu (EGEA), an annual common event titled “The flying world” (Triin Tamme). That symposium, bringing together the students of the specialty of Tallinn University and the University of Tartu provided an overview of research by the young people and discussed the problems in the area of geography concerning Estonia and the Globe. The papers delivered at the symposium will be recurrently published as a separate collection in the series EGS publications, allowing presenting of the research done by students to the wider public.

The Youth Club also attended the contest “Prize for popularising of Estonian research” in the category “Popularising research and technology by printed word” with collections of articles of autumn symposia, and attended the conference held on 28 October “Within the range of propagation of scientific wealth”.

Young geographers were, in cooperation with other natural sciences organisations, the main organisers at national competition of student works on geography.

Section of school geography of the Estonian Geographical Society (Ulvi Urgard) participated, as earlier, in cooperation with Geography Department of the University of Tartu and Ministry of Education and Research, at solving scientific-methodological problems of teaching geography, at preparation of gymnasium state examination in geography and analysing the examination results, as well as promotion of environmental education and professional improvement of teachers (Lea Koppel, Ulvi Urgard). In January, lectures were delivered to geography teachers. For the school students there were topical days organised at Tabasalu and Nissi. In cooperation with Department of Environment, in April there were outings to the Harjumaa nature conservation areas, in May to Naissaare. On 16-18 May, the national session of Geography Olympiad was held at Haapsalu. Under aegis of the Union of Biology-Geography Teachers, the students had a study tour to Finland, to the Saima lakes. The August conference of geography teachers was held in that year in Saue Gymnasium, where the students also participated at GPS orientation game.

At club nights (6) the travelling impressions of general interest were heard, as well as news in geography.

In May, the club of friends of the marshes visited the Pääsküla bog, and at the beginning of June the Mohni island; they also visited the Viinistu art museum.

August 2-4 – the bus crammed full of geographers headed to visit the places of interest in Viljandimaa and Valgamaa. Beside beautiful spots of nature, the

geographers were fascinated by Olustvere's renovated manor compound, the traditional music granary in Viljandi, Anu Raud's museum at Heimtal, the house-museum of the family Kapps and Kitzberg and the Võrtsjärve limnological station.

Co-operation was developed with many research institutions, organisations and universities. 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 AREAL STUDIES**

Associated with the Estonian Academy of Sciences  
27.01.1998

Founded 1939

Membership: 222

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

Chairman: Andrus Ristkok, Tel: +372 566 47806

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



Membership of Society of Estonian Areal Studies (EKUS) suffered in the reporting year the losses through death and welcomed new arrivals. The most enthusiastic and numerous group of researchers, engaged in the areal studies, has concentrated in Pärnumaa Society of Areal Studies (45), which can be regarded as affiliate of EKUS. Proceeding consistently as always was the circle of areal studies at Tallinn City Museum. Conspicuously picking up were areal studies in village societies, supervised mainly by active members of EKUS.

In the past year, the Society managed to perform the follow-up project "Areal research and education programme 2010". The activities of the project were headed by member of the Board Ene Luka. Within the framework of the project, under the same title, development of areal studies was carried out also in 2009.

The Society held its general meeting on 31 March in the hall of the Institute of History. Some of the researchers, attending the meeting, saw for the first time the exposition, presenting Estonian areal studies in time, completed by the past anniversary year, and already the second year travelling around Estonian cultural institutions. The researchers also had a chance to look at the Archaeological Museum, which is not every day accessible. The travelling exposition of the anniversary year is scheduled to be put up at several places this year.

Supported by co-financing of the Gambling Tax Council and Estonian Youth Work Centre the Society succeeded in organising more events to its members. In the first place however, the project is designed for promotion of the youth areal studies. There was held the 19th contest of young guides, the regular common excursion to Pärnumaa on the topic "On paths of Koidula and Jakobson" (August), the national youth areal studies conference on 15 October in Tallinn and the study day of the young and their supervisors engaged in areal studies in Tartu (October, on the topic "Message conveyed by heritage"). Published was another collection of papers of that conference.

In cooperation with Institute of Religion of Estonian Evangelic-Lutheran Church, a longer series of trainings was carried out titled "Sacral and profane" (organised by K. Idvand). In the series of trainings there was one outing to Märjamaa (in June) to look at the local churches. The students also visited the Sillaotsa museum in Raplamaa. The training in cemetery culture was exemplified by a visit to a little known graveyard in Tallinn, at Pirita.

In 2010 the EKUS dedicated, like earlier a study tour to places of cultural heritage. That year the outing was made immediately after St. John's Day to Läänemaa, Ridala parish. The explanations relating to the cultural heritage were given by L. Tarang. In mid-October the interested members of the Society met with Society of Coastal People at the Lake Peipus. The main stop-over was at Lohusuu, where the museum of the Society of Coastal People and also the local Russian museum were visited.

The yearbook 2009 appeared in cooperation with Estonian National Heritage Society and Estonian Genealogical Society, in keeping with the practice developed in recent years. The volume and format of the yearbook are now regular. The prescribed ca. 50 printed sheets accommodated seven pieces of research and overviews, four pieces of writing for report and six of personnel.

Organisation of the past year's study tour was fully shouldered by Pärnumaa areal researchers. They organised a two-day trip to Ida-Virumaa. Invited were also other members of EKUS.

The village board of the Society met twice. At the last meeting on 12 October summaries of proceedings of recent years of the board were drawn. The most fruitful author is, beyond compare Monika-Aino Jõesaar – six books in three years! Members of the board delivered lectures, initiated and carried out

researches, drew and published factsheets, and headed the activity of local societies. At the meetings, some sceptical opinions were expressed, because members were worried about the possibilities of ensuring further work of the board.

There is no need to emphasise the enthusiasm of researchers in areal studies at organising the study days and speaking at them. This is also done by several members of the Board (K. Idvand, E. Luka, A. Ristkok).

The information about individual initiatives and activities is still being deposited at the seat of the Society. However it can be asserted that the activity of amateurs in areal studies and the activities creating awareness of native place have steadily met with good response. There are topical discussions, meetings with papers, study tours; exhibitions are opened and publishing effort is put in, personal anniversaries and local lore events are celebrated. The “log book” of Pärnumaa Society of Areal Studies, for instance features entries on 50 events organised in 2010.

The Society has received information about a hundred articles and a score of books authored by members of the Society. The more detailed overview of printed matter of areal studies can be found in the EKUS website: [www.ekus.ee](http://www.ekus.ee). The website also puts up notices of currently planned events and those having taken place.

## **ESTONIAN MOTHER TONGUE SOCIETY**

Associated with the Estonian Academy of Sciences  
4.02.1998



Founded 1920

Membership: 344 active members, 10 honorary members

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Chairman: Helle Metslang, Tel: +372 522 5074

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Librarian: Helju Kaal, Tel: +372 644 9331

In 2010 the Estonian Mother Tongue Society was 90. In the reporting year, the Society organised 3 conferences, incl. one international conference, 8 meetings with papers and 13 language days, incl. Wiedemann Language Prize language day at Väike-Maarja and 7 foreign language days. In that year, 93 papers were delivered.

Outside Estonia, with co-organisation of Ministry of Education and Research and local Estonian societies, 7 language days were held (in Ukraine at Aleksandrovka, in Hamburg, Göteborg, Brussels, Petseri, Copenhagen, St. Petersburg). The topics of papers were widely different, in view of the proposals and expectations of local listeners. As usual, an overview of the Estonian language policy featured among papers. Under discussion were new words in Estonian, first names, foreign lexis, body language, phraseology, language games, the language of the expatriates, the newest Estonian literature, acquisition of the language, comparison of Estonian and communication in Estonian with other languages, the instruction materials of Estonian etc. Altogether 23 papers were delivered at the language days abroad. After delivering papers, on 12 September there was the ceremony at Aleksandrovka of opening of the memorial plaque to A. Adamson. At the last foreign language day in St. Petersburg, there was presented the book compiled by Jüri Valge "Linguistic gift from the native country. Ten years of St. Petersburg language days".

On 13 March in Stockholm, at Estonian House the Estonian Mother Tongue Society organised the foreign conference on topic "Book, reading skill and their impact on us and our children". The papers were altogether 6 in number: Maria Jürimäe of the University of Tartu, Centre of Administrative Research and Curriculum Development delivered a paper on the topic "Beginning of reading", Helin Puksand of Tallinn University spoke on the topic "Teenagers and reading", the writer Leelo Tungal delivered the paper "About children and the grownups, fairy tales and life", the poet Contra spoke about the role of

poetry books in the reading repository, the former teacher of Estonian at Stockholm's Estonian School Anne-Mari Asker-Badersten spoke about learning to read and teaching in Sweden and Kadi Lukanenok of Estonian Reading Union presented the activities of 2010.

On 28 June, Tartu hosted the traditional J. V. Veski language conference. The topic of XLIII J. V. Veski day was "Language contacts and Grammar of Estonian". In the programme were five papers. The opening paper "Language contacts and Grammar of Estonian" was delivered by Lembit Vaba, Jüri Viikberg delivered a paper on the topic "About German in Estonian", Helle Metslang spoke on the topic "Steps and leaps of change in grammar", Enn Veldi spoke about "English loan words in Estonian in the European context" and Martin Ehala "On language contacts in WWW: examples on variation in the use of object".

Annual student conference, with which the Estonian Mother Tongue Society celebrates the Day of European Languages, was held at the University of Tartu on 24 September. Speaking about their language research works were bachelor and master programme students of Tallinn University and the University of Tartu and the gymnasium students, delivering altogether 14 papers. The papers were topically divided into four divisions: pronunciation, grammar, application of language and language of conversation.

On 26 March, at the festive meeting with papers of the Estonian Mother Tongue Society in the white hall of the museum, papers were delivered by Mati Ereht, Kristiina Ross and Helle Metslang. Simultaneously there was opened an exposition "Estonian Mother Tongue Society is 90". Report for the 90<sup>th</sup> year of activity (2009) was presented by Academic Secretary Annika Hussar.

The Estonian Mother Tongue Society is one of the organisers of Ferdinand Johann Wiedemann prize, beside the Institute of the Estonian Language, Ministry of Education and Research, Language Inspectorate, Väike-Maarja Gymnasium and Väike-Maarja parish government. The language day was held on 21 April at Väike-Maarja. Papers of Ain Kaalep, laureate of 2010 were followed from video recordings. Papers were also delivered by linguist Mati Hint, who read the letter previously approved by Ain Kaalep "Wiedemann's Language Prize reflects the Estonian society and spiritual life", and student of the 3rd course of Väike-Maarja Study Centre Siiri Randmaa, handling in her paper Ain Kaalep's word creation and translation. Ain Kaalep's tree was planted in the language oak grove by Mati Hint.

At eight meetings with papers (three in Tallinn and five in Tartu) altogether 25 papers were delivered. On 11 March speaking on the topic "Insights into Estonian from angle of view of the Slav languages" were Irina Külmoja, Jelena Kallas and Peter Kehayov. On 29 April, speaking at the University of Tartu in the composition of a team of oral Estonian were Tiit Hennoste, Kirsi

Laanesoo and Krista Strandson. On 27 May, at the meeting with papers held in commemoration of Hella Keem, Mari Must and Salme Nigol were Piret Norvik, Mari Mets and Inge Käsi. On 12 October, the paper on the topic “Estonian verb against Indo-European background” was delivered by Petar Kehayov and Virve Vihman, Jelena Kallas and Irina Külmoja. On 14 December, speaking on the topic “The Estonian language profile” were Tõnu Tender, Maie Soll and Kristi Mere.

Estonian Mother Tongue Society successfully continued organisation of school language days, restarted in 2009 upon initiative of Annika Kilk. In 2010, there were 5 language days held with the total of 15 papers, in every educational institution three papers. Speaking at schools were Estonian philologists of different areas, the language days were directed in the first place at school students of periphery. Handled at Juuru Gymnasium was the topic “Language change”, at Muhu Basic School the topic “Diversity of language”, at Uulu Basic School the topic “How the language speaks?”, at Kärkla Coeducational Gymnasium the topic “Language Instruction”, at Narva Estonian Gymnasium the topic “Linguistics and dictionaries”.

Since 26 March, Krista Kerge has been head of Language Working Group of the Estonian Mother Tongue Society. Language Working Group comprises Reili Argus, Külli Habicht, Reet Kasik, Katrin Kern, Einar Kraut, Helika Mäekivi, Urve Pirso, Peeter Päll, Maire Raadik and Tiit-Rein Viitso. In 2010, the Language Working Group held 3 sessions, one of them by e-mail. The names of certain languages and nations were clarified and the principles and directions of activity, concerning further work of the Language Working Group were discussed. Under discussion too were issues of more efficient dissemination of orthological decisions. Language Working Group delivered to compilers of Dictionary of Orthology several recommendations for unification. There were also discussed various orthography and morphology questions and problems relating to the graduation exams of Estonian and translation of EU texts.

Subject to an agreement made with Estonian National Library, cataloguing and making visible the printed matter of the Society in e-catalogue ESTER continued in 2010. Entering of the data on printed matter contained in Library of the Society into e-catalogue enables their use by a significantly wider circle of those interested.

The series of reviewer-posters printed in 2009 (in Estonian, Russian, French, English, and German) arrived in the Society’s website, where all can download them.

Released in 2010 from print were

- Estonian Mother Tongue Society Yearbook 55 (2009). Editor in chief Mati Ereht, editor Tiiu Ereht. Estonian Mother Tongue Society of the Estonian Academy of Sciences. Tallinn 2010. 288 pp;

- Language magazine Oma Keel, no. 1, 108 pp;
- Language magazine Oma Keel, no. 2, 119 pp;
- Valge, Jüri (composed and edited by him) Linguistic gift from native country. Ten years of St. Petersburg language days. Articles on organisation of language days and papers, abstracts of papers of the tenth language days. Foundation of the Estonian Language, 2010. 186 pp.

The library of the Estonian Mother Tongue Society was replenished in the reporting year by 78 items of printed matter, obtained by exchange, donation and purchase. The library keeps on record 6203 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: 60 active members, 7 honorary members (of whom 4 outside Estonian),

6 collective members

Address: Ülikooli 18, 50090 Tartu, ESTONIA, erki@zbi.ee

<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 the first embraces the history of science and technology and the other the logic, methodology and philosophy of science.

The Board of the Union met once in the reporting year, the general meeting was held in Tallinn, at the House of the Estonian Academy of Sciences on 26 May. The general meeting approved the activities report for 2009 and the working plan for 2010. In 2010, the most important scientific project of the Union was completion of the last, 4th volume of the Biographical Lexicon of the Estonian Science. The Union managed doing that job. Hence long compilation of the Biographical Lexicon reached the finish. The general meeting decided not to issue the additional volume of Biographical Lexicon and to transfer the additional biographies, to be completed in 2011, to the end of Volume IV. The general meeting decided it expedient, due to lack of means, to put all volumes of the Lexicon on website of the Estonian Academy of Sciences. Member of Board of the Union Karl Siilivask took it close to his heart to print Volume III of the Lexicon and he was successful in his quest for funds.

On 8-9 October 2010, Tallinn University of Technology hosted, upon co-organisation of the Union, the XXIV Conference of Baltic Science Philosophers and Historians of Science, which was successful. It was attended by over 60 scientists from 8 countries, the total number of audience being nearly 100. Under the programme, the agenda included 91 verbal papers and 3 poster papers, actually there were 60 papers. By the time of conference there appeared the abstracts in English *Historiae Scientiarum Baltica* 2010. Pending publication is the collection of papers, as a special issue of a journal issued by

Department of Economics of Tallinn University of Technology, consisting of the best papers of the conference. The decisive role for success of the conference was played by Chairman of the Steering Committee, member of board of the Union Peeter Mürsepp and secretary of the Steering Committee Mait Talts.

Peeter Mürsepp represented the Union at the IV Conference of European Union of Science History in Barcelona on 18-20 November.

On 17 December, Tallinn University of Technology was the venue of follow-up of the XXIV Baltic Conference organised by Mait Talts: Seminar of Estonian, Russian and Finnish Natural Sciences Historians, attended by 15 people.

## **ESTONIAN LEARNED SOCIETY IN SWEDEN**

Associated with the Estonian Academy of Sciences

19.03.1999

Founded 1945.

Membership: 86 active members and 3 honorary members

Address: c/o Tõive Kivikas, Wirséns väg 10 B, SE-182 63 Djursholm,  
SWEDEN

Chairman: Tõive Kivikas, Tel: +46 8 7559450, [toive@kivikas.com](mailto:toive@kivikas.com)

Secretary: Diana Krull, Tel: +46 8 162852, [diana.krull@ling.su.se](mailto:diana.krull@ling.su.se)

The Southern Swedish Department of the Society:

c/o Paavo Roos, Näckrosgatan 2, SE-25271 Råå, SWEDEN

Chairman: Paavo Roos, Tel: +46 42 260334.

Secretary: Kristiina Savin, Tel: +46 46 122945, [kristiina.savin@kultur.lu.se](mailto:kristiina.savin@kultur.lu.se)

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

In 2010 the Society held its annual meeting, six meetings with papers (one of them as co-arranger), and the annual celebration of the anniversary of the University of Tartu. All those meetings took place at the Estonian House in Stockholm. Moreover the Society paid a visit to the Centre for Baltic and East European Studies at the Södertörn University near Stockholm.

The meetings dealt with various topics: “Four themes connected to Tartu Peace” (Peeter Järvelaid), “Nanotechnology – a new conception”(Ivar Paljak), “The abolition of certain land laws in the early years of the Republic of Estonia” (Peeter Maandi), “Ancient ships and harbours in the Baltic Sea region” (Kristin Ilves), “Gothland strikes back in the 15th century” (Hain Rebas), “The Estonian language politics of today” (Ilmar Tomusk), and “Multi-faceted and perspective research on the environment changes” (Urve Miller).

On the 1st of December, the 91st anniversary of the Estonian University at Tartu was celebrated. A scientific paper was delivered by Professor Katrin Nyman Metcalf on the topic “The reciprocal influence between technology and the law”. Klarika Kuusk performed on the piano.

## **ESTONIAN LITERARY SOCIETY**

Associated with the Estonian Academy of Sciences

January 23, 2001

Founded in 1907

Members: 293 members (incl. 38 lifetime members, 14 honorary members and 21 regional representatives)

Location: Vanemuise 19, 51014 Tartu, ESTONIA

<http://www.kirjandus.ee>

Chair: 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)

Representative in Tallinn: Kristel Kiigemägi, Tel: +372 566 44243, [kristelkiigemagi@gmail.com](mailto:kristelkiigemagi@gmail.com)

In the year 2010 the activities of the Estonian Literary Society (hereafter Society) were significantly influenced by the fact that 2010 was declared “the year of reading” (Book Now 2010) by the Estonian Ministry of Culture. The Society functioned as the main coordinating organisation of the year’s activities. At the same time the previously initiated activities of the Society continued and the traditional events took place.

During the spring season the Society collaborated with the Work Group of Literature and Culture Theory of the Estonian Literary Museum, helping to organise the conference *Tuleviku arheoloogiad* (The Archaeologists of The Future). The traditional session of the annual review of literature took place in April where the 2009 Estonian prose, poetry, drama, travel journals and literary criticism were discussed.

In April and May the traditional contest Sotsia Poetry Slam took place in Rakvere, Tartu, and Pärnu. On April 23 the Day of Book and Rose was celebrated as a warm-up event for the 7th international literary festival PrimaVista. The warm-up events of Prima Vista also took place in the beginning of May: a film about David Toop by Guy-Marc Hinant and Dominique Lohlé was shown at the Estonian National Museum; a conference called *Õnnekonverents!* (Conference of Happiness!) took place in the Noorus Gallery, ending with a poetry reading by Benjamin Zephaniah. A discussion about the connections between literature and sports was held at the Estonian Sports Museum and the Hungarian writer Attila Bartis met the readers at the Tartu Literature House.

On 6-9 May the Tartu International Literary Festival *Prima Vista* was held, taking its activities also to Põltsamaa for a day. The main organisers of the festival were the non-profit society Festival Prima Vista, Estonian Literary Society, the Tartu Department of Estonian Writers’ Union, Tartu Public Library, and Library of the University of Tartu. The patron of Prima Vista 2010

was poet Hannes Varblane and the main theme was “The Art of Survival”. The festival was visited by many writers from various places across Estonia, numerous discussions, book presentations, poetry readings and other events took place. Many foreign guests also took part in the festival: the Russian writer Dmitrii Bykov; Leonie Swann from Germany; Zinaida Lindén, a Russian writer living in Finland; Rosa María Rodríguez Magda and Josep Carles Lainez from Spain, German poet Tobi Kunze; French poet Dizzy Lez; Latvian poets Inga Gaile, Juris Kronbergs, and Guntars Godiņš. The guests of Tallinn literary festival “HeadRead”, Mihhail Shishkin, Fay Weldon and Jason Goodwin also visited Prima Vista. The representatives of the British music magazine *The Wire* – Tony Herrington, Lisa Blanning, David Toop, and Kodwo Eshun – gave presentations following the main theme, “The Art of Survival”. The traditional book fair was also held in front and inside of the Library of the University of Tartu and the Park Library was open at the city centre.

The society also continued organising various planned seminars: in Tartu a discussion about the underground magazines of the 1970s took place and seminars about fantasy and horror stories were organised in Tallinn. During the spring season, the 15th volume of the society’s quarterly magazine *Vihik* was presented in Tartu and the season ended with the traditional spring school for the students of literature of the University of Tartu where in addition to the papers given by students the writer Kristiina Ehin also gave a reading.

In early autumn, the beginning of the third selection of poems for the joint enterprise of the Society and the railway company Edelaraudtee Ltd, *Rongiluule* (Railway Poetry) was celebrated at Rakvere. The programme of the opening event included musical performances and a poetry reading given by some of the authors represented in the selection.

In November a new interdisciplinary cultural festival “Crazy Tartu” took place in Tartu for the first time. The initiator of the festival was writer Jaan Malin, the festival was organised in collaboration with Estonian Literary Society and Estonian Writers’ Union. This new festival, joining literature, art and music took place in the building where the psychiatric hospital of Tartu once used to be and also at the club Genialistid. The programme included an exhibition of works by Ilmar Malin, Enn Tegova, Ahti Seppet, Kristina Viin, Raivo Kelomees, Elo Järv, Jüri Kask, Vello Vinn, Enn Põldroos, Markus Kasemaa, and Andrus Kasemaa. The writers participating in the festival were Doris Kareva, Triin Soomets, Peter Sragher, Kristiina Ehin, Hanane Aad, Andres Ehin, Olavi Ruitlane, Karl-Martin Sinijärv, Philip Meersman, Igor Kotjuh, Hasso Krull, Tobi Kunze, Katja Malin, Jürgen Rooste, Anti Saar, Peter Waugh, Jaan Malin, Jan Kaus, and Aare Pilv. A literary performance was presented by Erkki Luuk, a writer whose work is full of experiment. The musical part included performances by Manus J. Olesk, Margo Kõlar, and ensemble *Kreatiivmootor*.

The year ended with poetry nights at the café of the University of Tartu. The aim of these poetry events is to offer an overview of contemporary Estonian literature, appreciate live performances by the authors, and to renew an old tradition of literary events at the cafés of Tartu, especially the University café. The poetry nights will continue in 2011 and will hopefully become an appreciated tradition.

In 2010 the work also continued on presenting Tartu as a candidate for the title of a UNESCO creative city as a city of literature. The numerous events and enterprises related to the year of reading caused a delay, so the application necessary for the presentation will be completed in 2011.

Published in 2010 by Estonian Literary Society:

- Vihik nr. 15: linnaruumi arhitektoonika (City space architectonics, quarterly fascicle vol. 15); edited by Jaak Tomberg (112 pp.),
- Dmitrii Bykov “Mahakantud” (Listed Out) (348 pp.)
- Vihik nr. 16: draama eri (Drama special, quarterly fascicle vol. 16); edited by Anneli Saro (116 pp.)
- Yearbook of the Estonian Literary Society no. XXXIII (2007); edited by Marja Unt and Katrin Raid (94 pp.)

## **ESTONIAN LEARNED SOCIETY**

Associated with the Estonian Academy of Sciences  
23.01.2001



Founded 1838

Membership: 111 active members, 16 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 5396, [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 2010, 16 meetings with papers were held with 423 participants, and in cooperation with Institute of Geography of the University of Tartu the day with papers “90 years of Department of Geography at Vanemuise Street”. 16 papers were delivered, by topics: history 9, archaeology 4, ethnology 1, history of law (incl. history of legal language) 2.

Of greater interest were the following papers: Enn Tarvel “Week’s job”, Heiki Valk “On Setomaa older history against the background of Setomaa volume: state of research, new questions and angles of view” and Martin Malve “Tartu Dome Cathedral’s skeletons: data of archaeology and osteology”.

In cooperation with Ilmamaa Publishers there appeared “Estonian History 1816-1918” (5th Volume of History of Estonia), which was presented. As an issue of Society and Institute of History and Archaeology of the University of Tartu there appeared the book “Roots of Finnish and Estonian statehood: the significance of 1809”, as well as Yearbook of Estonian Learned Society 2009. For the best article published in Yearbook 2008 “Parish party organisers – representatives of regime in the Estonian village in second half of 1940” Indrek Paavle was awarded the 2500 kroon grant.

The Society performed smaller archaeological salvage excavations at Loosi burial mound and archaeological supervision works at building of the water main at Tartu in Kroonuaia Steet and on road widening on the edge of mediaeval village graveyard of Vanaküla and supported the reconstruction of a building of Viking period at Rõuge citadel.

## **ESTONIAN MUSICOLOGICAL SOCIETY**

Associated with the Estonian Academy of Sciences 21.06.2004

Founded 1992

Membership: 77 active members (of whom 6 outside Estonia),  
1 honorary member

Address: Rävåla 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 researchers in music and people entertaining interest to scholarly study of music and supports practicing of all areas of music in Estonia.

The achievement of 2010 was releasing of the second issue of the musicological year book *Res musica* in cooperation with Department of Musicology of Estonian Academy of Music and Theatre. *Res musica* is a periodical issue with international editorial board, publishing peer-reviewed scientific articles from all areas of musicology. The year book is open to international cooperation. The issue is prevalently in Estonian however it contains bulky resumes of articles in English or German.

The Society also participated in releasing an international volume of articles: Siitan, Toomas; Pappel, Kristel; Sõõro, Anu (ed.) *Musikleben des 19. Jahrhunderts im nördlichen Europa: Strukturen und Prozesse = 19th-Century Musical Life in Northern Europe: Structures and Processes*. Hildesheim: Georg Olms Verlag 2010, 331 pp. (Studien und Materialien zur Musikwissenschaft, 60). The volume includes 14 research articles from Estonian, German, Swedish, Finnish and Irish scientists.

Upon organisation of the Society, regularly held every year are two meetings with papers, in spring at Tartu and in autumn in Tallinn. At Society's meeting in Tartu on 10 April there were nine researchers delivering papers from Estonian Academy of Music and Theatre; Estonian Literary Museum, Library of the University of Tartu and others. The autumn Leichter Day in Tallinn on 18 October united the regular annual meeting of the Society and two academic papers: Professor Andreas Waczkat (Göttingen) "Deconstructing Spirituality: Collage and Décollage in Arvo Pärt's Credo (1968)" and Saale Kareda (Vienna) "How to approach the concealed levels of tintinnabuli – style?" To present and propagate the speciality of musicology the Society arranged in the reporting year the essay contest on music to gymnasium students, the festive completion whereof and handing over the prizes took place in Estonian Academy of Music and Theatre on 24 March.

Tradition of the Society is also organisation of culture-lore trip at the beginning of September: in 2010 it visited Narva and Ida-Virumaa.

## **ESTONIAN PHYSICAL SOCIETY**

Associated with the Estonian Academy of Sciences  
14.06.2005



Founded 1989

Membership: 298 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 22 and 23 March in Tartu in Tähe St 4 study building. The Physics Days were organised by Kaido Reivelt, Aile Tamm, Jaak Jõgi and Riina Murulaid. Within the framework of the Physics Days the general meeting of the Society was held on 22 March, approving the activities' and economic report of the Board of Society.

At Estonian Physics Days, the annual prize of the Society was awarded to Toomas Rõõm for building and successful commissioning of the laboratory of terahertz spectroscopy of world level for working group of terahertz and low temperatures of Institute of Chemical and Biological Physics. The Society's school student prize was awarded to Agne Jõgis for the work "Physics of soap bubble" (supervisor Kadri-Ly Trahv).

There appeared the Yearbook of Society 2009 (eds. Anna Aret, Helle Kaasik and Piret Kuusk). The Society's list [seltsid.efs@lists.ut.ee](mailto:seltsid.efs@lists.ut.ee) and website ([www.fyysika.ee/efs](http://www.fyysika.ee/efs)) is administered by Kaido Reivelt.

March 6-7 – at the 57th Physics Olympiad of Estonian school youth the special prize of the Society (annual subscription to "Scientific American") was granted to Erik Tamre (10<sup>th</sup> form, Tallinn Science Secondary School).

Various events of the Society popularising physics continued. Upon leadership of Taavi Adamberg the Science Bus "Ursa Major" continued its work. Development of the physics portal ([www.fyysika.ee](http://www.fyysika.ee)) continued and as a result of a joint effort of almost seventy LOTE students of the University of Tartu the successive science festival Täpe 2009 was organised, on topic of science theatre, where all spectacles currently in programme of Science Bus were played.

The Society has, in cooperation with Science School of the University of Tartu organised science camps of the University ([www.teaduslaager.ee](http://www.teaduslaager.ee)). In the reporting year the science camp was held on 19-25 July in Kloogaranna youth camp. Participating were 132 students of 5-9 forms. Students were divided into six groups, every day tackling one topic. The topics were robotics, physics, chemistry, materials science, biology, and rocket science. Supervisors were

students and graduate students of the University of Tartu; the preparation of camp was assessed also by doctoral students and researchers.

The Society together with Department of Natural Sciences of the University of Tartu and Science School of the University launched the programme of workshops of physics, chemistry and biology, where the smart and motivated students of 7-12 forms are offered special instruction basing on experiment in natural sciences (physics, chemistry, biology), what could help compensate difference in possibilities of schools when giving to students the natural science education. There were composed four programmes (two in physics, one in biology and one in chemistry). Every programme is equal to  $8 \times 4 = 32$  h volume. By the end of 2010, 1699 people had registered in working groups (students and teachers). The workshops are held in 25 support schools in Estonia, they are carried out by 38 supervisors. In three months there were held 192 working groups, programme's website is [www.fyysika.ee/opikojad](http://www.fyysika.ee/opikojad).

The department of physics teachers of the Society organised the Society's physics teachers meeting in Tartu, Kohtla-Järve and Sillamäe. The topic was integration of chemistry and physics – measurements, experiments. The participants looked at new chemistry building of the University of Tartu, Kohtla-Järve College of Tallinn University of Technology and Plant of Silmet. Participating were 40 teachers.

For helping about implementation of new syllabuses the Society announced a contest for grant for writing the gymnasium's physics textbooks. The contest turned out successful and writing of the textbooks has started. The textbooks created would be issued on traditional hard copy and also as e-textbook. Elaboration of the e-textbook has started; partners of the Society are here Tiger Leap Foundation and Webmedia.

The department of physics teachers organised two seminars to develop the network of physics teachers. The first of them was held in Tartu on 5 December, where representatives of counties under initiative of Riina Murulaid gathered. There were discussed the problems and perspectives of development of network of physics teachers. The second seminar was held in Saka on 6-8 January. Under consideration was training of research in basic school and gymnasium course "Basics of physical treatment of nature" and engaged in cooperation for compiling distribution of hours in five obligatory courses of gymnasium. The work of network of physics teachers is reflected on website [www.fyysika.ee/vorgustik](http://www.fyysika.ee/vorgustik).

Estonian Physical Society organised in that year the activity of GLOBE Estonia ([www.globe.ee](http://www.globe.ee)), using for that purpose the means of project of European Social Fund. There was carried out contest of GLOBE research works, summer camp in Jäneda (with participation of 150 teachers and students), student conference in Rakvere Science Gymnasium and the teachers' seminar in

Tartu. The Society has initiated, through GLOBE the programme for support of research study and research works in Estonian schools.

Under leadership of the Society's young physicists division, the Society's summer school of exact sciences was held from 18-20 June at Pärleselja and autumn school was held on 29-31 at Voore Leisure Centre. Attending the summer school were the total of 67 and in autumn school 119 students, researchers and members of faculty. They heard over 30 hours of lectures and seminars. Work carried on simultaneously in two study halls. Considered were the topics on space and nano-technologies, optics and quantum mechanics, discussed were topics of physical education and for the first time the autumn school brought together "Club of a good teacher". Moderators were Taavi Adamberg, Kaido Reivelt, and Aigar Vaigu.

In 2010, 54 new members joined the Society. 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, Tallinn University of Technology, Institute of Chemical and Biological Physics, Tartu Observatory, Institute of the Estonian Language. We appreciate all supporters and look forward to continuation of cooperation.

## 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. 1200 individual members  
Address: Liivalaia 9, 10118 Tallinn, ESTONIA  
[http:// www.insener.ee](http://www.insener.ee)  
President: Arvi Hamburg, Tel: +372 630 3003, +372 516 2026,  
[inseneronlooja@hot.ee](mailto:inseneronlooja@hot.ee), [arvi.hamburg@gaas.ee](mailto:arvi.hamburg@gaas.ee)

Estonian Association of Engineers is an NGO, acting in public interests. The Association is an umbrella organisation, bringing together in the Republic of Estonia the professional organisations of engineers and trainers of engineers. Welcome too are innovative employers, interested in taking to use engineering knowledge in their companies.

MISSION – promotion of development of Estonian engineering sciences, development and innovation and respective education policy.

VISION: Knowledge and innovation based society. The society values knowledge.

Members of the Association in 2010:

- Estonian Society for Biomedical Engineering and Medical Physics
- Estonian Union of Building Engineers
- Estonian Electrical Energy Society
- Estonian Electronics Society
- Estonian Union of Mechanical Engineers
- Estonian Transport and Roads Union
- Põlva Association of Engineers
- Estonian Mining Society
- Estonian Society of Engineers in Thermal Technology
- Estonian Association of Systems Engineers
- Tallinn University of Technology
- Estonian University of Life Sciences

In the reporting year, there were 7 meetings of the Board, among them 2 common meetings of Board of Association and a member organisation.

February 18 – a common meeting of the Board and Estonian Union of Mechanical Engineers in Tallinn University of Technology. Chairman of Estonian Union of Mechanical Engineers Priit Kulu and Professor of Tallinn University of Technology Toomas Rang provided an overview of the activities of Esto-

nian Union of Mechanical Engineers and training of mechanical engineers in the University.

March 23 – a common meeting of the Board and Energy Department of Tallinn University of Technology in the University Energy House. Dean Tõnu Lehtla provided an overview of the present day and visions for the future of the Energy Department. Professor Jaan Järviik presented the concrete programmes and international cooperation projects.

The reporting-election of the Association was held in the Hall of the Council on 30 March.

In 2010 Estonian University of Life Sciences acceded to the Association.

#### Main areas of activity of the Association in 2010

##### COMMON PROJECT OF ENGINEER TRAINERS AND COLLEGES OF TECHNOLOGY

The goal: disseminating information about opportunities of studying in exact sciences.

Complementing and preparation of a common project of engineer trainers and colleges of technology for publication in March 2011 in the journal *Inseneeria* (Engineering).

The summary contains specialities studied, opportunities to enrol in universities, applied higher schools, vocational educational institutions and coordinates of procurement of additional information and presentation of opportunities to indulge in extracurricular activities.

##### ON CONTRIBUTION TO ENGINEERING AND PRODUCTION JOURNAL INSENEERIA

The goal: importance of the role of engineer, engineering and science-consuming product development when providing the sustainable development.

The journal is issued upon support of the Association 10 times a year. The Association is represented in editorial board of *Inseneeria*, the members have made recourse to that opportunity of publication.

##### ORGANISATION OF FRAMEWORK OF THE ENGINEER'S VOCATIONAL QUALIFICATION

The goal: attributing value to engineer's vocational qualification, creating the demand in cooperation with Estonian Qualification Authority.

The main issue is cohesion of the academic degree with vocational standard; awarding of first professional degree by the higher school

Applied higher education, Bachelor	engineer	(EQF 6)
Master	diploma engineer	(EQF 7)

Decisions made:

1. On the basis of application of a graduate of the higher school, the educational institution can award to him/her the first professional degree, meeting the level of educational level acquired. The first professional degree

enables entering to the labour market for doing engineer's work under supervision of a professional engineer. The first professional degree is for perpetual duration.

2. To move on to higher levels of professional level (professional engineer, the diploma engineer and authorised engineer), it is necessary to acquire professional working skills, participation in projects of the level, set down in the vocational standard and to head them, perception of responsibility and following the rules of engineer's ethics. Decision on level of applicant's professional qualification will be handed down in professional commissions of expert associations of top specialities of engineering areas. The validity of profession is 5 years.
  3. Prerequisite for prolongation of the professional level is conformity of applicant's knowledge and skills with updated expert know-how and compliance of competence with changing demands of the labour market.
  4. The competence requirements and limits of responsibility meeting the qualification levels are set down in professional standard. Upon lapse of the term profession, the person will fall to lower level of previous profession, upon lapse of the said further lower until the level of the first professional degree, which meets the person's educational level.
  5. Movement to the higher professional level takes place, as a rule step-by-step upwards, however omission of one level is not excluded, if the applicant has fulfilled the requirements of the professional standard applied for.
  6. In case of persons, who in the Soviet period received the profession of engineer on the basis of 5-year professional higher education, his/her vocation will be equalled to the first professional degree of a diploma engineer.
- The Association has organised joint discussions for unifying the professions of engineer. The Estonian Union of Building Engineers is the most active member of the Association in working out the system of profession of building engineers and architects and organisation of the system of engineering professions.

#### Participation of the Association in programmes

##### PROGRAMME TEAME FOR POPULARISING SCIENCE

The Association participated in the work of Council of TeaMe programme, desirous of:

- increasing the population's awareness about impact of the R&D activity on economy and competitiveness,
- informing the youth and persons influencing them about professions and options for a career, related to the domain of natural and engineering sciences,
- propagating the scientific way of thinking.

Our expectations: the share of science topics in media is increasing, the new instruction materials of the domain of natural and engineering sciences will be completed and the quality of science media will be enhanced.

#### ENGINEER'S COMPETENCE

The goal of the programme: in cooperation with Association of Nordic Engineers (ANE) to enhance the engineer's role in society.

The expectation is to make more efficient the application of engineers in product development.

Besides the Association, the project involves Tallinn University of Technology and Estonian Union of Mechanical Engineers.

#### CONTEST OF YOUNG INVENTORS

The goal of the contest: to spur the young of 1-12 forms to think about application of technical solutions in daily life.

As member of the contest's assessment panel, the Association can promote in the young the interest in engineering. In the summary of the results of contest we appreciate the best and select the topics of the following contest.

The Estonian Association of Engineers is represented in several councils, notably:

- Heading the council of Tallinn Polytechnic and Kehtna School of Economy and Technology enables to link successfully professional education with engineer education and work experience
- Participation in talk-shop of Tallinn College of Engineering enables to handle the engineer's education as an integrity
- Status of member of TeaMe programme's board of councillors and assessment board of application session of TEEME enables to increase the efficiency of R&D and engineering integral chain
- As Councillor of Energy Technology Programme of Ministry of Economic Affairs and Communications, the Association is engaged in development of national energy technology programme, the challenges in energy facing engineers
- Activity as expert of Tallinn vision conference enables to link engineering with planning of city economy. The problems arising of urbanisation are impetuously growing and demand complicated technical solutions
- Work as member of Energy Council of the Estonian Academy of Sciences links research, engineering and energy directly and through the prism of politics

Jointly with the journal *Inseneeria*, the Association participated at the fair Instutex 2010.

Association participated at annual meetings of steering committees of European Federation of National Engineering Associations (FEANI – Fédération

Européenne d'Associations Nationales d'Ingénieurs) and at session of General Assembly of FEANI on 28 September – 2 October in Sofia. Under consideration were the topics: on role of engineers in the future Europe, on training of young engineers, on profession of engineers, on fulfilment of target-programme “Energy”. Detailed information was obtained on Bulgarian engineering, application of engineers in solving the energy and environmental issues.

On 10 December, within the framework of Day of Engineers, the Estonian Academy of Sciences hosted a festive conference to celebrate the 22nd birthday of the Estonian Association of Engineers. The conference heard Arvi Hamburg's paper “Engineer's creation and responsibility”. Appreciated were outstanding engineers, announced was the Engineer of the Year 2010 – Enno Lend and the Student of Engineering of the Year 2010 – Triin Aavik.

## ESTONIAN BIOCHEMICAL SOCIETY

Associated with the Estonian Academy of Sciences

13.11.2009

Founded 1959

Membership: 116 active members

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General meeting of reporting year of the Estonian Biochemical Society was held in Tartu on 9 April. President of the Society Jaak Järv delivered an overview of events of the past year. The meeting approved the financial report of the Society and carried out the ceremony of awarding the laureates of contest of student papers. Participants of the meeting discussed the future plans, elected the new Board and appointed the delegate of the Society to the FEBS Council Meeting in Göteborg (P. Palumaa). The elected members of the Board of the Society were: V. Tõugu and P. Palumaa of Tallinn University of Technology and J. Järv, A. Rincken and U. Soomets of the University of Tartu. The scientific lecture "Alzheimer protein structure" was delivered by senior researcher of Institute of Chemical and Biological Physics Jüri Järvet. Participants of the meeting had opportunity to see laboratories of the new *Chemicum* of the University of Tartu.

The contest of the Society's student papers, which has been organised since 2007 with guidelines available at the Society's website, received a lot of applications in 2010. The Board of the Society awarded the following three works:

Ann Karafin, the first prize of the Society for participation in the article:

Tõugu, V., Karafin, A., Zovo, K., Chung, R.S., Howells, C., West, A.K., Palumaa, P. Zn(II) and Cu(II)-induced nonfibrillar aggregates of amyloid- $\beta$  peptide are transformed to amyloid fibrils, both spontaneously and under the influence of metal chelators. *Journal of Neurochemistry*, 2009, 110, 1784-1795. (<http://www.ncbi.nlm.nih.gov/pubmed/19619132>)

Maire Kriisa, the prize of the Society for participation in the article:

Enkvist, E., Kriisa, M., Roben, M., Kadak, G., Raidaru, G., Uri, A. Effect of the structure of adenosine mimic of bisubstrate-analog inhibitors on their activity towards basophilic protein kinases. *Bioorganic & Medicinal Chemistry Letters*, 2009, 19, 6098-6101.

(<http://www.ncbi.nlm.nih.gov/pubmed/19800227>)

Indrek Saar, The award of the Society for participation in the article:  
Runesson, J., Saar, I., Lundström, L., Järv, J., Langel, Ü. A novel GalR2-specific peptide agonist. *Neuropeptides*, 2009, 43, 187-192.  
(<http://www.ncbi.nlm.nih.gov/pubmed/19467704>)

The traditional spring school of the Society was held on 7-8 May in Viljandimaa, the Kopra farmstead. The topic of spring school of that year was Structural Biology. In the first day, papers of members of faculty were heard (Vello Tõugu, Tallinn University of Technology; Aare Abroi, Estonian Biocenter; Aivar Lõokene, Institute of Chemistry of Tallinn University of Technology; Ago Samoson, Tallinn University of Technology; Sergei Kopantšuk, Institute of Chemistry of the University of Tartu; Peep Palumaa, Tallinn University of Technology; Ago Rinken, Institute of Chemistry of the University of Tartu; Nigulas Samel, Institute of Chemistry of Tallinn University of Technology; Raik-Hiio Mikelsaar, the University of Tartu; Erki Enkvist, Institute of Chemistry of the University of Tartu). In the second day, graduate students delivered their papers, presenting the results of their research. The photo album of the event is available in the website of the Society. The choice of the topic of the seminar was related to the Estonian Roadmap of Research Infrastructures, drafted in 2010. The Estonian Centre of Structural Biology was included into that Roadmap. High level of research in structural biology in Estonia was also confirmed by the fact that article from Peep Palumaa's research group was published in *Nature* in 2010 (<http://www.nature.com/nature/journal/v465/n7298/full/nature09018.html>).

The Society initiated Terminology Project, focussed on translation of biochemical terms from English into Estonian, and the draft of dictionary was presented for general discussion by the end of the reporting year. The dictionary contains *ca* 1000 English terms. The list of translated terms is available on website of the Society. That Terminology Project is headed by a doctoral student at the University of Tartu Indrek Viil.

The annual FEBS Congress was held in Göteborg in 2010 and that event was attended by 8 members of the Society, who presented oral and poster reports. The FEBS Council Meeting, held at the end of this Congress, elected Jaak Järv as new chairman of the FEBS Advanced Courses Committee.

## ESTONIAN SEMIOTICS ASSOCIATION

Associated with the Estonian Academy of Sciences  
22.12.2010



Founded 1998

Membership: 60 members

Address: Tiigi 78-312, 50410 Tartu, ESTONIA

Chairman: Peeter Torop, Tel: +372 737 6155, peeter.torop@ut.ee

Vice-chairman: Timo Maran, timo.maran@ut.ee

The activities of Estonian Semiotics Association (ESA) in the year 2010 included annual seminars as well as one-time events, publication of the ESA journal *Acta Semiotica Estica*, rewarding the author of the best semiotic article in 2009, also regular meetings of the board and general assembly of ESA were held. A new board of ESA was elected at the general assembly on the 30th of April.

In 2010 ESA organised altogether four conferences, seminars and workshops. Some of them were aimed at introducing the semiotic research to a wider audience whereas others focused on more specifically semiotic problems and questions.

The first event, organised by ESA in Tallinn, Solaris Apollo bookshop on the 19th of March was titled “Young intellectuals against the depression: what can the social sciences and humanities do?” It was organised in the form of an open discussion forum, where young scholars as well as entrepreneurs shared their ideas about the roots of the current social and economic crisis and discussed the role of science and scientists in forestalling such situations and in providing solutions to it. Plenary talks were given by Leenu Nigu, Luukas Ilves, Marit Rebane and Martin Lään. The seminar was divided into three parts. The first session provided views from different disciplinary perspectives on depression. The second session was meant to discuss the role and possibilities of social scientists in reacting to the social changes. The third session continued the topics set up in the second part of the seminar, asking, whether scientists should more actively enforce the results of their research on social scale.

The second event of ESA was XI Spring School of Semiotics “Object: Subject”. The spring school took place from the 15th to the 16th of May in Kopra Tourist farm (Viljandimaa). The spring school of semiotics continues the tradition of semiotic autumn schools that were initiated by students in 1999 and that were inspired by the famous Tartu-Moscow school of semiotics summer schools in Kääriku. The presentations and discussions of the seminar explored the variety of meanings the term “subject” carries for different research fields. The first day included presentations by Marina Grišakova, Mihhail Lotman,

Riin Magnus, Tiina-Ann Kirss, Kiwa, Sven Vabar and Roy Strider. The presentations were followed by discussions on the seminar topic on the second day.

The third seminar “Semiotician takes the responsibility” took place on the 27th of May in the Training Centre of the Estonian Supreme Court. The seminar was organised in the framework of the applied semiotics workshop series of ESA. Topics related to the disciplinary responsibility of the semiotician were set to the focus of the seminar. More specific attention was turned to the questions about the ethical and practical sides of the semiotic expertise. The seminar was built upon four presentations (by Igor Gräzin, Liina Kanger, Peeter Torop and Kaie Kotov) that were followed by an open discussion. In addition to semioticians and people from related academic fields, also representatives from the institutions that have ordered semiotic expertise participated in the seminar discussions. The following questions were targeted at the final discussion of the seminar: what is expected from a semiotic expertise; how should a semiotician respond to the expectations and what is the public benefit of such applications of semiotics?

From the 26th to the 27th of November ESA together with Department of Semiotics, the University of Tartu organised an international conference “Culture in Mediation: Total Translation, Complementary Perspectives” to mark Peeter Torop’s 60th birthday. The conference focused on the concept of mediation, understood as an overarching term to cover all kinds of information processing and exchange taking place in culture. The presentations of the conference mainly encompassed areas of research that are in one way or another related to cultural mediation: semiotics and theory of culture, semiotics of translation and intersemiotic processes in culture, literature and history of literature, different types of autocommunication, history of science, including history of cultural semiotics and translation history. In two days 24 presentations were held.

To simplify the organisation of various events, a project management instruction was compiled by ESA board. The instruction contains suggestions for the financial as well as organisational planning of projects that are carried out under ESA and is given as a suggestive material to the organisers of future events.

In 2010 also the seventh volume of ESA’s annual journal *Acta Semiotica Estica* was published. The journal contains 12 articles, plus the sections of “Chronicle” and “Sightings” (*Märkamisi*). The opening article of the journal is co-authored by Maria-Kristiina Lotman, Mihhail Lotman and Rebekka Lotman and is a follow-up to their work on the autometadescription in Estonian poetry. Krista Keedus discusses in her article the work of Karl Ristikivi while concentrating on the author’s attempt to structure his historical novels on the example of the gothic cathedral. Katre Kikas explores the stories about

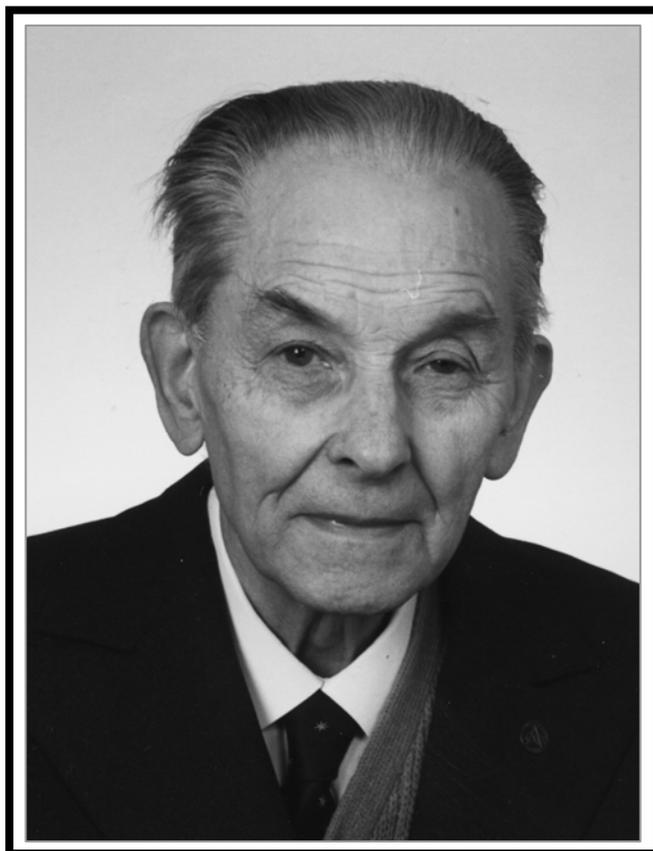
the old Estonian books by the folklore gatherer Hans Anton Schults. Ott Heinapuu focuses on the sacred oak groves (the groves of Taara) as the dominant motif in Estonian national discourse, while observing its paradoxical connections with the occidental and local culture. Also Mart Kuldkepp writes about the construction of national culture via nature when he discusses the unification of nature and culture in Icelandic national discourse. The article by Maarja Saldre concentrates on the image of an empty beach in Mati Unt's novel and in the film by Veiko Õunpuu and play by Ingomar Vihmar based on the novel. Jaanus Kaasik describes the film languages that model film landscapes and on the basis of his analysis draws a typology of the landscapes. Priit Põhjala writes in his article about the vocabulary of Estonian advertisements and its functioning mechanisms. The research of Mari-Liis Madison deals with the verbalisation of fear, taking the swine influenza case as an example. Andres Kurismaa provides links between semiotics and psychiatry with the help of the notions 'abduction' and 'multilingual'. Silver Rattasepp arguments against the dualistic worldview that is accepted by the mainstream of modern philosophy and cultural sciences. Margus Ott discusses the relations of man and environment, while departing from some notions of Jakob von Uexküll and Jean-Paul Sartre. In the section called "Sightings" (*Märkamisi*) an overview is given of the life and work of three members of the Tartu-Moscow school of semiotics Aleksandr Pjatigorski, Juri Levin and Linnart Mäll. The section also contains a reflection by A. Pjatigorski on the theoretical premises of semiotics and an article by Roman Jakobson about the linguistic aspects of translation. The article by Kaj Sand-Jensen provides ironic instructions on how to write a boring scientific article. Tiit Kuuskmäe and Kriistina Omri give an overview of the public discussion "Young intellectuals against depression: what can the social sciences and humanities do?"

According to the statute of the ESA annual award "Semiotic trace" the best semiotic article of the previous year was rewarded for the first time. The laureate of the award was announced at the Association's general assembly on April 30. The award was given to Priit Põhjala for his article "Discussion on the 'arbitrary' nature of the language sign" (*Arutlusi keelemärgi arbitraarsuse üle* (*Akadeemia* 11/2009)). The laureate also gave a talk "Three Saussures" at the general assembly of ESA.

Concerning the structural changes of ESA – a new board of ESA was elected at the general assembly on April 30. The new members of the board are Riin Magnus, Timo Maran, Priit Põhjala, Peeter Torop, Katre Väli.

## IN MEMORIAM

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Member of Academy *Harald Keres*  
15.11.1912–26.06.2010

Harald Keres was born on 15 November 1912 in Pärnu to an artisan's family. In 1932 he graduated from the Boys' Gymnasium of Pärnu and in 1936 *cum laude* the Faculty of Mathematics of the University of Tartu. In 1938 Harald Keres was awarded a Master's degree in Mathematics and in 1942 the Ph.D. degree. He had to defend his thesis on the topic "Relativist theory of space and time" for a second time in 1947 in order to obtain the Doctor of Science degree in Physics and Mathematics. In 1954 he obtained a Professorship in theoretical physics. After completing his studies Harald Keres embarked on a teaching career at the University. He was Associate Assistant at the Observatory of the University, Junior Associate Lector in mathematics, Acting Docent in mathematics. At that time he started, among other things to deliver

lectures on the theory of relativity basics, which remained his narrower speciality and also meant moving over from mathematics to theoretical physics.

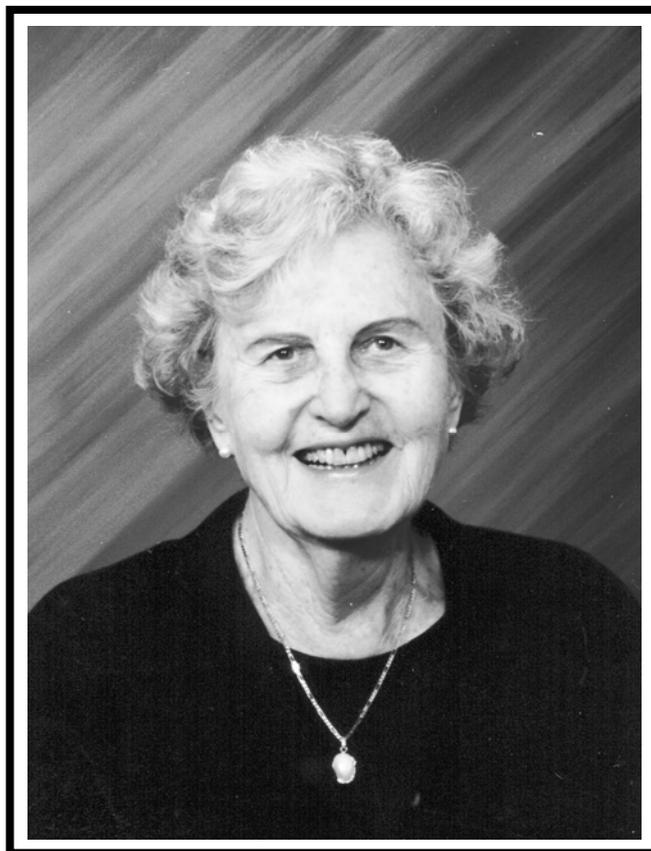
In 1944 Harald Keres was called to the German Navy, where he was a tutor-instructor (Betreuungslehrer) of teenage Estonian boys recruited to the support service. With the war coming to an end, he found himself on the American side and managed to get back to Estonia. For Harald Keres the faculty member's work at the University of Tartu continued as Senior Lecturer at the Department of Mathematical Analysis and Docent. He further headed the Department of Theoretical Physics (1949-1958) and was Vice-Rector for Research (1958-1960). Beside university Harald Keres was also working as Head of the Observatory at the Institute of Physics and Astronomy of the Estonian Academy of Sciences and until 1989, as Head of the Theoretical Physics Laboratory at the Institute of Physics. Since 2000 he was *Professor Emeritus* of the University of Tartu.

Harald Keres was in 1961 elected Member of the Estonian Academy of Sciences in theoretical physics.

In his research, Harald Keres focused on developments in general relativity and gravitation theory. He became founder of the research direction of theory of relativity, authoring over thirty scientific publications, and also a number of books of reminiscence. He was conspicuously active in the area of publicistics, popularising science as an integral part of national culture.

Harald Keres was recognised by the national science prize and he was awarded the Order of the National Coat of Arms 3rd Class. In 1996 he was elected Honorary Citizen of the City of Tartu and in 2005 he was awarded the Lifetime Achievement Award of the Estonian National Culture Foundation.

In his outgoing years, Member of Academy Keres spoke his mind in great many critical issues pertaining to the development of science and education. His intrinsic dignity and integrity won him the respect of all his colleagues and such reflection of him will be retained in Estonian science history and recollections of his colleagues.



Foreign Member of Academy *Ilse Lehiste*  
31.01.1922–25.12.2010

Ilse Lehiste was born into a higher officer's family in Tallinn in 1922. During the German occupation, she graduated from Lender Gymnasium, then studied piano for one year at the Conservatory of Tallinn, and in 1942 she started her studies at the Faculty of Arts of the University of Tartu. In 1944, Lehiste fled to Germany, where she continued her studies at the University of Leipzig and then at the University of Hamburg. In 1948, she defended her PhD in philology at the University of Hamburg. Her dissertation concentrated on the work of William Morris, and especially on themes of the Nordic literature in his work.

In 1949, Lehiste moved to the United States. In 1959, she defended her PhD in linguistics at the University of Michigan. Lehiste's main research area was acoustic phonetics, an area where she enjoyed worldwide recognition. She authored over ten books, two hundred articles and around a hundred reviews.

Lehiste received an honorary doctorate from several universities, including the Universities of Essex, Lund and Tartu. She was elected member of the American Academy of Arts and Sciences and numerous professional associations in the United States, as well as the Finnish Academy of Sciences. She was active as the president of the Linguistic Society of America, and she gave lectures at universities all over the world. From 1963, Lehiste worked at Ohio State University in Columbus. In 1965, she was promoted to Professor in linguistics, and from 1987 she became Professor Emeritus. She fulfilled the tasks of the head of the Linguistics Department and was a member of the tenure committee of the university.

Lehiste was a bridge between the linguists of Estonia and the West. It was her suggestion to organize the 11<sup>th</sup> International Phonetics Conference in Tallinn in 1987. In 1989, the publishing house Maarjamaa published Lehiste's poems "Noorest peast kirjutatud laulud" ("Songs written in my young years"). Lehiste wrote numerous overviews of Estonian literature for the quarterly *World Literature Today* in the United States. In the past decade, Lehiste was active researching the prosody of minor Finno-Ugric languages in cooperation with the Institute of Estonian and General Linguistics of the University of Tartu.

In 2001, the Order of the White Star of the 3rd Class was bestowed on Ilse Lehiste. In 2008, the Estonian Academy of Sciences elected her as a foreign member, and in 2009, she became laureate of the Wiedemann Language Prize.

## REMEMBRANCE

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Member of Academy *Heinrich Laul* – 100th anniversary

Heinrich Laul was born in Tallinn on August 5, 1910 as a son of a car driver-mechanic. In 1930 he graduated from Tallinn City Boys Gymnasium (currently Gustav Adolf Gymnasium), in the Latin and Greek branch of the Humanities. As early as at school he developed, beside his humanitarian interests, a desire to become a building engineer. At the time he did not have a chance to materialise that inclination, because Tallinn Polytechnic had just terminated enrolment and no new higher schools in engineering was opened in Estonia, to fill the ensuing gap. It was as late as in 1934 that he could proceed to study in the speciality of a building engineer at the University of Tartu, Division of Engineering in the Faculty of Mathematics-Natural Sciences. He used the time in-between to acquire the profession of a building technician at courses organised with Tallinn Polytechnic. It was when the training of building engineers was transferred to the newly established Tallinn Institute of Technology in 1936, to become Tallinn University of Technology in 1938 that H. Laul enrolled in the Faculty of Building and Mechanics, majoring in building of structures and bridges and completed his studies in 1939 with a Diploma *cum laude* in Building Engineering.

He obtained his first experience as a building engineer during summer months of 1933 and 1934, working as a trainee in the Engineering Department of the Nõmme Town Government, where he was engaged in dredging of a swimming pool, building works of a bandstand shell and a town warehouse, pavement works with levelling the streets, and drawing paving designs. In the summer of 1935 he was a trainee at the Building Board of the Railway Authority; thereafter he proceeded to work, beside studies, under Professor O. Maddison at the University of Tartu and Tallinn University of Technology first as an aid, later as an assistant on faculty. His responsibility was to give a hand in preparing and delivering lectures as well as working in the Strength and Technical Mechanics Laboratory with the Faculty of Building and Mechanics at Tallinn University of Technology. In the second half of the 1930s H. Laul was engaged in a designer's job, solving various problems of statics. He was party to designing and completing a number of well-known facilities, among others a beach hotel and a beach cafe in Pärnu, a stand in the Kadrioru Stadium and the Palace Hotel in Tallinn, an extension to the Vanemuine Theatre in Tartu. Worth a mention are also calculations that he prepared for the Türi Radio Mast together with checking the results.

After establishment of the Soviet power in the summer of 1940 H. Laul left Tallinn University of Technology for several years. Until the summer of 1941 he was employed as a chief engineer at the Municipal Engineering Services Department of Tallinn. In that office he designed, among other objects the old ski jump tower at Nõmme, however, most of his work time through that period was involved with laying military strongholds and defence facilities. The latter caused him trouble later, during the German rule. For a short time before being arrested in December 1941 he managed to work in the position of Building Department Head at Tallinn Power Plant, mainly tasked with reconstruction of damaged reinforced concrete structures in the turbine hall. After one year's imprisonment in Tallinn and Ellamaa hard labour camps he succeeded in finding employment as a bridge engineer at the Estonian Railway Authority right upon being released. After withdrawal of the German troops he proceeded to work as a senior engineer at the Roads Authority, where he continued with reconstruction and building of bridges. In April 1945 H. Laul was transferred to the job of designers' group leader in the central design organisation of the time, the Design and Planning Centre of the Authority of Architecture with Council of People's Commissars of the ESSR, where an impressive number of building and reconstruction designs of buildings having great national importance were drawn. The most capacious and complicated new building among his works was the cement plant of oil shale ash Kukermiit, to which H. Laul designed the reinforced concrete frames of the plant, silos (reservoirs), bunkers as well as foundations. The plant was pulled down in 1970s, when preparations started for building of the Tallinn City Hall. As historically predestined, the restoration designs occupied in that

period a significant part of his practical engineering work – the destructions wrought by war needed liquidation. His most important task became restoration of the Estonia theatre together with architect A. Kotli, where H. Laul was vested with the responsible role of chief designer. Besides bolstering up the ceilings he also designed a number of new structures: foundations, stairs, ceilings, roof structures etc. He was also concerned with reconstruction of Tallinn old dais, the subsequent demolition whereof being necessitated by laying of the new dais with large echo screen for the national song festival of 1960. Meriting attention among reconstruction designs gone unperformed by him were restoration designs of buildings of the town of Narva and the design of Tartu Liberty Bridge. In cooperation with colleagues, the reconstruction designs of Tallinn State Printers' and pumping house of Tallinn Filter Waterworks were completed. In line with the epoch, H. Laul liked to use at restoration works the reinforced concrete, among others the new reinforced concrete altar dome was set in Põltsamaa church, concrete was used to patch the Aleksander Nevski cathedral's brick dome. When needed, he also had to find more traditional structural solutions, as duly exemplified by timber structure of spike helmet of Tallinn Town Hall. In 1952, when the specialists started restoring spike which perished in WWII, the least information was available on its structure. Basing on outside shape needed and the static calculations carried out H. Laul had to design a totally new structure, composed of two hexagonal lattice.

H. Laul's academic career continued, after WW II, at Tallinn University of Technology. In autumn 1945 he proceeded to work as senior lecturer at Division of Building Structures of the Department of Building and Mechanics and a year later he became Docent. In 1947 he defended the thesis of Candidate in Engineering on the topic "Load resolution method at calculating the hydrostatically loaded wall tiles". In the same year he was elected Dean of the Building Department, working in that office until 1958. In 1950-1975 H. Laul was Head of the Department of Building Structures. By character references given by the colleagues of the time, he was skilful in creation of a cohesive collective and formation of the professional, motivating and trustful work environment, pervasive at the Department. In 1955 he defended at the Leningrad Institute of Engineers of Railway Transport the doctoral thesis on calculation of cylindrical shells and prism solid carriers and in 1956 he was awarded the scientific degree of Doctor in Engineering and Professorship in building structures.

When starting the work on faculty in 1945, H. Laul delivered to students of architecture the course on strength of materials. Adding up further on were courses of reinforced concrete and wooden bridges to students of the Building Department and building static to students of architecture. He later delivered mainly the reinforced concrete courses and devoted a major part of his time to supervising post-graduate and graduate students. He delivered regular lectures

until 1984, continuing thereafter supervising post-graduate students, work in expert council and fulfilling other science organisation tasks. As member of faculty he was exacting, however just, expecting from his students and subordinates the utmost commitment. The students were most of all enchanted by his excellent engineering insight, engineer's clarity of turns of thought and personal opinions. His lectures were also appraised as an opportunity to obtain information in the humanities at an engineering higher school and to share in his philosophical deliberations.

Heinrich Laul's research work embraced various areas, for instance suspended structures, issues of design of reinforced concrete bridges, calculation of frame buildings, direct measurement of concrete stresses with inductive sensors etc. In the centrepiece were shell structures, in the research of which he was primarily interested in creation of engineering methods, which were easily implemented in the actual design work. He derived the approximation method of shear stresses diverging from classical shell theory, enabling relatively easily to estimate the size and location of internal forces created and to establish, by reference to that, the dimensions of the structure. He published 74 researches on shells and was supervisor to 51 Diploma, 33 Candidate's and 5 Doctor's theses. Hence it is plausible to assert that there was Heinrich Laul's thin-wall reinforced-concrete shell school in existence, characteristic feature of which was a strong experimental incline, where for finding or checking the calculation method tests were made on model of the structure. Paradoxically, although the school was directed at elaboration of practical methods needed by designer, only isolated shell structures have been realised in Estonia. Generally their use at building was inhibited by the building policy favouring type-designs prevalent in the Soviet Union, where shells found no place. The main outcome of the researchers was therefore the academic channel: publication of articles in scientific journals and delivery papers at expert conferences. The shell-related conferences were held several times also in Estonia, which witnessed in 1957 the first all-Union Shells and Tiles Theory Conference.

Heinrich Laul is one of the most outstanding Estonian engineers and building specialists of 20th C., whose activity as designer, building expert, member of faculty and scientist has served an example to several generations of Estonian engineers and has had a wider impact on the whole Estonian culture. The various phases of the role of building engineer in his career are best to be characterised by reconstruction of Estonia theatre and the unique echo screen of Tallinn dais. The first can be considered his most spectacular accomplishment as a practicing building engineer and designer. The structural solution of the echo screen however is the innovative engineering solution basing of scientific research. H. Laul falls outside the frame of a stereotypical modernist engineer: his works and pieces of writing are interlaced with inherent veneration of the cultural heritage – the older building heritage or classical music

alike. As intimated by himself, he had been accompanied through life with three interests: languages, music and building.

H. Laul authored over 160 scientific articles. He published also a number of articles on Estonian building history and problems of building science, mainly in "Proceedings of Tallinn University of Technology" and magazine "Building and Architecture", and also in the weekly "Sirp ja Vasar" (Scythe and Hammer), for which he was granted the author's award of "Sirp ja Vasar" in 1984. Essential in the activity of H. Laul as the building scientist and member of faculty was compiling textbooks and methodology materials. The books authored by him titled "Reinforced concrete. I" and "Reinforced concrete. II" are the study material still used while training building engineers and architects. In 1960s a number of building structures textbooks in the Estonian language appeared with involvement of colleagues at the Department of Building Structures and largely upon H. Laul's initiative. Of note among them are "Metal structures" volumes I and II, "Stone structures", "Timber structures", the works of authors whereof being bestowed recognition in 1970 with the state prize of ESSR. By compiling and publishing of study materials in Estonian they contributed to development of engineering vocabulary in Estonian, the importance of which cannot be underestimated given the Russification of the Soviet period.

In 1961 H. Laul was elected Member of the Estonian Academy of Sciences in mechanics. He was given recognition in 1985 with Medal of the Academy. He was merited scientist of the Estonian SSR and thrice laureate of the Soviet Estonia Prize.

H. Laul deceased on 16 April 1991 and he was buried in Metsakalmistu.

STATUTES OF THE ESTONIAN ACADEMY OF SCIENCES\*

Approved by General Assembly of  
the Estonian Academy of Sciences  
on 08 December 2010

Registered at Ministry  
of Education and Research  
on 05 April 2011

I. GENERAL

1. Estonian Academy of Sciences is the amalgamation of outstanding scientists and other creative persons established under Estonian Academy of Sciences Act on 1938, whose task is to promote and represent the Estonian research, to foster application of research results in the interests of Estonia and to value research, scientific thinking, and culture in Estonia.
2. Estonian Academy of Sciences (hereinafter referred to as Academy) shall be a public law based legal entity, acting on the basis of the Estonian Academy of Sciences Act, Organisation of Research and Development Act, other legal acts and its Statute.
3. For fulfilment of its tasks Academy shall:
  - 1) initiate, organise and coordinate research;
  - 2) promote international cooperation and represent Estonian research and culture in international organisations;
  - 3) publish scientific and popular science issues;
  - 4) organise scientific discussions, conferences and meetings with the delivery of papers;
  - 5) promote cooperation with universities and other research institutions and contribute to training new generations of researchers;
  - 6) carry out contests of research works and assign awards for scientific research work;
  - 7) allocate, within the limits of its monetary means grants, research benefits, and stipends to scientists and students;
  - 8) support institutions and societies having associated with Academy;
  - 9) initiate activity for popularising research and science;
  - 10) counsel *Riigikogu*, Government of the Republic, and state institutions and offer them advice;
  - 11) participate in drafting the legal acts concerning research and development activities;
  - 12) participate through its representatives in the work of Estonian research and development institutions, foundations, and decision-making and expert panels;

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\* Unofficial translation of no legal effect.

- 13) submit opinions regarding funding and organisation of Estonian research and development activities.
4. Academy shall have its bank accounts, seals, flag and other symbols.
5. Academy shall act within the domain of administration of Ministry of Education and Research.

## II. MEMBERSHIP

### COMPOSITION OF MEMBERSHIP

6. Academy's membership shall be constituted by Members of Academy, whose upper-limit number shall be established by law, and by Foreign Members, whose number shall be established by the General Assembly. Affiliation to Academy's membership shall be for life.

### MEMBERS OF ACADEMY

7. Elected Members of Academy shall be scientists of Estonian citizenship, who have outstanding achievements in research and development work and who have substantially developed science in their domain of research. Elected Member of Academy may also be any outstanding creative persons of Estonian citizenship, who has made essential contributions to the Estonian culture.
8. Members of Academy shall be elected by Academy's General Assembly from among presented candidates; the right to present the candidates shall be vested on Members of Academy, scientific councils of Estonian research and development institutions, scientific societies, and creative unions and associations. Election shall be carried out by ballot subject to the Regulation of Election of Members of Academy approved by Academy's General Assembly.
9. Elected as Member of Academy shall be considered the candidate, winning the vote in favour by at least 2/3 of Members of Academy having participated in election, however not below half of the designed composition of General Assembly.
10. Member of Academy shall be member of one of the Divisions of Academy.
11. Tasks of a Member of Academy shall be:
  - 1) to promote by personal creative work science, engineering, technology, and culture in his or her domain;
  - 2) to participate in formation of research, culture, technological, and socio-economic development programmes in Estonia;
  - 3) to participate in teaching and training of intellectuals;

- 4) to foster valuation of science, culture, and education in Estonia;
  - 5) to counsel the Government of Republic and state institutions in issues requiring his or her specific expertise.
12. Member of Academy shall have the right:
- 1) to attend the sessions of Board of Academy and sessions of assemblies of all the Division;
  - 2) to make propositions for discussing research, or science organisation related issues to Academy's General Assembly, Board, and the assembly of his or her Division
  - 3) to obtain information on decisions of Academy's General Assembly and Board, and on positions forwarded by Academy to *Riigikogu*, Government of the Republic, state institutions, and research and development institutions, as well as obtain information on other issues concerning the activity of Academy;
  - 4) to be elected in whatsoever executive office in Academy;
  - 5) to introduce and present to the public and state institutions his or her positions in issues concerning research and society.
13. Member of Academy shall be obliged:
- 1) to participate at sessions of General Assembly of Academy and sessions of assemblies of his or her Division;
  - 2) to participate, insofar as possible, in fulfilling the tasks of Academy and in planning and implementing Academy's activities;
  - 3) to submit annually to President of Academy, and to his or her Division his or her activities report and the list of publications having appeared that year.
14. Members of Academy shall get for life a fee to reimburse their expenses in fulfilling their tasks and obligations, the size of which is conditional on annual target-specific benefits from the state budget and the monetary possibilities of Academy itself. The concrete size of Member of Academy fees shall be established by annual spring General Assembly on the basis of proposal of Board of Academy, with the decision staying valid until the next spring General Assembly.
15. Member of Academy shall have the right to withdraw from membership of Academy and forego the title of Member of Academy. The withdrawal shall be approved by General Assembly on the basis of written application by Member of Academy, however not earlier than three months after submitting the application to President of Academy. Until General Assembly hands down the decision, Member of Academy having submitted the application for withdrawal shall stay in the composition of

membership of Academy and he shall be entitled to rescind his application.

#### FOREIGN MEMBERS

16. Elected Foreign Members of Academy shall be foreign scientists with spectacular achievements, who are related to Estonia through their research work. The number of Academy's Foreign Members cannot exceed 30% of the number of Members of Academy.
17. Foreign Members shall be elected by General Assembly of Academy from among the candidates recommended by Members of Academy and presented by Board of Academy to General Assembly. Election shall be carried out by ballot subject to Regulation of Election of Foreign Members of Academy approved by Academy's General Assembly. Elected as Foreign Member of Academy shall be considered the candidate presented, in whose favour are cast the votes of at least  $\frac{2}{3}$  of Members of Academy having participated in election, however not below half of the designed composition of General Assembly.
18. Academy shall expect from its Foreign Member his or her reasonably opportune activity for promotion of research in Estonia and presentation abroad of the accomplishments of Estonian science, and contribution to expanding the scope of Academy's international scientific relations.
19. Academy's Foreign Members shall have the right to get information on activities of Academy, to attend the sessions of General Assembly of Academy and assemblies of Divisions, and to make proposals to Academy for discussion of research problems.

### III. MANAGEMENT

#### ORGANISATION OF MANAGEMENT

20. For management of the activity of Academy, collegiate management bodies and executives shall be elected from among Members of Academy.
21. The collegiate management bodies of Academy shall be General Assembly and Board.
22. Elected leaders of Academy shall be President, Vice-Presidents and Secretary General, managing the activity of Academy subject to competence and distribution of work specified in law and this Statutes.

#### GENERAL ASSEMBLY

23. Academy's supreme management body shall be General Assembly, constituted by all Members of Estonian Academy of Sciences.

24. General Assembly shall:
- 1) lay down directions and principles of the activities of Academy;
  - 2) approve the Statutes of Academy and other base documents regulating the activity of Academy and make amendments therein;
  - 3) approve Academy's structure and introduce changes therein;
  - 4) approve statutes of the institutions of Academy and make amendments therein;
  - 5) elect Members of Academy and Academy's Foreign Members;
  - 6) elect Academy's President, Vice-Presidents, Secretary General and other Board members, except Heads of Division;
  - 7) hear and approve the annual report on the activities of Academy and approve the Academy's budget and report on fulfilment thereof;
  - 8) provide estimates on the situation of research directions in Estonia and submit proposals for their development;
  - 9) adopt positions to be forwarded to *Riigikogu* and Government of the Republic in issues concerning social, technological and economic development of the State of Estonia;
  - 10) hear scientific papers;
  - 11) form positions in scientific and science organisation issues, which are submitted under these Statutes to General Assembly for discussion by Members of Academy;
  - 12) form positions and adopt decisions in other issues, which are deemed by President or Board necessary to be submitted for discussion at General Assembly;
  - 13) establish the rule and procedure of payment of the Member of Academy fees.
25. Sessions of General Assembly shall be regular and special. Sessions shall be called by President, absent the President by the Vice-President substituting him. Regular session of General Assembly shall be called at least twice a year. A special session of General Assembly shall be called, when deemed necessary by President or demanded by the majority of Board, one of assemblies of Division, or at least one fourth of all Members of Academy. Session of General Assembly shall be called by President with a written 21 days notice, tendered to Members of Academy in case of a regular session, and with a written 7 days notice in case of a special session.
26. General Assembly shall have the quorum, if it is attended by over half of Members of Academy belonging to the designed composition of General Assembly on the session day. Presenting an exception shall be election of Members of Academy, revocation of powers of members of Board and approval of Academy's Statutes and structure and changes made therein, when attendance of at least 2/3 of designed composition shall be requisite.

27. The designed composition of General Assembly shall be the total number of Members of Academy without Members of Academy, who cannot attend the session due to disease or sojourning abroad. Members of Academy can be reckoned as being in the designed composition by reason of the matters set out above, to the extent of 1/5 of total number of Members of Academy.
28. Decisions of General Assembly shall be adopted by simple majority vote provided the decisions are supported by at least half of Members of Academy, belonging to the designed composition of General Assembly. Presenting an exception shall be election of Members of Academy, revocation of powers of members of Board and approval of Academy's Statutes and structure and changes made therein, when in like terms, support of at least 2/3 of Members of Academy participating at voting is requisite
29. Decisions of General Assembly shall be adopted by rise of hands. Presenting an exception shall be election of Members of Academy and Foreign Members of Academy, and election of members of Board and revocation of their powers, when ballot shall apply. General Assembly may apply ballot as an exception also in other cases, when that is requested by at least one fourth of Members of Academy attending the meeting.
30. Sessions of General Assembly shall be recorded in minutes. The decisions adopted shall be sent to Members of Academy, Academy's institutions, to institutions and societies associated with Academy, public law based universities, Research and Development Council, Ministry of Education and Research, Ministry of Economic Affairs and Communications, and Estonian Development Foundation. The other persons, institutions and organisations shall be sent only the decisions pertinent to them.

#### BOARD

31. Board shall be the collegiate management body of Academy in the interim period between sessions of General Assembly.
32. Belonging to Board shall be President, Vice-Presidents, Secretary General, Heads of Divisions, and non-executive members, not assigned a concrete office in Board. The number of Vice-Presidents and non-executive members of Board shall be determined by General Assembly.
33. Board shall:
  - 1) provide for implementation of decisions of General Assembly;
  - 2) draft the questions to be presented to General Assembly;

- 3) announce contests of research works and assign awards;
  - 4) announce and assign, within limits of monetary means of Academy the grants to researchers and students;
  - 5) decide joining international organisations by Academy;
  - 6) decide the use of assets of Academy, unless law sets limits to it;
  - 7) approve the structure and positions of Academy's Office;
  - 8) form standing or temporary committees for solving issues in research and development activity;
  - 9) appoint representatives of Academy to extra-Academy decision making bodies and expert panels;
  - 10) decide association of Academy with institutions and societies;
  - 11) discuss research and science organisation questions, which Members of Academy submit to Board under these Statutes for forming Board's position;
  - 12) fulfil other tasks needed for statutory activity of Academy.
34. Board shall hold sessions subject to need, however at least once per quarter. Sessions shall be called and presided at by President, absent the President, the Vice-President substituting him. The procedure of work of sessions of Board shall be determined by Regulations approved by General Assembly.
  35. Session of Board shall have the quorum, if it is attended, with the presiding officer included, by at least half of composition of Board.
  36. Decision of Board shall be adopted under the consensus principle. If consensus cannot be reached, Board shall adopt the decision by rise of hands with simple majority vote. If the vote is tied, the presiding officer shall have the casting vote.
  37. Decision of Board shall take effect when signed by President or the Vice-President, acting in his absence as the presiding officer. If President has a dissenting opinion with regard to the decision of Board, or does not consent to the decision made in his absence, he may set the disputed question at discussion in Board anew. If the divergence of opinion still cannot be settled, the question shall be given for General Assembly to decide.
  38. Sessions of Board shall be recorded in minutes. Members of Academy shall be provided information about decisions passed through Secretary General or Head of Division. Persons, institutions and organisations shall be sent copy of decisions affecting them.
  39. Board shall report to General Assembly.

#### PRESIDENT

40. President shall be the chief executing officer of Academy, representing Academy in communication with other persons, institutions and organisations and proceeding the matters at court. President shall be responsible for general development of Academy, its statutory activity and lawful and expedient use of Academy's assets and means.
41. President shall be elected by General Assembly from among Members of Academy by ballot for five years. The same Member of Academy cannot be elected President consecutively for more than two periods in office.
42. President shall report to General Assembly.
43. The term contract of employment with President shall be made and terminated in the name of Academy by a Member of Academy duly authorised to the effect by General Assembly.
44. Absent the President, he shall be substituted by one of the Vice-Presidents. The Vice-President, to whom the tasks of President are temporarily transferred, and the scope of powers of Vice-President as substitute to President, shall be determined by President.

#### VICE-PRESIDENTS

45. Vice-President shall supervise the area of work determined by President and he may also simultaneously fulfil the tasks of Head of Division.
46. Number of Vice-Presidents shall be determined by General Assembly.
47. Vice-President shall be elected by General Assembly from among Members of Academy by ballot for five years. The same Member of Academy cannot be elected Vice-President consecutively for more than two periods in office.
48. Vice-President shall report to General Assembly and President.
49. The term contract of employment with Vice-President, proceeding to work in Academy in the full-time office of Vice-President, shall be made and terminated, in the name of Academy by President.

#### SECRETARY GENERAL

50. Secretary General shall organise, through Academy's Office the clerical work of Academy and its financial activity, he shall made and terminate in the name of Academy contracts of employment with workers of Divisions and Academy's Office and heads of institutions of Academy's, and he shall also fulfil other tasks subject to decisions of General Assembly and Board.

51. Secretary General shall be elected by General Assembly from among Members of Academy by ballot for five years. The same Member of Academy cannot be elected Secretary General consecutively for more than two periods in office.
52. Secretary General shall report to General Assembly and President.
53. The term contract of employment with Secretary General shall be made and terminated, in the name of Academy by President.

#### SETTING UP THE BOARD

54. Board shall be set up and its composition changed by General Assembly, subject to Regulations of Election of Members of Board approved by General Assembly.

#### IV. STRUCTURE

55. Academy's structure shall be formed by:
  - 1) Divisions;
  - 2) Academy's Office;
  - 3) Academy's institutions.

#### DIVISIONS

56. Division shall unite Members of Academy, Foreign Members and institutions of the respective domain of science of Academy and organise, within the framework of tasks of Academy their activity, engaging in cooperation with other research and development institutions and scientific societies of the same area.
57. The number of Divisions and domains of science, where Divisions are formed, shall be decided by General Assembly.
58. Affiliation to Divisions by Members of Academy, Foreign Members and institutions of Academy shall be approved by Board.
59. Division shall:
  - 1) be a competent panel of experts in its domain;
  - 2) coordinate the research and science organisation activity of Academy in its domain;
  - 3) prepare materials and formulate positions in issues, to be discussed at Academy's General Assembly or Boards;
  - 4) analyse the situation of science and perspectives for development of research directions in Estonia and formulate positions in those issues;
  - 5) hear, at its reasonable convenience, the research papers of all candidates for position of Member of Academy, in line with profile of the

Division and present to General Assembly its position regarding the suitability of candidates.

60. Activity of Division shall be supervised by assembly of Division and Head of Division. Division may, by decision of assembly of Division, form also other management bodies.
61. Assembly of Division shall be formed by all Members of Academy belonging to Division. Tasks and procedure of activity of other management bodies set up for organisation of activity of Division by the assembly of Division shall be specified by statute of the Division.
62. Head of Division shall be the chief executive officer of Division, with vested responsibility for development of the activity of Division under Statutes of Academy and Division statute.
63. Head of Division shall also be member of Board of Academy and his office may be combined with Vice-President's office.
64. Head of Division shall be elected by assembly of Division from among Members of Academy belonging to Division by ballot for five years. Election shall take place subject to Regulations approved by General Assembly of Academy. The same Member of Academy cannot be elected Head of Division consecutively for more than two periods in office.
65. Head of Division shall report to assembly of Division, Board of Academy and President.

#### ACADEMY'S OFFICE

66. Academy's Office shall organise clerical work related to the activity of Academy, and Academy's financial activity, it shall be responsible for preparation and publishing of printed matter concerning the activity of Academy and it shall fulfil other tasks needed for Academy subject to decisions of General Assembly and Board.
67. Academy's Office shall work under supervision of Secretary General.
68. Academy Office's structure and positions shall be approved by Board.

#### INSTITUTIONS OF ACADEMY

69. Institutions of Academy shall be:
  - 1) Estonian Academy Publishers;
  - 2) Under and Tuglas Literature Centre of the Estonian Academy of Sciences;
  - 3) institutions, united into the structure of Academy by legal acts;
  - 4) institutions, created by decisions of General Assembly.

70. Functions, tasks and bases of activity of an institution of Academy shall be established in the statutes of the institution, approved by General Assembly of Academy. Statutes of the institution shall be registered at Ministry of Education and Research.
71. Institution of Academy fulfilling scientific functions shall belong structurally to the Division of Academy embracing the respective domain. It shall develop its activity in Academy under supervision and through agency of that Division. An institution of Academy of general purpose shall report directly to Board of Academy.
72. Institution of Academy shall fulfil its functions and tasks autonomously; it shall have an independent budget, its bank accounts, and seal.
73. Institution of Academy shall be managed by Director, set in office for a term up to five years by Board of Academy. The same person can be set in office as Director of Institution of Academy for a new term consecutively and repeatedly.
74. Director of an institution of Academy shall be approved in office by Board of Academy on the basis of public contest. Election of Director under the procedure of contest shall take place subject to Regulations approved by Board of Academy.
75. The contract of employment with Director of an institution of Academy shall be signed and terminated by Secretary General in the name of Academy.
76. Institution of Academy and its Director shall report to President of Academy and to Board of Academy. Institution of Academy and its Director fulfilling scientific functions shall report also to the respective Division of Academy.
77. Institution of Academy shall form council of institution as Director's advisory body, the composition of which is approved by Board of Academy. The procedure for formation of scientific council shall be specified in statutes of the institution.
78. For mutual coordination of activity of institutions of Academy, a common representative council of institutions can be formed, including Directors of all institutions of Academy or their authorised representatives. The tasks and rights of the representative council of institutions shall be established by statute of the representative council, approved by General Assembly of Academy.

#### INSTITUTIONS AND SOCIETIES ASSOCIATED WITH ACADEMY

79. Research and development institutions, cultural institutions and scientific societies not belonging to the structure of Academy, whose activity is in compliance with the activity and goals of the Academy, can associate with it.
80. Institutions and societies having associated with Academy shall act subject to their statutes or standing orders. The relations of an associated institution or society and Academy, their reciprocal rights and obligations shall be specified in the association agreement.
81. Association of an institution or society with Academy demands from institution(s) recognition of Statutes of Academy and the goals set down in it, compliance of principles specified in statutes or standing orders of the institution (society) with Statute of Academy and readiness of the institution (society) to develop cooperation with Academy.
82. Directors of institutions associated with Academy and heads of associated societies or their authorised representatives can be involved to work in the representative council of institutions of Academy. Their involvement and its conditions shall be decided by Board of Academy.

#### V. ASSETS, MEANS, FINANCING AND REPORTS

##### ACADEMY'S ASSETS

83. Academy's assets shall be:
  - 1) assets, which have been given or will be given into ownership of Academy under law;
  - 2) assets, which Academy will acquire in the process of its activity for the means at its disposal;
  - 3) assets, which a third person transfers to the benefit of Academy.
84. Academy shall possess, use and dispose of its assets under the procedure specified in law for fulfilment of its statutory tasks.
85. Assets of an institution of Academy shall constitute an independent part in Academy's assets, whose possession, use and disposition for fulfilment of the institution's tasks shall be delegated to the institution.
86. Under motivated circumstances Board of Academy may, by its decision, transfer, under the procedure specified in law, assets in possession of an institution of Academy or rearrange their possession, use and disposition.

#### MONETARY MEANS AND FINANCING

87. Academy shall get the monetary means necessary for its activity from state budget and other sources.
88. The scope of state budgetary financing of Academy shall be determined by State Budget Act, in the expenses of administrative domain of Ministry of Education and Research.
89. Academy shall have the right to provide to other persons, within the framework of its statutory activity, the services for a charge and get from that additional monetary means for its activity.
90. Academy shall have the right to give, on account of its means, the research benefits, grants, to organise contests of research works, to assign awards, and to support the institutions and societies associated with Academy. The size of those expenses shall be decided by General Assembly when approving the Academy's annual budget.
91. Monetary means of Academy shall be disposed of by President and Secretary General, under conditions and procedure specified by General Assembly of Academy.
92. Monetary means assigned to an institution of Academy, as well as the means, obtained by institution of Academy from services for a charge provided by it shall be disposed of by Director of institution, under conditions and procedure specified by statutes.

#### BUDGET AND BALANCE SHEET

93. For all income of Academy and its institutions, a consolidated budget shall be drawn, the fulfilment of which shall be reported, upon termination of financial year, in Academy's consolidated balance sheet. Academy's annual budget and its fulfilment shall be approved by General Assembly.
94. The extra-budgetary income shall be distributed according to Academy's budget, unless limits are set by law, or special conditions are specified for use of income received. The income received target-specifically shall be used subject to conditions specified.
95. Budget and balance sheet of income and expense of an institution of Academy shall constitute an independent part of Academy's consolidated balance and consolidated balance sheet, drawn and submitted for approval by the institution subject to requirements established by Academy.

#### AUDIT AND REPORTS

96. Academy and its institutions shall maintain accounting and statistical reckoning on use of their assets and means under the procedure subject to law.
97. Use of state budgetary means allocated to Academy and its institutions shall be audited by Ministry of Finance and State Auditing Office.
98. State supervision over the activity of Academy shall be exercised by Ministry of Education and Research.
99. Intra-Academy supervision over the activity of an institution of Academy shall be exercised by President and Board of Academy. The financial and economic activity of institutions shall be audited by Academy's accountancy, as assigned by President.

#### VI. PROCEDURE OF APPROVAL AND AMENDMENT OF STATUTES

100. Statutes of Academy and amendments done therein shall be approved by General Assembly and registered at Ministry of Education and Research. Statutes and their amendments shall be considered as approved by General Assembly, if vote in their favour is cast by at least 2/3 of Members of Academy having participated in voting, however not below half of the designed composition of General Assembly.
101. Proposals for amendment or complementing Statutes of Academy shall be considered and submitted to consideration at General Assembly by Statutes Commission formed by General Assembly. Proposals for amendment or complementing Statutes of Academy shall be taken for consideration at General Assembly, provided they have been brought to cognizance of Members of Academy with a 21 calendar-day notice.
102. Statutes of Academy and its amendments shall take effect as from their registration.

#### VII. IMPLEMENTATION OF STATUTES

103. Board of Academy shall provide drafting and adopting of base documents regulating the activity of Academy subject to stipulations of these Statutes within one year after Statutes take effect.
104. Persons elected and decision-making assemblies formed in Academy before this Statutes take effect, shall proceed to act until expiration of the period of their election, unless subject to effective Regulation of Election of Members of Board, General Assembly has terminated their powers prior to expiration of that term.

ESTONIAN CONTACT POINTS FOR  
INTERNATIONAL SCIENCE ORGANISATIONS  
(whose membership fees in 2010 were covered  
by the Estonian Academy of Sciences  
from a specific allocation of the Ministry of Education and Research)

Estonian contact organisation	International organisation
Estonian Physical Society (Chairman: Kaido Reivelt, kaido.reivelt@ut.ee)	European Physical Society, EPS
Estonian Geophysical Committee (Chairman: Rein Rõõm, rein.room@ut.ee)	International Union of Geodesy and Geophysics, IUGG
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@gi.ee)	ESF European Polar Board, EPB
Estonian National Committee on Astronomy (Chairman: Laurits Leedjärv, leed@aai.ee)	International Astronomical Union, IAU
Estonian National Committee for Mechanics (Chairman: Andrus Salu- pere, salupere@ioc.ee)	International Union of Theoretical and Applied Mechanics, IUTAM
Estonian National Committee for IUPAP (contact: Ergo Nõmmiste, ergo.nommiste@ut.ee)	International Union of Pure and Applied Physics, IUPAP

Estonian Academy of Sciences (contact: Jüri Engelbrecht, j.engelbrecht@akadeemia.ee)	International Council for Science, ICSU
Estonian Academy of Sciences (contact: Jüri Engelbrecht, j.engelbrecht@akadeemia.ee)	European Federation of National Academies of Sciences and Humanities “ALL European Academies”, ALLEA
Estonian Academy of Sciences (contact Leo Mõtus, leo.motus@akadeemia.ee)	European Academies’ Science Advisory Council, EASAC
Estonian Academy of Sciences (contact: Peeter Tulviste, peeter.tulviste@akadeemia.ee)	Union Académique Internationale, UAI
Estonian Academy of Sciences (contact: Anne Lill, anne.lill@ut.ee)	International Commission <i>Thesaurus Linguae Latinae</i> , TLL
Estonian Academy of Sciences (contact: Jüri Engelbrecht, foreign@akadeemia.ee) and Estonian Science Foundation (contact: Meelis Sirendi, meelis@etf.ee)	European Science Foundation, ESF
Estonian Marine Commission of Estonian Academy of Sciences (contact: Tarmo Soomere, tarmo.soomere@cs.ioc.ee)	ESF Marine Board
ESTQUA (Estonian National Committee for INQUA) (Chairman: Volli Kalm, volli.kalm@ut.ee)	International Union for Quaternary Research, INQUA
Estonian National Committee of Geomorphologists (Chairman: Volli Kalm, volli.kalm@ut.ee)	International Association of Geomorphologists, IAG
Philosophy and Methods of Science Division of the Baltic Association of Science History and Philosophy (Contact: Rein Vihalemm, rein.vihalemm@ut.ee)	Division of Logic, Methodology and Philosophy of Science/Union of History and Philosophy of Science (IUHPS/DLMPS)

COOPERATION AGREEMENTS OF THE ESTONIAN ACADEMY OF  
SCIENCES WITH PARTNER ORGANISATIONS  
(in brackets, the date of signing the currently valid agreement)

1. Austrian Academy of Sciences (12.11.2007)
2. Academy of Sciences of Bashkortostan (15.09.2008)
3. British Academy (31.10.1991)
4. Berlin-Brandenburg Academy of Sciences and Humanities (16.05.2002)
5. Bulgarian Academy of Sciences (02.04.1996)
6. Royal Flemish Academy of Belgium for Science and the Arts (26.03.2004)
7. Chinese Academy of Sciences (26.05.2000)
8. Spanish Council for Scientific Research (19.06.2001)
9. Israel Academy of Sciences and Humanities (19.07.1995)
10. Italian National Research Council (23.04.2004)
11. Lithuanian Academy of Sciences (12.11.1991)
12. Royal Society of London (30.10.1991)
13. Latvian Academy of Sciences (12.11.1991)
14. Macedonian Academy of Sciences and Arts (16.12.1996)
15. Montenegrin Academy of Sciences and Arts (17.10.2005)
16. Norwegian Academy of Science and Letters (20.03.1992)
17. Polish Academy of Sciences (17.06.1996)
18. French Academy of Sciences (22.03.1994)
19. Royal Swedish Academy of Letters, History and Antiquities (18.01.1995)
20. Royal Swedish Academy of Sciences (17.11.2005)
21. Slovak Academy of Sciences (28.11.1993)
22. Slovenian Academy of Sciences and Arts (28.04.1997)
23. Academy of Finland (04.01.2007)
24. Finnish Academy of Science and Letters (10.03.1992)
25. Swiss Academy of Sciences (18.09.1989)
26. Academy of Sciences of the Czech Republic (10.04.1996)
27. National Academy of Sciences of Ukraine (02.10.2000)
28. Hungarian Academy of Sciences (20.06.1995)
29. National Academy of Science of Belarus (18.02.2002)
30. Russian Academy of Sciences (17.02.1993)

# DIRECTORY

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Estonian Academy of Sciences

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|-----------|---|
| 1940      | Year Book I of the Estonian Academy of Sciences<br>(in Estonian)  |
| 1969–1988 | Annual Report of the Academy of Sciences of<br>the Estonian SSR (in Russian, 20 volumes)  |
| 1989      | Annual Report of Estonian Academy of Sciences<br>(issued separately in Estonian, Russian and English)   |
| 1990–1995 | Annual Report of Estonian Academy of Sciences<br>(issued separately in Estonian and English, 6 volumes)<br><br>Scientific Publications of the Estonian Academy of<br>Sciences (with a Foreword in Estonian and English,<br>6 volumes) |
| 1996–2010 | Year Book of the Estonian Academy of Sciences II–XVI<br>(issued separately in Estonian and English)   |