

*Facta non solum verba*

ESTONIAN  
ACADEMY OF SCIENCES  
YEAR BOOK

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ACADEMIAE SCIENTIARUM  
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## FOREWORD

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The year of 2009 was even more starved of funds than the preceding years however it significantly enhanced the Academy's vistas for the future. Namely, on 15 December 2009 the President of the Republic promulgated amendments to the Estonian Academy of Sciences Act, enabling the Academy to independently decide on its paths of development, and granting to the Academy the freedoms equated with those of other public-law based institutions.

Additional freedom also involves the privilege of decision-making and liability – General Assembly can now hand down the resolutions, striking the “checks and balances” between body of Members of the Academy and top actors of Estonian science and fine arts, and between the Academy and the society. The majority of decisions to be passed are tinted by the hue of monetary restrictions, although currently the freedom of the Academy as regards growing its monetary resources approaches zero. In the long perspective the Academy hopes to develop the capacity to participate in planning the funds needed for its activity.

The experience shows that in two years the Marine Commission of the Academy consisting of enthusiasts was able to become, in its domain the leader of public opinion in Estonia, and influential in international scientific circles. However the long-term work cannot be built up on enthusiasm solely.

The economic crisis introduced correctives and the planned development transformed into a conservation of the main activity. In 2009, the budget revenue of the Academy decreased by 17% (as compared to 2008). We have attempted to preserve the activities spearheaded to the future – supporting young scientists, supporting scientific societies, popularising the science – by reducing our participation in the European Academies' Science Advisory Board (EASAC), minimizing the expenses related to the European Federation of National Academies of Sciences and Humanities “ALL European Academies” (ALLEA), and drastically cutting down on expense of the Foundation for International Exchanges of the Academy. The Year Book describes objectively the activities of the Academy and the institutions and scientific societies associated with it.

Whereas the nature is proceeding with its life and the natural environment even stopped its rapid warming, the houses and utility infrastructure still need repairs, heating, water and electricity bills are steadily increasing. In Estonia, the hardship of the economic crisis has been evenly shared between different domains, while several other countries opted for a strategy where research and education were clearly given a preferential treatment.

The papers and discussions published in the Year Book clearly support the idea that in a sustainable society the culture should be considered a common denominator of research, science, art, music, literature, architecture, engineering etc.

Enjoy your reading and join in a speculation in these matters

*Leo Mõtus*

## CHRONICLE

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January 14–15 – Professor of bio-semiotics Kalevi Kull of the University of Tartu and Vice-President of the Academy Jüri Engelbrecht participated in a seminar “Engaging with Social Science” of the “European Network of Funding Agencies – Coordination of National Complexity Research and Training Activities” (Complexity-NET) project of the EU 6th R&D Framework Programme at Chantilly (France). The seminar focused on complexity research in social sciences.

January 20 – Board at its meeting approved the Academy’s Action Plan 2009. The Board heard President Richard Villems’ information about the need of amendments to the “Regulation of Election of Members of the Estonian Academy of Sciences”. A panel was set up for elaboration of proposals for amendments. The Board discussed the matters relating to filling two vacancies for Members of Academy and the opportunity to rejuvenate the composition membership of the Academy by opening additional vacancies, when a Member of Academy reaches the age of 75. The Board considered the issues related to the Population Census and the population register. The Board unanimously supported the candidacy of Member of Academy Jüri Engelbrecht for the second period of presidency in the European Federation of National Academies of Sciences and Humanities (ALLEA).

January 21–23 – Vice-President Jüri Engelbrecht attended the jubilee event of the 80th anniversary of the National Academy of Sciences of Belarus in Minsk.

January 26–27 – Secretary General Leo Mõtus attended a meeting of the Complexity-NET working group in London. Under discussion was the scientific topic range of the pilot call for cooperation projects.

February 4–5 – Vice-President Jüri Engelbrecht participated in the discussion of joint activities in Halle (Germany) of the ALLEA and the European Academies Science Advisory Council (EASAC).

February 4–5 – Assistant Secretary General for Foreign Relations Anne Pöitel attended a meeting of the Complexity-NET working group in Brussels. The topic was preparation of the Guide for Applicants of the pilot call for cooperation projects, incl. participation and evaluation criteria. The meeting of the project consortium held on the following day discussed, with participation of Vice-President Jüri Engelbrecht the results of the activities of working groups and adopted a decision on holding the pilot call.

February 11– Vice-President Jüri Engelbrecht participated in a meeting of the Advisory Group of the specific programme “People” of the Seventh Framework Programme for Research and Technological Development (FP7) in Brussels.

February 12 – University of Tartu hosted the conference “Biodiversity and evolution” dedicated to the 200th anniversary of Charles Darwin organised by the Natural History Museum, centres of excellence in biodiversity and genomics, AHHA Science Centre and the Estonian Academy of Sciences.

February 12 – Estonia was represented by Assistant Secretary General for Foreign Relations Anne Põitel at a meeting of the quality working group of the European Network of Mobility Centres EURAXESS (former ERA-MORE) in Brussels.

February 12–13 – Head of the Division of the Humanities and Social Sciences Peeter Tulviste attended, as a representative of the Academy a meeting of the Bureau of the Union Académique Internationale (UAI) in Paris (France). Under discussion were expansion of activities in Africa as well as administrative and financial issues.

March 10 – Board at its meeting discussed the matters relating to the Estonian Academy of Sciences Act Amendment Act. Secretary General Leo Mõtus presented proposals for adjusting the Regulation of Election of the Members of Academy and the Board decided to send the altered “Regulation of Election of the Members of the Estonian Academy of Sciences” to the General Assembly for approval. A review about execution of the budget of the Academy for 2008 and about the budget for 2009 was presented by the Secretary General. The Board decided to forward them to the General Assembly for approval. The Board announced the Student Research Paper Contest for 2009 and set up an evaluation panel for appointing the prizes. The Board approved the composition of the Estonian National Committee for Mechanics. The Board heard Vice-President Ain-Elmar Kaasik’s information about the intended alterations to the agreement between the Estonian National Culture Foundation and the Estonian Academy of Sciences, and Member of Academy Endel Lippmaa’s information about the joint appeal of the Academy’s Marine Commission, Energy Council and Nature Protection Commission for procuring state support to furnish required data for assessment of the risks relating to building and exploitation of the Nord Stream gas pipeline and for scientific analysis of its environmental impacts.

March 13 – Board of the Academy visited the Bank of Estonia, within the framework of the series of meetings-discussions.

March 16–18 – Assistant Secretary General for Foreign Relations Anne Põitel participated in an EURAXESS conference in Potsdam (Germany), harmonizing the activities of the Network with the principles of the European Partnership for Researchers.

March 19 – Assistant Secretary General for Foreign Relations Anne Põitel attended a meeting of the programme committee “People” in Brussels, discussing the work programme 2010, deliberating about application of

COFUND, a new scheme for supporting mobility of researchers in the EU and the results of the call.

March 24–25 – Meeting of the Board of the InterAcademy Panel of International Issues (IAP) in Amsterdam was attended as observer by Jüri Engelbrecht, President of the ALLEA, who presented a plan for the establishment of an academy for European young scientists “Towards European Young Academy”. The Board discussed the IAP Strategic Plan 2010–2012.

March 25 – Academy Hall hosted the conference “200 years of wondering at the Universe in Estonia”.

March 31 – Vice-President Jüri Engelbrecht chaired a session of the Steering Committee of the ALLEA in London. The results of the presidential election were heard and Jüri Engelbrecht was approved as ALLEA President for a second term (2009–2012).

7 April – Board at its meeting approved Ülo Niine for a successive five-year period in the office of Director of the Estonian Academy Publishers. The Board nominated representatives of the Academy to the evaluation panel of the “Doctoral Schools”. President Richard Villems and Secretary General Leo Mõtus presented the UNESCO-I’OREAL international grant programme, envisioned for young female scientists in the area of biology, biochemistry, biotechnology, agriculture, medicine, pharmacology and physiology. The Board announced two Member of Academy vacancies: in the Division of Astronomy and Physics – 1 and in the Division of the Humanities and Social Sciences – 1.

April 16–18 – Vice-President Jüri Engelbrecht participated in an international conference of ERA 2009 “Role of Basic Research in the Process of Structuring ERA” in Prague, organised in the framework of the EU Czech Presidency.

April 23–24 – Vice-President Jüri Engelbrecht participated in a session of the European Science Foundation (ESF) Governing Council in Bern (Switzerland).

April 27–29 – Vice-President Jüri Engelbrecht spoke as an invited lecturer at an international conference “Researchers in Europe without Barriers” in Prague. The conference focused on making the European Research Area more attractive and on supporting young people in science.

April 29 – at an annual meeting of the General Assembly memorial medals of the Academy were handed over to Enn Mellikov, Leo Mõtus, Peeter Tulviste, Raimund-Johannes Ubar and Ergo Nõmmiste. A report on the activities of the Academy in 2008 was presented by Heads of Divisions Peeter Saari, Rein Küttner, Ilmar Koppel and Peeter Tulviste and President Richard Villems. The Academy’s financial activities in 2008 and its budget for 2009 were considered by Secretary General Leo Mõtus. The General Assembly adopted a decision on adjusting the Regulation of Election of the Members of Aca-



demy. Amendments to the Academy Act were considered by President Richard Villems.

May 5–6 – Vice-President Jüri Engelbrecht visited *Academia dei Lincei* in Rome and the Pontifical Academy of Sciences in Vatikan.

May 6 – Academy Hall hosted a public academic lecture by Member of Academy Raivo Uibo “Changing environment and our immune system”.

May 7–10 – Vice-President Jüri Engelbrecht participated in a research project at Torino University in Italy and delivered the Lagrange Lecture.

May 9–12 – Secretary General Leo Mõtus participated in a working meeting of the editorial board to the scientific journal “Engineering Applications of Artificial Intelligence” of Elsevier Publishers in Toulouse (France).

May 14 – Ida-Viru County was the venue for the Academy Science Day.

May 20 – Academy organised a seminar “Internationalisation of research”.

May 26 – Academy hosted an information meeting “Nuclear energy in Estonia”.

May 27–29 – Secretary General Leo Mõtus attended the brokerage event of Complexity-NET in Brussels, aimed at establishing contacts and distributing information for the pilot call.

June 2 – Vice-President Jüri Engelbrecht participated in a session of the Advisory Board of the FP7 project NETWATCH held in Seville (Spain). The participants discussed the mandate of the board, provided an overview of the activities of NETWATCH and relating projects (ERA-LEARN, NORDERA etc.) and spoke about long term perspectives. The project is aimed at setting up a common web environment, which would provide information on transnational Research and Technological Development (RTD) programmes, holding in view the principles of the common European Research Area.

June 4–5 – Vice-President Jüri Engelbrecht and Foreign Relations Manager Piret Press attended a meeting of Complexity-NET partners in Madrid, discussing possibilities of extending the project, estimating project costs and summarizing the brokerage event of Complexity-NET in Brussels.

June 4–6 – Secretary General Leo Mõtus attended an EASAC Council meeting in Madrid and a field session in Seville (Spain), discussing issues related to annual fees for member organisations, the possible relocation to the German Academy of Sciences Leopoldina and elaborating on a new strategy, which would enhance the efficacy and visibility of the activities of that organisation.

June 11–12 – Foreign Relations Manager Piret Press represented the Academy at a meeting of national Bridgehead Organisations of EURAXESS in Brussels. Under consideration were involvement of new members, results of

the project call, issues arising from implementation of Research Visa and development of the internal website (Extranet).

June 16 – session of the Board was held, followed by presentation of the book “National science prizes 2009 of the Republic of Estonia”. The Board decided to make the association agreement with the Estonian Semiotics Association; Member of Academy Agu Laisk was nominated as the representative of the Academy to the Scientific Council of the Estonian Research Institute of Agriculture, Member of Academy Hillar Aben was approved as nominee for the Nikolai Alumäe memorial medal. Also under consideration were budget cuts of the second half of 2009.

June 18–19 – Vice-President Jüri Engelbrecht participated in a session of the Advisory Group of the EU specific programme “People” in Brussels.

June 26–27 – festive session to celebrate the 250th anniversary of the Bavarian Academy of Sciences was held in Munich, the Academy was represented by Vice-President Jüri Engelbrecht.

June 28–July 3 – high level meeting of Nobel Laureates in chemistry and outstanding young scientists in Lindau (Germany) was attended by doctoral students of the University of Tartu Tavo Romann and Siret Saarsalu (trips were financed by the Academy) and by Vice-President Jüri Engelbrecht as a guest of honour on part of Estonia. Lectures and panel discussions with Laureates were held.

June 29 – Clemens Smolders, Leading Expert of the EU-China science and technology fellowship programme presented to representatives of research institutions convened by the Academy the international Science Technology Fellowship Programme (STF), aimed at promoting cooperation of the EU countries with China.

30 June–1 July – Assistant Secretary General Galina Varlamova attended an international science communication seminar “Road-mapping Science in Society” in Paris, organised by the European Science Foundation (ESF) with an aim to design common activities for promoting relations between science and society.

July 2 – Assistant Secretary General for Foreign Relations Anne Pöitel attended as representative of Estonian EURAXESS Services a seminar on the EU social security issues in Riga, organised by the Training and Reporting on European Social Security (TRESS) network.

July 7–8 – Jüri Engelbrecht spoke at the R&D vision conference “New World – New Solutions” organised in Lund (Sweden) in the framework of the Swedish EU Presidency, resulting in the adoption of the Lund declaration. The document emphasises among other issues the need for developing the readiness to take risks in research and innovation activities, an aspect to be reckoned with in preparation of funding schemes.

August 18 – Academy held a seminar “Perspectives for dynamics of global systems”.

September 3–4 – Secretary General Leo Mõtus participated in a meeting “Forward Look: Beyond Transition” of the European Science Foundation (ESF) in Brussels.

September 4–5 – Vice-President Jüri Engelbrecht participated in an international symposium “European Research on the Move” in Wrocław (Poland). The following topics were considered: national vs. cross-European research activities; research infrastructures; economy and research.

September 10–11 – conference “From language to mind 3” was held.

September 14–15 – discussion, held in Brussels by euroCRIS (Current Research Information Systems) and the European Science Foundation (ESF) on recording research and systematising the databases, was attended by Vice-President Jüri Engelbrecht, who also took the floor.

September 16 – Academy Hall hosted a public lecture by a noted German Professor of History Volker Sellin on the topic “Monarchy and Nationalism”.

September 21–24 – Foreign Relations Manager Piret Press attended a training session organised by EURAXESS on counselling services for mobile researchers in Thessaloniki (Greece).

September 22 – Board at its meeting considered the agenda of the following session of the General Assembly, taking cognizance of the information concerning discussions over the candidates for presidency and membership of the Academy held by the Divisions, and information on the preparation status of the Draft Research and Development Act, presented by President Richard Villems. The Board discussed funding principles for books of memoirs authored by Members of Academy and nominated Raivo Uibo as the Estonian representative to a Standing Committee of the European Science Foundation.

September 24 – Vice-President Jüri Engelbrecht participated in a festive event of the European Research Council (ERC) “ERC – The Future Starts Today” in Brussels, marking the inauguration of the ERC Executive Agency.

September 25 – Academy as a project partner coordinated the Researchers’ Night 2009 events in Tallinn, introducing researchers and science to the wider public.

September 27–29 – Vice-President Jüri Engelbrecht chaired a session of the ALLEA Steering Committee in Bratislava (Slovakia).

September 29–30 – Academy was represented by Vice-President Ain-Elmar Kaasik at an annual conference of the International Council for Science (ICSU) European member organisations in Podgorica (Montenegro). The conference discussed action plans of the organisation, introduced the new

Strategic Plan and made preparations for the General Assembly Meeting in 2011.

October 1 – Jüri Engelbrecht participated in a session of the European Science Foundation (ESF) Governing Council in Strasbourg (France).

October 7–8 – Assistant Secretary General for Foreign Relations Anne Pöitel and Foreign Relations Manager Piret Press met with colleagues from the British Academy and the Latvian Academy of Sciences at a trilateral discussion in London. They reasoned on issues involved with fostering of the mobility of researchers between the Academies.

October 9 – Academy held a seminar “Complex systems: growth and emergent behaviour”.

October 14 – General Assembly at its session re-elected Richard Villems as President of the Academy for a second term. Two new Members of Academy were elected to vacant seats: Arvi Freiberg in exact sciences and Urmas Varblane in economy.

October 15 – Academy Hall hosted a seminar dedicated to President Lennart Meri’s 80th anniversary “Silverwhite Route: Following Pytheas and Lennart Meri”.

October 22 – Assistant Secretary General for Foreign Relations Anne Pöitel participated in a meeting of the Programme Committee “People” in Brussels, discussing the current situation of the funding schemes for research mobility (the so-called Marie Curie actions, COFUND, IRSES) as well as the needs and opportunities to change them.

October 27 – meeting of the Board and the Energy Council of the Academy with members of the Management Board of the company Estonian Energy.

November 4 – Board at its meeting discussed the agenda of the following session of the General Assembly, heard the information about the results of elections of the Heads of Divisions and the Student Research Paper Contest of 2009. The Board adopted the decision to sign an association agreement with the Estonian Biochemical Society. It discussed the proposal of the Estonian Research Council on development of an internationally high-level science publisher in Estonia and decided to forward the proposal for elaboration to the Academy’s Publishing Council. Also under consideration was the draft Code of Conduct of the European Commission for nano sciences and nano technologies. The Board heard information about matters discussed at the meeting of the Research and Development Council, presented by President Richard Villems. The Board discussed and agreed in principle with the proposal of the Energy Council of the Academy to present in the name of the Academy a public memorandum against privatisation of the Estonian Energy company and against the measures for green energy implementation.

November 4 – Academy Hall hosted a conference of the winners of the Student Research Paper Contest, where diplomas were handed over to laureates and prize-winning papers were delivered.

November 4–7 – Vice-President Jüri Engelbrecht participated in the World Science Forum in Budapest and opened a symposium “Intellectual Property Rights in the European Research Area”, held in the framework of the Forum.

November 16–17 – Vice-President Jüri Engelbrecht conducted the Extraordinary Strategy Meeting of the ALLEA in Amsterdam. Vice-President Ain-Elmar Kaasik attended the event in the capacity of representative of the Academy. The conference discussed the Strategy Plan 2010–2015, presented a new financial plan with the instalment scheme relating thereto and a plan of setting up an academy for European young scientists (“Towards European Young Academy”).

November 18 – Academy Hall hosted a public academic lecture by Member of Academy Hillar Aben “Polarised light to perform glass strength measurements – why is glass no longer shattering”.

November 19–20 – Vice-President Jüri Engelbrecht participated in an annual meeting of the European Science Foundation (ESF) in Strasbourg.

November 25 – at a session of the General Assembly the awards of the Academy were conferred: the Nikolai Alumäe Memorial Medal to Member of Academy Hillar Aben, the Memorial Medal of the Academy to Vladimir Hizhnyakov, Jaak Järv and Helle Martinson. A paper was delivered by Member of Academy Dimitri Kaljo. The General Assembly elected a new Board of the Academy.

November 29–30 – Vice-President Jüri Engelbrecht presented in Sofia (Bulgaria) a report of the ALLEA and the European Science Foundation on evaluation of the institutes of the Bulgarian Academy of Sciences.

December 3 – Board at its meeting approved the reports of Research Professors Tiina Nõges and Pärt Peterson for the first working year, commencing funding of the second working year for them as well as for Research Professor Martti Raidal. Estonian representatives to the working bodies of the European Science Foundation were nominated. The Board decided to announce a call for the office of Director of the Under and Tuglas Literature Centre for 2010–2014 and discussed the Academy’s work organization for 2010–2014.

December 3–4 – Vice-President Jüri Engelbrecht participated in a meeting of the European Academies’ Science Advisory Council (EASAC) in Brussels. The meeting discussed a joint appeal drawn for the UN Climate Change Conference and dealt with the financial plan for 2010–2011.

December 15 – President of the Republic promulgated by Decision No. 580 the “Estonian Academy of Sciences Act Amendment Act”.

December 15 – Academy Hall hosted presentation of the collection “Scientific Thought in Estonia (V). The Humanities”.

December 17 – Assistant Secretary General for Foreign Relations Anne Pöitel presented at the information day of the Estonian University of Life Sciences an overview of the Academy’s scientific exchange programmes for visiting researchers and other schemes for fostering international research collaboration.

## **MEMBERSHIP OF THE ACADEMY**

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On November 14, the General Assembly of the Academy elected two new Members of Academy to vacancies earlier announced:

In exact sciences Arvi Freiberg and  
In economics Urmas Varblane.



*Arvi Freiberg*



*Urmas Varblane*

The Academy has recently lost four of its members – Member of Academy Uno Mereste and Foreign Member of Academy Indrek Martinson (deceased in 2009), Members of Academy Loit Reintam and Viktor Palm (deceased at the beginning of 2010) (see p. 168).

As of February 2010 the Estonian Academy of Sciences numbered 57 Members of Academy and 18 Foreign Members of Academy, who distributed among four Divisions as follows:

### DIVISION OF ASTRONOMY AND PHYSICS

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

Members of Academy: Jaak Aaviksoo (Head of Division from 15 December), Jaan Einasto, Ene Ergma, Vladimir Hizhnyakov, Arvi Freiberg, Harald Keres, Georg Liidja, Endel Lippmaa, Ülo Lumiste, Cheslav Lushchik, Peeter Saari (Head of Division up to 15 December), Mart Saarma, Arved-Ervin Sapar, Gennadi Vainikko, Richard Villems.

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

DIVISION OF INFORMATICS AND ENGINEERING (14 Members of Academy, 4 Foreign Members of Academy)

Members of Academy: Olav Aarna, Hillar Aben, Jüri Engelbrecht, Ülo Jaaksoo, Lembit Krumm, Valdek Kulbach, Rein Küttner (Head of Division up to 15 December), Ülo Lepik, Enn Mellikov, Leo Mõtus, Arvo Ots, Tarmo Soomere (Head of Division from 15 December), Enn Tõugu, Raimund-Johannes Ubar.

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

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

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

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

DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES  
(11 Members of Academy, 5 Foreign Members of Academy)

Members of Academy: Mihhail Bronshtein, Raimund Hagelberg, Arvo Krikmann, Arno Kõorna, Jaan Ross, Huno Rätsep, Karl Siilivask, Peeter Tulviste (Head of Division up to 15 December), Jaan Undusk, Urmas Varblane (Head of Division from 15 December), Haldur Õim.

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

During 2009 the majority of Members of Academy carried on their research and academic activities as leading experts.

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

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

Riigikogu – Peeter Tulviste;

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

Research and Development Council – Mart Saarma, Richard Villems;

Estonian Research Council – Rein Küttner;

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



National Science Prize Committee – Richard Villems (Chairman), Rein Küttner, Enn Mellikov, Jaan Ross, Peeter Saari, Mart Saarma, Raimund-Johannes Ubar, Raivo Uibo;  
Adviser to the Government of the Republic for Research – Mati Karelson.

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

Enn Tõugu was member of the Higher Education Evaluation Council.

Mati Karelson, Ilmar Koppel, Rein Küttner, Peeter Saari ja Peeter Tulviste were members of the Research Policy Advisory Committee of the Ministry of Education and Research. Peeter Saari was member of the Steering Committee of the National Programme “Supporting Terminology in Estonian (2008–2012)”. Dimitri Kaljo was Chairman of the Expert Council on Science Collections. Ain-Elmar Kaasik was member of the Steering Committee of the National Programme “Compilation and Publishing of Textbooks in Estonian for Higher Education”. Jaan Undusk was member of the Steering Committee of the National Programme “Estonian Language and Cultural Memory”.

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 member of the Informatics Council.

Raivo Uibo was member of the Gene Technology Committee at the Ministry of the Environment, Leo Mõtus was member of the Research Council for the Ministry of Defence, Dimitri Kaljo was Chairman of the Commission of Estonian Mineral Resources, Haldur Õim was member of the Estonian Language Council, Rein Küttner was member of the Board of the Federation of Estonian Engineering Industry, Ülo Jaaksoo was Chairman of the Enterprise Estonia Assessment Panel for Technology and Innovation.

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

Centre for Integrated Electronics Systems and Biomedical Engineering was headed by Raimund-Johannes Ubar.

Dimitri Kaljo was awarded the National Science Prize for long-standing achievements in research and development, Hillar Aben (head of team) – National Science Prize for outstanding R&D studies resulting in an innovative product (see p. 62). Foreign Member of Academy Ilse Lehiste became the laureate of the Wiedemann Language Prize.

Foreign Members of Academy 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, COMMISSIONS**

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## **GENERAL ASSEMBLY**

The General Assembly of the Academy convened thrice in 2009:

April 29 – Annual Meeting

- Scientific paper by Foreign Member of Academy Ilse Lehiste “Linguistic function of the temporal dimension of a speech signal”
- Papers by Heads of Division Peeter Saari, Rein Küttner, Ilmar Koppel and Peeter Tulviste and President Richard Villems “Activities of the Academy in 2008”
- Paper by Secretary General Leo Mõtus “Financial activities of the Academy in 2008 and budget for 2009”
- Amendment to the Regulation of Election of Members of Academy
- On amendments to the Academy Act

October 14

- Election of the President of Academy
- Election of new Members of Academy

November 25

- Paper by Member of Academy Dimitri Kaljo “A selective view on changes in geology and their links with local reality (self-centred critical-laudatory treatise)”
- Election of the Board of the Academy

The first session of the General Assembly was held as an annual meeting of the Academy. As ever, the session focused on summing up the activities of the Academy in the reporting year 2008. Detailed data on the activities of the Academy in 2008 were made available in the “Estonian Academy of Sciences Year Book” XIV (41), which had been previously mailed to Members of Academy.

At the beginning of the meeting President R. Villems handed over Medals of the Academy to Enn Mellikov, Leo Mõtus, Peeter Tulviste and Raimund-Johannes Ubar.

Thereafter, the laureate of the Ferdinand Johann Wiedemann Language Prize 2009, Foreign Member of Academy Ilse Lehiste delivered her paper “Linguistic function of the temporal dimension of a speech signal”. The speaker was asked questions by Arved-Ervin Sapar and Agu Laisk.

The activities of the Academy in 2008 were reviewed by Heads of Divisions Ilmar Koppel, Rein Küttner, Peeter Saari and Peeter Tulviste, who first of all spoke about the activity of their Divisions. The summary was made by President Richard Villems. Upon proposition of Secretary General the General Assembly approved the report of the Academy for 2008, by reference to papers heard and materials presented in the Year Book.

Secretary General Leo Mõtus submitted an overview on execution of the budget of the Academy for 2008 and presented the budget for 2009, which was approved by the General Assembly.

Secretary General Leo Mõtus presented propositions for making amendment on the “Regulation of Election of Members of Academy”. Questions were posed and opinions were expressed by Anto Raukas, Dimitri Kaljo, Erast Parmasto, Ain-Elmar Kaasik, Huno Rätsep, Ene Ergma, Richard Villems, Peeter Saari, Rein Küttner and Enn Tõugu. Taking into account the observations and propositions of Members of Academy, the General Assembly adopted the resolution on approval of the “Regulation of Election of Members of Academy”.

President Richard Villems delivered a paper on the topic “On amendments to the Academy Act”. Questions to the speaker were posed and opinions were expressed by Dimitri Kaljo, Agu Laisk, Anto Raukas and Udo Margna.

During the discussion comments were made by Anto Raukas, Agu Laisk, Erast Parmasto, Dimitri Kaljo and Tarmo Soomere.

At the second session of the General Assembly, held on 14 October, the main issue was election of the President of Academy. All Divisions of the Academy supported continuation of President Richard Villems for a second term in office. No additional candidates were submitted by those attending, hence Richard Villems was the sole candidate standing for the President’s office. As a result of secret ballot, elected as President of the Academy for the following five years was Richard Villems.

On the agenda of the second half of the session was election of Members of Academy to two vacancies announced in exact sciences and economics. Out of four candidates for membership of the Academy (Arvi Freiberg, Eve Oja, Martti Raidal, Enn Saar), nominated by Members of Academy, institutions of higher education and research institutions in exact sciences, Arvi Freiberg was elected as Member of Academy. Urmas Varblane had been nominated as a candidate for membership of the Academy in economics and was elected to the position.

The third session of the General Assembly was held on 25 November. After opening the session President R. Villems handed over the Member of Academy Diploma to Urmas Varblane, who had been elected at the previous session of the General Assembly. Medals of the Academy were handed over to Member of Academy Jaak Järv and Doctor of Chemistry Helle Martinson. Speaking of the memorial awards of the Academy, this time Member of Academy Hillar Aben was conferred the N. Alumäe Memorial Medal for outstanding achievements in the area of mechanics.

A paper on the topic “A selective view on changes in geology and their links with local reality (self-centred critical-laudatory treatise)” was delivered by Member of Academy Dimitri Kaljo, Laureate of the National Science Prize 2009 for long-standing achievements in research and development. The speaker was asked questions by Erast Parmasto and Peeter Saari.

The second half of the session was dedicated to election of the new Board of the Academy. President Richard Villems moved that the new Board be elected 16 members strong, the same as the current one. A resolution was adopted for approval of the structure of the Board of the Academy. Richard Villems made his proposals: to elect Jüri Engelbrecht and Mart Ustav as Vice-Presidents, Leo Mõtus as Secretary General and as non-executive members of the Board Ene Ergma, Endel Lippmaa and Peeter Saari of the Division of Physics and Astronomy, Enn Mellikov and Enn Tõugu of the Division of Informatics and Engineering, Ain-Elmar Kaasik and Mati Karelson of the Division of Biology, Geology and Chemistry and Peeter Tulviste of the Division of the Humanities and Social Sciences. No other proposals were made. The ballot resulted in the election of Jüri Engelbrecht and Mart Ustav as Vice-Presidents, Leo Mõtus as Secretary General and the candidates proposed by the President as non-executive members.

In the process of discussions, the floor was taken by Agu Laisk, Endel Lippmaa, Erast Parmasto and Peeter Saari.

The General Assembly took cognizance of the fact that the composition of the Board would include Heads of Divisions previously elected by Divisions as follows: Jaak Aaviksoo by the Division of Astronomy and Physics; Tarmo Soomere by the Division of Informatics and Engineering; Ilmar Koppel by the Division of Biology, Geology and Chemistry and Urmas Varblane by the Division of the Humanities and Social Sciences.

## **BOARD**

The Board of the Estonian Academy of Sciences worked until expiration of its powers on 14 December, 2009 in the following composition:

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

As from 15 December 2009 the Board of the Academy proceeded to work in the following composition:

President	<i>Richard Villems</i>
Vice-President	<i>Jüri Engelbrecht</i>
Vice-President	<i>Mart Ustav</i>
Secretary General	<i>Leo Mõtus</i>
Head of Division of Astronomy and Physics	<i>Jaak Aaviksoo</i>
Head of Division of Informatics and Engineering	<i>Tarmo Soomere</i>
Head of Division of Biology, Geology and Chemistry	<i>Ilmar Koppel</i>
Head of Division of the 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. Four times the decisions were passed under the procedure of electronic questioning.

The calendar schedule of Academy events for 2009 was discussed and approved at the first session taking into account the proposals made by Divisions. For the most part the schedule was carried out by the end of the year.

In the course of the year science policy issues were repeatedly discussed and information about the status of the draft Science and Development Organi-

sation Act preparation process was heard from the members of the Board participating in the activities of the Science Policy Committee of the Ministry of Education and Research. The sessions of the Board discussed issues related to the Amendment Act to the Academy Act. The session held in March decided to agree with the formulation of the “Estonian Academy of Sciences Act Amendment Act” to be submitted to the Riigikogu and to inform the Ministry of Education and Research to the effect. At the end of the reporting year Riigikogu adopted the Act and on 15 December 2009 the President of the Republic promulgated the Act.

Because powers of the President of the Academy and the Board expired at the end of the reporting year, in that year the issues related to election of the new Board were discussed several times. The Board heard reviews by Heads of Divisions about discussions held in Divisions in connection with presenting candidates for Presidency and election of Heads of Divisions. On 3 December a joint session of the previous and new Boards was held, raising problems and making proposals for organisation of the work of the Academy in 2010–2014.

At the end of the year elections of two Members of Academy were held, wherefore the issues related to election were repeatedly under discussion. For introducing amendments into the “Regulation on election of Members of the Estonian Academy of Sciences” a board was formed, whose proposals were considered by the Board; it presented the amended Regulation for approval to the General Assembly. The Divisions were assigned the task to present their proposals for distribution of membership vacancies. As a result of discussions it was decided to announce 1 vacancy in exact sciences in the Division of Astronomy and Physics and 1 vacancy in economics in the Division of the Humanities and Social Sciences. The Board approved 5 candidates nominated for two announced vacancies and assigned the Divisions the task to discuss the candidates by the assemblies of the Divisions and to submit prior to the elections their preferences to the General Assembly.

In December, the reports for the first working year of two Research Professors elected in two previous years, Tiina Nõges and Pärt Peterson were heard, and their plans for the second working year were studied, after which the funding of their second working year was commenced. Due to the mission abroad of Research Professor Martti Raidal, the consideration of his report for the first working year was deferred to the session in January 2010, however funding of his second working year was commenced.

The Board considered expedient to enhance cooperation with the Estonian Semiotics Association and the Estonian Biochemical Society and to approve the terms and conditions for association agreements with those societies.

The Board decided to award the Medal of the Academy to Members of Academy Vladimir Hizhnyakov, Jaak Järv, Enn Mellikov, Leo Mõtus, Peeter Tulviste and Raimund-Johannes Ubar, Dr. Helle Martinson and Senior Rese-

archer of the Institute of Physics at the University of Tartu Ergo Nõmmiste. Regarding memorial medals of the Academy the Board decided to confer the Nikolai Alumäe Medal to Member of Academy Hillar Aben.

In spring the Board decided to announce the competition for the Student Research Paper Prize, approved the respective regulation and composition of Evaluation Panel (Chaired by Member of Academy Georg Liidja). On 4 November the Board heard information presented by Chairman of the Panel Georg Liidja about the results of the competition. The session was followed by a conference, where the winners of the competition presented 4 papers; the winners were granted diplomas (see p. 49).

The sessions of the Board considered issues related to the work of international science organisations and nominated Estonian representatives to committees. Professor of Immunology at the University of Tartu, Member of Academy Raivo Uiho was nominated to the European Medical Research Council of the European Science Foundation, Professor of the Institute of Technology at the University of Tartu Tanel Tenson to the Standing Committee for the Life, Earth and Environmental Sciences. The Board prolonged the powers of Professor of the Department of Public Administration at Tallinn University of Technology Rainer Kattel on the Standing Committee for Social Sciences. The Board supported the candidacy of Jüri Engelbrecht for a second term as President of the European Federation of National Academies of Sciences and Humanities “All European Academies” (ALLEA).

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 a report on the execution of the consolidated budget of the Academy for 2008 and the budget for 2009. In June the Board agreed to the 2nd half-year budget cuts following from the negative state budget. The Board determined the size of salaries for the Director of Under and Tuglas Literature Centre and the Director of the Academy Publishers. Director of the Academy Publishers Ülo Niine was approved for the following five years in the office. At the end of the year it was decided to announce the call for nominations for the office of Director of Under and Tuglas Literature Centre. The Board discussed the proposal of the Estonian Research Council concerning development of high-level scientific publications of international relevance and forwarded it for elaboration to the Academy Publishing Council. Senior Researcher of the University of Tartu Jonne Kotta was approved as acting Editor-in-Chief of the journal “Estonian Journal of Ecology”.

Taking into account the recommendations of the Council of the Division of Informatics and Engineering, the composition of the Estonian National Committee for Mechanics was approved, whose Chairman Andrus Salupere was

also nominated as representative of the Estonian National Committee for Mechanics to the International Union of Theoretical and Applied Mechanics (IUTAM). Member of Academy Agu Laisk was nominated as the Academy's representative to the Research Council of the Estonian Research Institute of Agriculture; Professor Martin Zobel to the intended Steering Group at the Ministry of the Environment for preparing Nature Conservation Plan up to 2020; Members of Academy Jüri Engelbrecht and Ain-Elmar Kaasik to the Assessment Panel of sub-measure "Doctoral Schools" under the EU Social Fund sub-measure "Cooperation between Higher Educational Institutions and Enhancement of Innovation". The Board approved the draft regulation of the Minister of Education and Research "Updating of the small-scale research infrastructure in the framework of targeted financing of research topics of Estonian research and development institutions". The Board discussed an address of Ene-Margit Tiit, the leader of a sub-project on Population and Housing Census Methods, whereby the Academy was appealed for support in clarifying problems in relation to conducting population census. The Board heard information on the joint appeal of the Marine Commission, the Energy Council and the Nature Protection Commission for getting state subsidy for collecting data necessary for assessment of risks related to building and running of the Nord Stream gas pipeline and for scientific analysis of environmental impacts. The Board took cognizance of the information presented by Vice-President Ain-Elmar Kaasik concerning alterations to the agreement of the sub-foundation of the Academy of Sciences of the Estonian National Culture Foundation, whereby the scholarship granted to a doctoral student working in the speciality of molecular microbiology and virology was re-named after Tiit Talpsep. The Board formed a panel for updating documents specifying the work procedures of the Academy (headed by Secretary General L. Mõtus). The Board decided to subsidise publication of memoirs authored by Members of Academy in keeping with its budgetary limits. In the reporting year the Board subsidised publishing of the book by Mihkel Veiderma "Tagasivaade eluteele" (In retrospect on my path of life).

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On 7 April the Board invited to the Academy of Sciences representatives of the Ministry of Economic Affairs and Communications and NATO Cooperative Cyber Defence Centre of Excellence for a joint discussion about the current state of Estonian cyber security (upon initiative of Member of Academy Enn Tõugu). Taking into account the dimensions of a possible cyber hazard and imminent critical times, the meeting adopted an address to the Government of the Republic and the Riigikogu with a proposal to establish the Estonian Cyber Defence Agency. By the end of the year the Estonian Cyber Defence Agency had been formed.

The session of the Board on 4 November heard the review by Chairman of the Energy Council Endel Lippmaa about the issues discussed by the Energy



Council on 30 October in connection with Estonian energy self-sufficiency and independence and the proposal of the Council to present a public memorandum in the name of the Academy against privatisation of the company Eesti Energia. The members of the Board agreed to the position of the Energy Council that the production share of the company of strategic importance to the state, providing energy security and international engineering innovation must be left in the state ownership. On 12 November the position of the Estonian Academy of Sciences was sent to the President of the Republic, the Riigikogu and the Government of the Republic in connection with plans to widen the circle of owners of the company Eesti Energia by taking it to the stock exchange.

## **DIVISIONS\***

### DIVISION OF ASTRONOMY AND PHYSICS

In 2009 two meetings of the Division were held.

On September 10 the meeting of the Division held a discussion and recommendation voting in order to present candidates for the vacant position of Academy membership allotted for the Division. On the meeting of 6 November Jaak Aaviksoo, the sole candidate proposed was elected the new Head of Division.

From among four candidates proposed by the Division, Arvi Freiberg was elected as a new member of the Division by the General Assembly of the Academy.

Anniversaries of Members of Academy were celebrated. On 26 February, Jaan Einasto's 80th anniversary was celebrated at the Library of the University of Tartu, where the exposition "Per aspera ad astrum" was opened on that occasion. On 19 June Ülo Lumiste's 80th anniversary was celebrated, where the new book of the Member of Academy was presented titled "Foundations of geometry: based on betweenness and flag-movements" and an exposition was opened of his recent scientific publications, etc. Upon organisation of the Division, June witnessed celebration of the 80th anniversary of Henno Aherma, veteran Director of the Special Construction Bureau of the Academy of Sciences.

Members of the Division represented the Academy and the Division in several decision-making bodies for science administration (see "Membership" p. 16).

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\* Composed on base of materials submitted by Heads of the Divisions Peeter Saari, Rein Küttner, Ilmar Koppel and Peeter Tulviste.

## DIVISION OF INFORMATICS AND ENGINEERING

In 2009, four meetings of the Division were held.

February 2 – execution of the plan of the Division for 2008 and the working plan for 2009 were discussed, as well as cooperation with the Estonian Association of Engineers in connection with its planned association with the Academy. The meeting discussed the situation evolved for the time being in connection with planned preparation for evaluation of science. The Ministry of Education and Research was suggested to delay the intended evaluation process for a year, so that it could be better prepared.

June 15 – meeting discussed candidates for the Nikolai Alumäe Medal. It was decided to second the proposal of the Estonian National Committee for Mechanics to present Member of Academy Hillar Aben as a candidate for the Nikolai Alumäe Medal of the Estonian Academy of Sciences for 2009.

September 11 – meeting discussed candidates for President of the Estonian Academy of Sciences. At secret ballot, Member of Academy R. Villems won 12 votes in favour, coming from 13 Members of Academy attending. At discussion of candidates for new Members of Academy in exact sciences and economics, 13 members of the Division voted in favour of both A. Freiberg and U. Varblane.

October 26 – Division discussed election of the Head for the following period. T. Soomere and E. Mellikov were proposed as candidates, of whom by secret ballot Tarmo Soomere was elected Head of the Division for the next period. The meeting also heard the paper by Member of Academy A. Ots on current developments in oil shale energy and related issues.

Several events of the Academy were held upon organisation and with participation of members of the Division, incl. an academic lecture “Polarised light to perform glass strength measurements: why is glass no longer shattering?” (H. Aben), two seminars “On Estonian cyber security” (E. Tõugu) and “New directions in science. Complex systems – growth and manifest behaviour” (L. Mõtus). Several other specialist events were arranged, e.g. an international seminar and Summer School in Tallinn by the centre of excellence CEBE (chief organiser R. Ubar), the 9th Glass Stresses Summer School at the House of Cybernetics in Tallinn (chief organiser H. Aben), an international oil shale symposium in Tallinn (co-organiser A. Ots), the 7th Baltic Sea Marine Congress at Tallinn University of Technology (co-moderator T. Soomere), a seminar “Perspectives of dynamics of global systems” at the Academy House and the Institute of Cybernetics (chief organiser T. Soomere) and an international conference “Complexity of Nonlinear Waves” in Tallinn (T. Soomere).

Members of the Division participated in the editorial boards of several journals, e.g. “Estonian Journal of Engineering”, “Applied Mechanics Re-

views”, “Oil Shale”, “Thermal Science”, “Thermal Engineering”, “Applied Mechanics”, “Journal of Marine Systems”, “Academy”, etc.

Members of the Division represented the Academy and the Division in several decision-making bodies for science administration (see “Membership” p.16).

#### DIVISION OF BIOLOGY, GEOLOGY AND CHEMISTRY

In 2009 an extended meeting of the Board of the Division, two electronic meetings or votes of the Division and three meetings of the assembly of the Division were held.

January 7 – extended meeting of the Board discussed the activity and annual report of the Division for 2008, the working plan for 2009 and preparation of the meeting of the assembly of the Division and other issues.

January 13 – assembly of the Division discussed and approved a report for 2008 and a working plan for 2009. Under scrutiny were problems related to population census to be held in 2010–2011.

September 14 – on agenda of the assembly of the Division were elections of the President of the Academy for 2009–2014 and filling two vacant positions of Academy membership in the Division of Astronomy and Physics and this Division. After a lively discussion and secret preferential ballot, which could also be attended by previously filled out/mailed sealed envelopes submitted by members of the Division not present (sick, out of the country, etc.). R. Villem was approved to the office of President of the Academy by unanimous vote (18 out of 18). At recommendation voting for the Academy membership vacant position in the first Division the votes were 12 for A. Freiberg, 5 for E. Oja, 1 for M. Raidal and 0 for E. Saar. U. Varblane standing for membership in the humanities got 12 votes in favour. The Division supported continuation of the current Head of the Division in the office for the following period 2009–2014.

October 15 – assembly of the Division supported association of the Estonian Biochemical Society with the Academy and re-elected I. Koppel as Head of the Division for the period 2009–2014.

November 25 – General Assembly elected several members of the Division to the new Board: M. Ustav (Vice-President), A.-E. Kaasik and M. Karelson (Non-Executive Members) and I. Koppel (Head of the Division).

Members of the Division represented the Academy and the Division at several decision-making bodies for science administration (see “Membership” p. 16).

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

## DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES

Four meetings were held by the Division, in case of need in the form of an inquiry for opinion as well. The meeting held on 17 April specified the title of the vacant position for the Academy membership. The inquiry for opinion held on 4 June gave full support to association of the Estonian Semiotics Association with the Academy. The meeting held on 10 September specified the title of vacancy in the Division and supported Professor of the University of Tartu Urmas Varblane as a candidate for membership, it also expressed its opinion regarding filling of the vacancy of the first Division. The assembly of the Division also found that Richard Villems, who had initiated influential undertakings and legislative amendments should continue as President in order to fully complete the reform plan during his second period in office. The meeting held on 4 November discussed the working plan for 2010 and elected Urmas Varblane as Head of the Division.

April 13–14 – events of the 100th anniversary of the Estonian National Museum in Tartu were attended by members of the Division as well as members of the Board of the Academy.

May 14 – Science Day was held upon organisation of the Division in Ida-Virumaa. In May the Division organised several school lectures at Ahtme, at Narva Pähklimäe Gymnasium and various schools in Hiiumaa, with two papers delivered by President of the Academy Richard Villems.

May 19 – conference and exposition “Gold has stuck in footsteps” dedicated to the 90th anniversary of a deceased Member of Academy Juhan Peegel was opened at the University of Tartu Library. The paper “Juhan as folklore researcher”, on the ground of Juhan Peegel’s book “Nimisõna poeetilised sünonüümid eesti regivärssides” (poetical synonyms of noun in Estonian folk poetry)” was delivered by Member of Academy Arvo Krikmann. On June 27 members of the Division attended the 42nd J. V. Veski Day “Name and its language”.

On September 9–10 the Estonian Literary Museum hosted the international conference “From language to mind 3” dedicated to Member of Academy Arvo Krikmann’s 70th anniversary, whose various sessions were attended by quite a few Members of the Division. The opening speech was delivered by Peeter Tulviste. The international seminar “Silverwhite Route: Following Pytheas and Lennart Meri” was held to commemorate the 80th anniversary of Member of Academy Lennart Meri on October 15.

December 15 – presentation of the book in the so-called blue series “Scientific thought in Estonia (V). The Humanities”.

December 17 – conference commemorating the untimely departed Member of Academy Andrus Park, followed by presentation of his book “End of an Em-

pire? A Conceptualization of the Soviet Disintegration Crisis 1985–1991” at the Academy House.

Members of the Division represented the Academy and the Division at several decision-making bodies for science administration (see “Membership” p. 16).

## **COUNCILS, COMMISSIONS**

### **ENERGY COUNCIL**

Chairman Member of Academy E. Lippmaa

In 2009 the Energy Council held two meetings: on April 6 and October 30 and drafted a letter of 05.11.2009 to the Government and the President of the Republic.

April 6 – meeting was attended by President of the Academy Richard Villems and Chairman of the Marine Commission Tarmo Soomere as guests. Members of the Council exchanged opinions over Estonian energy economy and plans for development of the electricity economy in the light of global chilling. Attention was drawn to the fact that climate change was not related to human activity and it was dangerous to espouse and go along with the philosophy of global warming. It was noted that the above position must be further elucidated in the press. Tarmo Soomere presented to the audience the environmental issues in connection with the report on assessment of the transboundary environmental impact of the Nord Stream gas pipeline. Also under scrutiny were opportunities and needs of Estonian nuclear energy. It was decided to hold a respective discussion by the Academy.

The need for oil shale-focused energy was substantiated and a decision was made to support it by building new large energy blocks and continuation of the Baltic Power Plant operation after modernisation of its furnaces. The issues of shale oil production and manufacturing proper diesel fuel on its basis were under discussion as well. That kind of oil refining is possible, however it would require application of rather complicated and expensive modern catalytic technology. Everything pertaining to the Finnish-Latvian gas pipeline was left open-ended.

October 30 – imaginary climate warming in the conditions of global chilling was discussed at the meeting. Endel Lippmaa presented to members of the Council a number of recently published scientific data, corroborating the presumption that within the past 30 years the global temperature had stayed constant and climate warming was not supported by evidence validation. The Council pointed out that in order to avoid wrong decisions, the fact must be duly taken into account both in everyday politics and energy-related deliberations spearheaded into the future. The matters related to increasing the share capital of the company Eesti Energia were also discussed. The Council found

that Eesti Energia as a strategic company of the state of Estonia must not be converted into a publicly traded company. From the point of view of the security of Estonia it is impermissible to take risks by privatisation of a strategic company. A respective document was drawn and submitted to the President and the Prime Minister of the Republic.

The most influential decision of October 30 was: refrain from supporting the hasty and unprofitable privatisation of Estonian power plants and oil shale resources through entering the stock exchange. By now the Government of the Republic and the majority of Riigikogu have dropped that perilous idea. The attitude towards building of wind parks has become more circumspective as well.

May 26 – the Academy hosted an information meeting held upon the initiative of the Energy Council “Nuclear energy and Estonia”.

October 27 – within the framework of visits-discussions a meeting of the Board and the Energy Council of the Academy with members of the Management Board of the company Eesti Energia was held.

#### MARINE COMMISSION

Chairman Member of Academy T. Soomere

Primary goals of the Marine Commission of the Academy include representation of Estonian marine sciences in the ESF Marine Board and activities as an advisory panel in Estonia. In the reporting year one meeting was held. The work in the substantial matters was mainly focused on the analysis of documentation concerning assessment of the trans-boundary environmental impact of the Nord Stream gas pipeline. Upon the initiative of the Commission addresses were drafted to the President and the Prime Minister of the Republic as well as a communication to institutions responsible for trans-boundary environmental impact assessment in the states surrounding the Baltic Sea (see Appendix 1 p.180). The results of the analysis were simultaneously presented at national as well as the Baltic Sea Region and EU levels. On ground of the analysis, the European Research Advisory Board included a recommendation into its memorandum to the new members of the European Parliament and the EU Commission to handle with particular attention the impact of large scale engineering-technical works having significant trans-boundary impact on the marine environment. Members of the Marine Commission participated as experts in the formation of opinion in the Riigikogu committees, in a special plenary session of the Riigikogu and as Estonian representatives in several international conferences.

The extended meeting of the Commission on March 3 was additionally to members of this Commission attended by Endel Lippmaa (Energy Council), Ivar Puura (Nature Protection Commission), Toomas Veidebaum (Institute for

Health Development), Priit Ennet (Vikerraadio) and Hubert Veldermann (Kuku Raadio) as guests. The meeting discussed as a pivotal topic the issues related to planning of the Nord Stream gas pipeline. The meeting heard T. Soomere's information about increasing awareness of Nord Stream problem range in academic circles and development of the processes concerning assessment of the respective environmental impact. The meeting discussed the general level of the latest work version of the Commission and potential risks affecting Estonia, finding that the state of Estonia must rapidly react in connection with the report of the Commission soon to be made public. The meeting took cognizance of the fact that the Ministry of Economic Affairs and Communications had formed a marine policy committee, with T. Soomere as the invited representative of the Academy. E. Lippmaa reviewed the hazards caused by chemical weapons sunk into the Baltic Sea and formulated the need to recover from the European Union the existing (incl. confidential) data on submerged armament. I. Puura provided a review on toxic substances in bottom sediments of the Gulf of Finland, incl. dioxins and methyl mercury contained therein. T. Soomere informed the audience about marine physics and dynamics related problems involved by laying the pipeline. The Chairman of the Commission was empowered to take necessary radical steps in the name of the Commission at national, international and EU levels.

#### NATURE PROTECTION COMMISSION

Chairman of the Board Professor Urmas Tartes

The major result of 2009 was completion of a new list for the Red Data Book of Estonia. The data of the Red List are available to public at the Biodiversity Website of the Natural History Museum at the University of Tartu <http://elurikkus.ut.ee/prmt.php?lang=eng>.

The traditional Day with Papers, the 48th in succession, held by the Commission on May 27, was dedicated to drawing conclusions on the work related to the Red List. The topic on the agenda of the Day was "The Red Data Book – mirror of our nature". Honour was conferred on the Laureate of the Kumari Award 2009 Member of Academy Hans Trass, the only surviving founding member of the Nature Protection Commission. Papers were delivered by compilers of the book Urmas Tartes, Ülle Kukk, Erich Kukk, Erast Parmasto, Tiina Randlane, Vilju Lilleleht, Piret Pappel, Uudo Timm. Protection of rare plant types and botanical gardens was the topic of speech made by Heiki Tamm.

The Commission kept its commitment to protection of the Baltic Sea. Upon the initiative of Ivar Puura it was engaged in the activities of the Working Group on Transboundary Environmental Impact Assessment for the Nord Stream Gas Pipeline, whereby its possible hazards were brought under the

notice of the Government, the Ministry of the Environment and the wider public.

Issues related to protection of the Nabala Karst area were discussed at the meeting of the Board on December 5. The meeting was among others attended by Member of Academy Anto Raukas.

The Commission helped the Ministry of the Environment in connection with celebration of the 100th anniversary of Estonian nature protection in 2010.

Member of Academy Hans-Voldemar Trass was elected as Laureate of the Kumari Nature Conservation Award 2009. An exhibition in honour of the laureate was on display at Tallinn Zoo, where the hand-over ceremony of the Award was conducted on May 11.

Several public expositions were organised during the year to celebrate anniversaries – Vilju Lilleleht 70, Inno Salasoo 80, Loit Reintam 80 as well as an exhibition to reflect the life's work of Dr Hugo Salasoo, renowned as the founder of the Estonian Archives in Australia.

#### THE COMMISSION OF METEORITICS

Chairman Member of Academy Anto Raukas

Members of the Commission participated in the field work activities involved with the study of the Keuruselkä Meteor Crater in Finland (Jüri Plado), continued research of meteoritic pulverised substance from samples taken from the Piila bog and the Reo cross-section in Saaremaa (Reet Tiirmaa) and conducted expert surveys on depression forms of disputed origin in Kiili Parish in Harju County and in Mõedaku Village in Lääne-Viru County (Enn Pirrus).

Anto Raukas investigated jointly with the French scientist Francois Marin the mineral composition of the sediments in the Kiviõli semi-coke waste mounds to discover in those sediments of man-made origin such high-temperature minerals, which are usually considered the endemic minerals of meteorite craters (lechatelierite, etc.).

Under supervision of Juho Kirs three Bachelor Papers on the rocks of the Finnish hypothetical Söderfjärden and Lumparn Craters were completed at the University of Tartu.

Kalle Suuroja composed a travelling exposition “Neugrund Meteor Crater – a world wonder in our local waters”, which was on display at the Estonian Maritime Museum in Tallinn and at the Natural History Museum in Tartu.

Members of the Commission attended and presented papers at various international conferences and seminars.

A manuscript of the book “Meteorite craters as geotourism targets in the Central Baltic area” was completed by J. Plado, H. Bauert, A. Raukas and S. Wil-



Imann within the framework of the “Fostering geotourism on Central Baltic islands” project in the INTERREG IV A co-operation programme.

A Meteoritics Study Day was organised to the interested inhabitants of Saaremaa upon the initiative of the Kaali Visiting Centre and the Commission of Meteoritics there. R. Tiirmaa served during the whole tourist season as a guide of the Kaali meteorite field, presenting to tourists local craters and providing information about meteorite falls.

## ACADEMY EVENTS

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### CONFERENCES

February 12 – University of Tartu hosted the conference “Biodiversity and evolution” dedicated to the 200th anniversary of Charles Darwin organised by the Natural History Museum of the University of Tartu, Centres of Excellence in biological diversity and genomics, Science Centre AHHA and the Estonian Academy of Sciences, where top scientists deliberated, two centuries after Darwin’s birth over key issues of the 21st C. and the species. The conference featured intriguing papers as well as a panel discussion. Papers were delivered by Foreign Member of the Estonian Academy of Sciences Charles Kurland (Uppsala University), Mairo Remm (Centre of Excellence in Genomics), Urmas Kõljalg (Centre of Excellence in Biological Diversity Research and the Natural History Museum of the University of Tartu), participating at discussions were Professors of the University of Tartu Peeter Hõrak, Urmas Kõljalg, Raivo Mänd, Mairo Remm, Toomas Tammaru and Richard Villems. The discussion was moderated by Ivar Puura.

March 25 – conference “200 years of wondering at the Universe in Estonia” was held jointly by the Academy and Tartu Observatory, marking the International Year of Astronomy 2009.

Papers were presented by:

- T. Viik* The incipient years of Estonian astronomy;
- L. Leedjärv* Astronomy in Estonian society and culture;
- K. Annuk* International Year of Astronomy 2009;
- E. Tempel* How galaxies generate and develop.

Urmas Sisask was playing music, inspired by the stellar canopy.

September 10–11 – Estonian Literary Museum in Tartu hosted the international interdisciplinary conference “From Language to Mind 3”, to celebrate Arvo Krikmann’s 70th birthday. Over the time his main research topics have been the history of short forms of Estonian and Fenno-Baltic folklore, historiography and textology (incl. research of older sources of Estonian phraseology and popular rhetoric); structural levels of the short forms of folklore and their connections: syntax, logic, modalities, image semantics; paremiological classifications; theory of figurative speech, humour theory; geographical dissemination of folklore and dialectal lexis etc. During the two-day conference over 40 papers, considering Arvo Krikmann’s research directions were heard from Estonia, Finland, Latvia, Lithuania, Russia, Sweden, Israel, Portugal, Italy, England, Bulgaria, Hungary and Nigeria. Areas of topics included short

forms of folklore (proverbs, maxims, riddles), the theory of figurative speech, humour theories and popular humour.

Main organiser of the conference was the Department of Folkloristics at the Estonian Literary Museum.

November 4 – Academy House hosted a conference of the winners of the student research paper contest. The Academy recognizes by monetary prizes for research the students having attained outstanding results in research and they are encouraged to engage in independent research also in the future. The conference was opened by President of the Academy Richard Villems, diplomas were handed over to laureates.

Authors of prize-winning works delivered their papers:

- P. Pikksarv* University of Tartu, Ultra-short optical impulses in diffraction edge wave theory and their experimental registration;
- V. Žukova* Tallinn University of Technology, Possibilities of Estonian coastal stations at estimating the sea wind;
- E. Oras* University of Tartu, Hidden treasures of the Estonian Middle Iron Age;
- I. Vinkel* Tallinn University, On changes of feeling created by hearing the recordings of natural sound backgrounds in the test room.

## SEMINARS

May 20 – seminar “Internationalisation of Science” was organised by the Estonian Academy of Sciences. The seminar was prompted by the need to analyse the situation of the Estonian research landscape in connection with implementation of the ideas of the European Research Area (ERA). The analysis on substance of the case is especially topical in the light of the latest moves of the European Commission, emphasising joint programmes and elucidating the impact of international cooperation on the priorities and science policy decisions of member states.

Papers were presented by:

- K. Haller* International cooperation – unavoidable prerequisite of science;
- J. Allik* Which international cooperation is useful for Estonia?
- A. Koppel* What should be the role of the state in internationalisation of science?
- R. Vaikmäe* Goals and role distributions of internationalisation of the University science;
- E. Quak* Marie Curie project CENS-CMA – facts and commentaries;
- K. Pajusalu* Internationalisation of the national: research of Estonian and cognate languages.

Discussion following the papers was moderated by Jüri Engelbrecht.

All speakers underlined that internationalisation is not a goal in itself. Internationalisation is a natural aspect to research activities not only due to increasing the critical mass (which is undoubtedly necessary), but just due to the value-added generated. It is especially evident in interdisciplinary areas. The strong research centres in Estonia have already attracted many scientists from other countries as top specialists, post-doctors and doctoral students. The necessary condition is however visibility and the environment favourable to research work and everyday life. For enhancing the visibility, our top scientists have an essential role to play, however the modern infrastructure is also necessary. Thanks to the support funds the situation of the infrastructure is becoming better. The Ministry of Education and Research has also launched a number of programmes, which favour employment of foreign scientists to proceed their work in Estonia, and occupation of our scientists (especially of the younger generation) elsewhere.

Lecturers and participants at discussion identically highlighted a number of problems: research work environment and its “friendliness” and solution of issues of everyday utilities, inflexibility of the funding system, incomplete use of measures, irregularity of salaries (in particular after termination of a given programme), etc.

Two success stories – one in the area of exact sciences (Centre of Analysis of Non-linear Processes of the Institute of Cybernetics at Tallinn University of Technology) and the other in the Humanities (Institute of Estonian and General Linguistics at Tallinn University) clearly asserted the surplus value generated from attracting foreign scientists to our research. Their experience is a valuable example for us.

May 26 – Estonian Academy of Sciences hosted the information meeting Nuclear Energy in Estonia, moderated by Leo Mõtus. Among the invited guests were Members of Academy, the support group of the Estonian nuclear station at the Riigikogu, representatives of the Riigikogu committees and fractions, representatives of ministries, county governors, of Tallinn city authorities and Estonian universities. The meeting was opened by Richard Villems.

Papers were presented by:

- E. Lippmaa* Nuclear energy in Estonia and the world;
- A. Tropp* Estonian energy in cross-fire of market and politics;
- K. Kallemets* Nuclear energy’s economical considerations for Estonia;
- E. Kisel* Nuclear energy’s potential role in development of the Estonian power industry.

Public discussions heretofore held in Estonia have focussed on political and psychological problems, and to a lesser degree on the economical arguments relating to the development of Estonian nuclear energy. In view of the absence of a final political decision and respective legislation in Estonia, such approach has been reasonable. Evidently the same direction is to be pursued

further on, in order to clarify to the whole Estonian population the essence of nuclear energy, the related risks and alternatives.

Because in case of nuclear energy it is the matter of high technology and science intensive area, besides informing the people, we must proceed to prepare also for the discussion of economic and technical problems, demanding specific knowledge and carried out in a narrower circle. They would include a comparative analysis of existing reactor types and nuclear station projects and those appearing in the market by 2020, the analysis of capacity and feasibility of fulfilment of possible subcontracts commissioned from Estonia, the need for building, station's exploitation and repairs personnel and organisation of training, etc.

The perspective goal of the information meeting was to find out the areas of interest for discussions needing specific knowledge, in order to launch, in parallel with preparation of political and legislative decisions, the discussion of time consuming economic and technical-scientific problems and upon need the development of respective competence in Estonia.

August 18 – seminar “Perspectives of dynamics of global systems” was held. The event was organised by Marine Commission and Nature Protection Commission of the Academy of Sciences and the Energy Council in cooperation with FP7 future technologies network “Global Systems Dynamics and Policies”. Papers were delivered by Klaus Hasselmann (Director Emeritus of Max Planck Institute for Meteorology), Leo Mõtus (Laboratory of Proactive technologies, the Academy of Sciences) and Steven Bishop (University College London).

At the ensuing panel discussion it was reasoned, which are, on one side the possibilities of scientists and their perspectives to find the essential information hidden in complicated systems and to deliver it to decision makers, and on the other side, the expectations and needs of decision makers regarding the quality and reliability of such information. The seminar considered the examples of several different complicated systems, e.g. climatic changes, spread of epidemics, energy supply and its security, issues of development of metropolises and dynamics of coasts and ecosystems.

October 9 – seminar of the series New Trends in Research – Complex systems: growth and manifested behaviour. The seminar considered different aspects of natural and man-made environment complex systems, which may affect control of their growth and/or their manifest behaviour. Papers were presented by Susan Stepney and Julian Miller (York University), Farhad Arbab (Leiden University) and Leo Mõtus (Laboratory of Proactive Technologies).

October 15 – Academy hosted the seminar “Silverwhite Route: Following Pytheas and Lennart Meri” to commemorate President Lennart Meri's 80th anniversary. The seminar was opened by Jüri Engelbrecht.

The programme included the following papers:

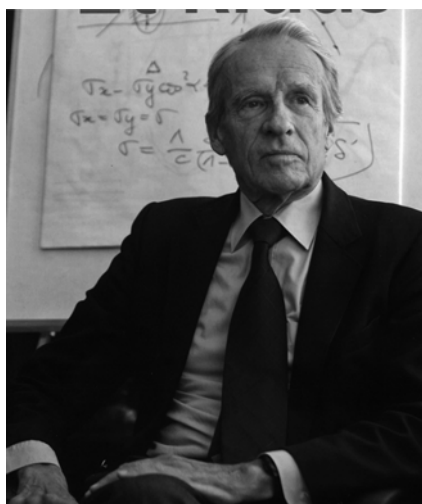
- U. Sutrop* (Institute of the Estonian language), Lennart Meri's silver-white world;
- A. Costopoulous* (McGill University), Climate changes in Canada – myths and reality;
- R. Villems* (Estonian Biocentre), The Uralic speaking people in North-Eurasia: a view from a geneticist;
- S. Veski* (Institute of Geology at Tallinn University of Technology), The impact of impact: Kaali meteorite fall;
- M. Kõiva* (Estonian Literary Museum), Reflections of catastrophes in folklore and catastrophe folklore;
- J. Mittelstrass* (Konstanz University), On transdisciplinarity.

## PUBLIC ACADEMIC LECTURES

The traditional series of “Estonian Academy of Sciences public academic lectures” was complemented in 2009 with two lectures:



6 May  
Member of Academy *Raivo Uibo*  
“Changing environment and our immune system”



18 November  
Member of Academy *Hillar Aben*  
“Polarised light to perform glass strength measurements – why is glass no longer shattering?”

September 16 – Academy House hosted the lecture by Member of the Heidelberg Academy of Sciences *Volker Sellin* “Monarchy and Nationalism”.

## MEETINGS-DISCUSSIONS

March 13 – delegation of the Estonian Academy of Sciences visited the Bank of Estonia, in the framework of the series of meetings-discussions. An excursion introducing various bank premises, was conducted by Liina Kulu, Economics Training Manager and Development Coordinator of the Bank of Estonia. Members of the Academy were presented a synopsis of the Estonian banking system and informed about the tasks and activities of the Bank of Estonia. In greater detail, they were introduced with the history of the time-honoured buildings, their construction and architecture.

The paper “On world economy and current situation of the Estonian economy” was delivered by Martin Lindpere, Deputy Head of Department of Monetary Policy. He deliberated on various crises in the world economy, their duration and depth. The Estonian economy depends on the welfare of our trading partners. The key issues of the economic development in the forthcoming years are the lesser credit resources, ongoing competitiveness, labour flexibility and adoption of the euro.

The event was attended by Members of Academy Hillar Aben, Jüri Engelbrecht, Dimitri Kaljo, Rein Küttner, Georg Liidja, Enn Mellikov, Leo Mõtus, Arvo Ots, Enn Tõugu and Mihkel Veiderma.

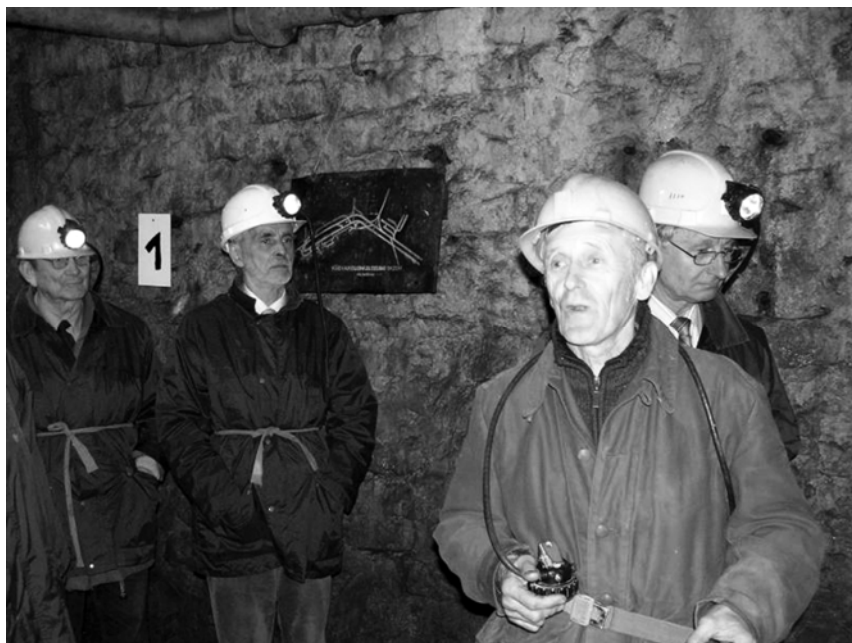
May 14 – a Science Day of the Academy was held in Ida-Virumaa. It was already the tenth undertaking in the traditional series of science days.

The Science Day started at Jõhvi, in the hall of the Ida-Virumaa County Government, where the following papers were delivered:

- Ida-Virumaa County Governor *R. Breivel*, On Ida-Virumaa’s paths of development;
- Member of Academy *R. Villems*, On the history of the Estonian Academy of Sciences and its mission;
- Member of Academy *R. Villems*, The genetic origin of East-Slavs in the Eurasian context.

The County Governor introduced the formation of the Ida-Virumaa structure in the period of regained independence and ethnic problems in the county. Under discussion was also the Ida-Virumaa development strategy for 2005–2013. The President of the Academy spoke about the historical formation of the Estonian Academy of Sciences. The subject of his second paper was habitation of Eurasia by modern humans. From the County Government the delegation proceeded to the Kohtla-Järve Ahtme Gymnasium, where Member of Academy Jaan Einasto spoke to school students about the structure of the Universe.

In the afternoon the Mäetaguse Parish Governor Aivar Surva presented to Members of Academy the splendid restored Mäetaguse manor, its impressive Classicist manor house with a richly decorated interior and a hotel accommodated in the stable-coach shed with a newly opened bathing house. Further, the delegation drove to the Kohtla Mining Park-Museum, where the day was concluded with a very special excursion in the underground mine workings, with lifelong miner Tõnu Kiiver acting as the guide.



**In Kohtla Mining Park-Museum**

From left in the back: Members of Academy Jaan Einasto, Richard Villems, Agu Laisk, in front the guide Tõnu Kiiver

The memorable Science Day was attended by Members of Academy Jaan Einasto, Jüri Engelbrecht, Ain-Elmar Kaasik, Agu Laisk, Ülo Lepik, Ülo Lumiste, Udo Margna, Jüri Martin, Peeter Saari and Richard Villems.

October 27 – within the framework of visits-discussions, a meeting of the Board of the Academy and members of the Energy Council was held members of the Management Board of the company Estonian Energy. Chairman of the Management Board Sandor Liive provided an overview of the plans for



technical and organisational development of the Estonian Energy group of companies and emphasised, among other issues the importance of the engineer's profession and the need for its rebirth in Estonia. Member of the Management Board Raine Pajo presented different solutions for electricity generation, the possibilities of balancing their output in Estonia and the key issues of energy security. The plans for the future of the company Elering OÜ, concerned with energy transmission were elaborated on by Member of the Management Board Kalle Kilk, under whose guidance the delegation had an opportunity to examine the Elering OÜ control centre.

The visit and discussion were attended by Members of Academy Lembit Krumm, Rein Küttner, Endel Lippmaa, Leo Mõtus, Arvo Ots, Anto Raukas, Enn Tõugu and Mihkel Veiderma and members of the Energy Council Arvi Hamburg, Leevi Mölder, Ülo Rudi, Andres Siirde and Mati Valdma.

# **POPULARISATION OF SCIENCE**

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

“The Falling Apple” (first transmitted in 2008) is a weekly science programme, put on the air by Radio KUKU in co-operation with the Estonian Academy of Sciences, presenting and popularizing science and scientists, unique on the Estonian science landscape in this form. During the time it has been on the air the broadcast 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 broadcast is Margus Maidla.

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

- Centres of excellence in research;
- National Science Prizes of 2009;
- The young in science;
- Presentations of research institutions;
- Personal broadcasts devoted to outstanding scientists in connection with their anniversaries or special events;
- Estonian scientists with the highest citation rates;
- Influential conferences and seminars;
- Topical broadcasts;
- Memorial broadcasts.

### **ESTONIAN CENTRES OF EXCELLENCE IN RESEARCH**

Estonian eXcellence in Computer Science – Head of the Centre, Senior Research Scientist of the Institute of Cybernetics, Tallinn University of Technology (TUT) Tarmo Uustalu and Research Director of Cybernetica Ltd, Associate Professor at the University of Tartu (UT) Peeter Laud; Centre for Integrated Electronic Systems and Biomedical Engineering – Professor of the Department of Computer Engineering at TUT, Member of Academy Raimund Ubar and Leading Research Scientist Extraordinary of the Department of Electronics at TUT Mart Min; Centre of Excellence in Chemical Biology – Head of the Centre, Professor of the Institute of Technology at the UT Tanel Tenson and Professor of Organic Chemistry at TUT Margus Lopp; Centre of Excellence in Theory of Culture – Head of the Centre, Professor of Archaeology at UT Valter Lang and Professor of Cultural Semiotics at UT Peeter Torop; Centre of Excellence in Genomics – Head of the Centre, Professor of Bioinformatics at UT Mairo Remm and Professor of Biotechnology at UT, Director of the Estonian Genome Project Andres Metspalu; Centre of Excellence for Translational Medicine – Head of the Centre, Professor of Physiolo-

gy at UT Eero Vasar and Acting Director, Professor of Toxicology at UT Al-  
len Kaasik; Frontiers in Biodiversity Centre of Excellence – Head of the  
Centre Professor Martin Zobel and Senior Research Fellow Asko Lõhmus.

#### LAUREATES OF NATIONAL SCIENCE PRIZES FOR 2009

Laureates of the Lifetime Achievement Award – Senior Researcher of Polli  
Horticultural Research Centre of the Institute of Agrocultural and Environ-  
mental Sciences at the Estonian University of Life Sciences, Doctor of  
Agriculture Kalju Kask, Senior Researcher of the Institute of Geology at  
TUT, Member of Academy Dimitri Kaljo; for outstanding research and devel-  
opment resulting in an innovative product – Head of Laboratory of the In-  
stitute of Cybernetics at TUT, Member of Academy Hillar Aben; in engineer-  
ing – Leading Research Scientist of the Department of Materials Science at  
TUT Malle Krunks; in geo- and biosciences – Professor of Botany of UT  
Meelis Pärtel; in chemistry and molecular biology – Professor of Stockholm  
University, Professor Extraordinary of UT Ülo Langel and research team  
member Professor Margus Pooga; in the humanities – Senior Researcher of  
the University of Tartu Library Arvo Tering; in exact sciences –Head of  
Laboratory of the Institute of Physics at UT, DSc. in Physics and Mathematics  
Aleksi Šerman; in medicine– Professor of Molecular Immunology at UT Pärt  
Peterson; in social sciences – Professor of the Chair of Economic Modelling  
at UT Tiiu Paas; in agricultural sciences – Dean of the Faculty of Science at  
TUT, Professor of the Department of Gene Technology Erkki Truve and As-  
sociate Professor of the Department Cecilia Sarmiento.

#### THE YOUNG IN SCIENCE

Institute of Cybernetics at TUT – Senior Research Scientists Marko Vendelin  
and Pearu Peterson; Institute of Physics at UT – Researcher Extraordinary  
Martti Pärs and Laboratory Assistant Mihkel Rähn; Institute of Chemistry at  
UT – Researchers Extraordinary Anu Ploom and Tavo Roman; Institute of  
Technology at UT – Researcher Meelis Kadaja and Researcher Extraordinary  
Toomas Silla; National Institute of Chemical Physics and Biophysics – Re-  
searcher Mario Kadastik and Fellow Ilja Livenson;

#### PRESENTATION OF ESTONIAN RESEARCH INSTITUTIONS AND SCIENTISTS

Institute of Technology at UT – Director Erik Puura; Institute of Cybernetics  
at TUT – Director Jaan Penjam and Senior Research Jaan Kalda; Institute of  
Molecular and Cell Biology at UT – Director, Professor Toivo Maimets;  
Centre for Ethics at UT – Head, Professor Margit Sutrop; Institute of Mate-  
rials Science at TUT – Director, Member of Academy Enn Mellikov and Se-  
nior Research Scientist Jüri Krustok; Centre for Nonlinear Studies (CENS) –  
Head, Member of Academy Jüri Engelbrecht; Estonian National Library –  
Director General Janne Andresoo and Director of Collections Ülle Talihärm;

PERSONAL BROADCASTS devoted to outstanding scientists and scholars in  
connection with their special events

Member of Academy Jaan Einasto – Grossmann Prize Laureate; Member of Academy Ain-Elmar Kaasik – 75th anniversary; Member of Academy Mihkel Veiderma – 80th anniversary;

#### ESTONIAN SCIENTISTS WITH THE HIGHEST CITATION RATES

Professor of the Estonian University of Life Sciences, ecophysiological Ülo Niinemets; Professor of the Institute of Physics at UT Jaan Aarik and Senior Researcher at UT Kaupo Kukli.

#### INFLUENTIAL CONFERENCES AND SEMINARS

“200 years of wondering at the Universe in Estonia” – Director of Tartu Observatory at UT Laurits Leedjärv; “On internationalisation of scientific research” – President of the European Federation of National Academies of Sciences and Humanities “All European Academies” (ALLEA), Member of Academy Jüri Engelbrecht and Vice-Rector for Research at TUT Rein Vaikmäe; 9th Annual International Gene Forum – Director of the Estonian Genome Project, Professor of Biotechnology at UT Andres Metspalu and Professor of Molecular Biotechnology at UT Ants Kurg; International Oil Shale Symposium – Head of the Chair of Thermal Power Equipment at TUT, Professor Andres Siirde; Research and Innovation Media Conference “Bermuda kolmnurk” (Bermuda triangle) – Professor of Bioinformatics at TUT Madis Metsis and Editor-in-Chief of City Papers Group, founder and Head of Educational Media Tiina Kangro; “Complex systems: growth and manifest behaviour” – Secretary General of the Estonian Academy of Sciences, Member of Academy Leo Mõtus; international seminar “Silverwhite Route: Following Pytheas and Lennart Meri” – Director of the Estonian Institute Mart Meri and Director of the Institute of the Estonian Language, Professor Urmas Sutrop; conference “Origins of biodiversity and informatics” – Professor of Botany at UT, Director of the Natural History Museum Urmas Kõljalg and Project Leader Ivar Puura;

#### TOPICAL BROADCASTS

On CERN – Senior Researcher of the National Institute of Chemical Physics and Biophysics, Research Professor of the Estonian Academy of Sciences Martti Raidal and Estonian team member, Researcher of the National Institute of Chemical Physics and Biophysics Andi Hektor; on Planet Earth Year – Member of Academy Dimitri Kaljo and Professor of Paleontology and Stratigraphy at UT Tõnu Meidla; on Estonian research organisation – Head of the Research Policy Department at the Ministry of Education and Research Indrek Reimand and Senior Researcher of Tartu Observatory Tõnu Viik; on studies in the field of antibodies – biochemist Armin Sepp, Professor of Physics at Montana University Aleksander Rebane; on report of the Nord Stream environmental impacts 1 – Members of Academy Endel Lippmaa and Tarmo Soomere; on report of the Nord Stream environmental impacts 2 – Member of the Nature Conservation Commission of the Estonian Academy of Sciences, geologist Ivar Puura and Member of the Marine Commission, marine biolo-

gist Kalle Olli; on population genetics and evolution in genera – President of the Estonian Academy of Sciences Richard Villems.

#### MEMORIAL BROADCAST

Member of Academy Uno Mereste (27.05.1928–6.12.2009).

The total number of broadcasts in 2009 was 52.

Broadcast times:

- originally on the air on Sunday at 15.00–16.00;
- first repetition on Sunday at 21.00–22.00;
- second repetition on Thursday of the following week at 22.00–23.00.

The rating of listening of the programme has held its average weekly level – 29 000 listeners. Downloading of the Podcast has also preserved its average level – ca. 650 instances of downloading as per broadcast.

## **RESEARCHERS' NIGHT 2009**

Estonia participated for the fourth year in the series of the European Researchers' Night activities, aimed at presenting researchers and science-related issues to the wider public. In Estonia the events of the Researchers' Night 2009 on 25 September were co-ordinated by the Science Centre AHHAA. The Estonian Academy of Sciences as a project partner was responsible for the activities in Tallinn. The programme was conducted in several venues and with the involvement of the Estonian Children's Literature Centre as well as research scientists of Tallinn University, Tallinn University of Technology, the University of Tartu and the Estonian Literary Museum.

In the course of the day fascinating events were organised for school students as well as senior public keen on knowledge and science. Especially popular were workshops for participants aged 9–10 at the Estonian Children's Literature Centre, carried out by research scientists of the Estonian eXcellence in Computer Science (EXCS) under leadership of Tarmo Uustalu (Institute of Cybernetics at Tallinn University of Technology). Children got to know what were the things computer scientists were studying and whether they were enthralling. They were offered an opportunity to programme an animated cartoon or a computer game and to operate a cube robot. In the afternoon scientists and scholars (incl. Member of Academy Jaan Undusk), bibliographers, bibliophiles and writers talked about the history of Estonian ABC-books, the collection of ABC-books of the Estonian Children's Literature Centre and stories related to their own ABC-books. An exposition "Monument to the ABC-book" was open in the Treasury of Estonian Children's Literature. Tallinn University Assembly Hall was the venue for a discussion panel "An Esto-

nian never becomes extinct or version 2.0?” The dispute panel included a population scientist Luule Sakkeus, Senior Researcher of the Demography Institute at Tallinn University and a sports physiologist Kristjan Port, Director of the Institute of Health Sciences.

The Hall of the Estonian Academy of Sciences hosted a concert-science café “Folk music and chorals in the visualisation of a researcher”, opened with an interesting and instructive prelude by Toomas Siitan, Professor of the Estonian Academy of Music and Theatre and Chairman of the Musicological Society associated with the Estonian Academy of Sciences. Helen Kõmmus, Researcher of the Estonian Literary Museum and Ergo-Hart Västriku, Senior Researcher of the University of Tartu deliberated over the links between folk music and spiritual music: how and why do canonical church songs enter into their own in folk tradition, how are melodies and words adapted in traditional culture, how does a local or individual choral song tradition arise, how are musicians making use of scholarly collections and reinvigorate ancient music pieces. Music was performed by a folk ensemble Triskele.

Tallinn Science Centre Energy marked the Researchers’ Night with “The Future Scientists’ Day” and the AHHA Tallinn Centre, situated under the newly opened Independence Square, welcomed visitors all through the day.

Activities of the Researchers’ Night were Besides Tallinn held in Tartu, Pärnu, Viljandi, Rakvere, Valga and Narva. The Estonian National Broadcasting contributed to the project as a partner.

## ACADEMY MEDALS, AWARDS

### MEMORIAL MEDALS OF THE ACADEMY

#### NIKOLAI ALUMÄE MEMORIAL MEDAL

The Nikolai Alumäe memorial medal was for the first time conferred in 2005.

In 2009 the Board of the Estonian Academy of Sciences decided to confer the Nikolai Alumäe Memorial Medal upon

Member of Academy  
*Hillar Aben*

for productive research of international significance in the area of integral photoelasticity method and its implementation in glass industry. The medal was handed over at the session of the General Assembly of the Academy.



### MEDAL OF THE ACADEMY

In 2009, the Medal of the Estonian Academy of Sciences was awarded to  
Member of Academy *Vladimir Hizhnyakov* for outstanding achievements in physics and for services rendered to the Estonian Academy of Sciences;  
Member of Academy *Jaak Järv* for outstanding achievements in natural sciences and for services rendered to the Estonian Academy of Sciences;  
Dr *Helle Martinson* for longstanding and uncompromising activities towards of the Estonian science organisation, building of the research support system and protection of interests of science and scientists;  
Member of Academy *Enn Mellikov* for outstanding achievements in materials technology research and for services rendered to the Estonian Academy of Sciences;  
Member of Academy *Leo Mõtus* for significant contribution to the development, organisation and representation of the Estonian Academy of Sciences;

Senior researcher of material sciences of the Laboratory of X-Ray Spectroscopy of the Institute of Physics of the University of Tartu *Ergo Nõmmiste* for significant contribution to the development of physics and for services rendered to the Estonian Academy of Sciences;

Member of Academy *Peeter Tulviste* for representing the Academy on high level and for services rendered to the Estonian Academy of Sciences when performing his tasks;

Member of Academy *Raimund-Johannes Ubar* for outstanding achievements in computer engineering research and for services rendered to the Estonian Academy of Sciences.

## STUDENT RESEARCH PAPER PRIZES

In 2009 the Estonian Academy of Sciences received 108 research papers for the contest of the Student Research Paper Prize. The papers were examined by the Appraisal Committee of the Academy including: Georg Liidja (Chair), Arvo Krikmann, Udo Margna and Enn Tõugu. The Committee decided to award five first prizes of 10 000 kroons and seventeen second prizes of 5 000 kroons.

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

*Pille Link* (Julius-Maximilians-Universität Würzburg) Diploma Paper “Research on effect of d/l-threo- methylphenidate, d-threo- methylphenidate and l-threo-methylphenidate on cell level”;

*Ester Oras* (University of Tartu) Master’s Thesis “Middle Iron Age wealth depositions in Estonia”;

*Peeter Piksarv* (University of Tartu) Master’s Thesis “Ultrashort pulses within the boundary diffraction wave theory and their direct measurement”;

*Veera Žukova* (Tallinn University of Technology) Master’s Thesis “Possibilities of estimation of marine winds from Estonian coastal stations”;

*Martti Veldi* (University of Tartu) Master’s Thesis “Centres and communication in South-Eastern Estonia during the Iron Age in the context of Early Modern Era maps”.

Assessed as meriting the second prize were:

*Natalja Jepihhina* (Tallinn University of Technology, National Institute of Chemical Physics and Biophysics) Master’s Thesis “Construction and characterization of recombinant luminescent bacterial sensors for evaluation of compounds causing oxidative stress”;

*Jürgen Jänes* (University of Tartu) Bachelor Thesis “Detection of emission line stars from the Gaia space telescope”;



- Kadri Kallip* (University of Tartu) Master's Thesis "Institutional treatment of children and young people with special needs in the example of two Estonian institutions";
- Ann Karafin* (Tallinn University of Technology) Master's Thesis "Zn(II) and Cu(II) induced aggregation and fibrillation of Alzheimer's amyloid peptide";
- Maria Kesa* (Tallinn University) Bachelor Thesis "The effect of dorsal hump size on the hydrodynamic drag of the sockeye salmon *Oncorhynchus nerka* and the conflict between natural and sexual selection";
- Arno Kruusmann* (Estonian National Defence College) Master's Thesis "Analysis of combat effectiveness of the fireplan of an anti-tank platoon equipped with the MILAN Anti-Tank Missile System with the help of JCATS";
- Heidi Lepplaan* (Tallinn University) Master's Thesis "*Recht oder Macht?* Source critical analysis of the attitude of Baltic Germans to the land reform of 1919";
- Erki Lind* (Georg-August-Universität Göttingen) Master's Thesis "Taani-Halle mission in Tranquebar in transcultural perspective. Missioners as agents of culture?";
- Jelena Morozova* (Tallinn University) Bachelor Thesis "V. Nabokov's "Luzin defence": game and the basic concept of game";
- Indrek Must* (University of Tartu) Master's Thesis "Linear modelling of EAP actuators at large deformations";
- Kaja Pae* (University of Tartu) Bachelor Thesis "Electronic transitions in systems of strong vibronic coupling";
- Marju Robal* (Tallinn University) Master's Thesis "Extraction and degradation dynamics of algal galactans";
- Andri Saar* (Tallinn University of Technology) Master's Thesis "Nonblocking network communication framework for Scala";
- Maris Suits* (Estonian Art Academy) Master's Thesis "Early reinforced concrete in Estonian architecture from conservator's viewpoint";
- Inga Zaitseva-Pärmaste* (Tallinn University of Technology) Master's Thesis "Long-term variations of wave fields in the Estonian coastal waters";
- Kristi Vaher* (Tallinn University) Master's Thesis "The position of women in early and classical Greece in the perspective of matriarchism";
- Ivar Vinkel* (Tallinn University) Master's Thesis "On changes of feeling created by hearing the recordings of natural sound backgrounds in the test room".

Research prizes together with corresponding diplomas were handed over at the Conference for the winners of student contest papers on 3 November, hearing the papers of four prize winners.

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

In 2009 the Prize for Popularisation of Estonian Science was conferred for the fourth time as a joint prize of the Estonian Academy of Sciences, the Ministry of Education and Research and the Archimedes Foundation. The aim of the prize competition is to highlight popularisation of science, to spur the activities communicating research to public and to bestow recognition for outstanding work in that direction on individuals and teams.

The Appraisal Panel included Member of Academy Georg Liidja (Chair), Member of Academy and President of the Riigikogu Ene Ergma, Adviser to the Minister of Education and Research Sirje Kivi, Director of the Gifted and Talented Development Centre University of Tartu Viire Sepp, representative of the Estonian Academy of Young Scientists Dmitri Teperik, Member of the Board of the Archimedes Foundation Ülle Must and Editor-in-Chief of Linnaleht (City Gazette) of Haridusmeedia Ltd. Tiina Kangro.

In 2009 the Prize for Popularisation of Estonian Science was decided to be conferred as follows:

The first prize

- Jaak Kikas, for longstanding versatile and energetic science popularisation activities;
- Uno Veismann, for popular science writings in 2001–2008;
- Organizing of the robotics competition “Robotex 2008”.

The second prize

- NGO Emajõe Lodjaselts, for nature barge outing study trips on the Emajõgi;
- Tallinn Secondary Science School, for systematic popularisation of science among students of the school and wider public;
- Hergi Karik, for the book “Inventions and discoveries in chemistry”.

The third prize

- Mati Martin, for longstanding resultful science popularisation activities;
- Raivo Sell, for the activities in popularisation of mechatronics in 2008;
- Martin Vällik, for the portal skeptik.ee;
- Institute of Geology at Tallinn University of Technology (team leader Linda Hints), for the study days “From geoscientists to school students and teachers”;
- Hea Valik OÜ, for organising youth science cafes in 2008 in the cafe EAT;
- Linguistics working group (head of the working group Renate Pajusalu), for popularising linguistics among youth;

- NGO Winter Academy, for the students' science article competition and for organising the conference "Winter Academy".

45 candidates were presented to the competition, of them 11 individuals, 8 books, 6 media-projects and 20 activities.

In 2009 the prize fund of the competition was 320 thousand kroons. The winners of the first prize were awarded with 50 thousand kroons. The amount for the second prize was 26 000 kroons and for the third prize 13 thousand kroons.

Prizes were handed over at the Academy Hall on 22 August, the ceremony was followed by a discussion on the topic "Science and media – quo vadis?"

## **PUBLICATIONS OF THE ACADEMY**

Books published by the Academy in 2009:

- “Estonian Academy of Sciences Year Book XIV (41)” in Estonian\* and English \*;
- The thirteenth book in the series “National Science Prizes” (in Estonian), providing an overview of the prize winning scientists in 2009 and their research papers;
- “Scientific Thought in Estonia (V). The Humanities” (in Estonian)\*. The collection is dedicated to ten years of activities in the framework of the National Programmes “Estonian Language and National Culture” and “Estonian Language and National Memory” (1999–2008) coordinated by the Ministry of Education and Research. The Editors-in-Chief Jaan Ross and Arvo Krikmann while preparing the collection took care that every contribution were essentially connected with the above mentioned programmes and that the widest possible section of the Estonian Humanities would be in view. Hence the collection basically reflects either the linguistic or the historico-cultural aspect of the humanities. The first named is represented by articles of Martin Ehala, Tiiu and Mati Erelt, Maarika Teral, Sirje Rammo and Birute Klaas, Irina Külmoja, Meelis Mihkla and Ülle Viks and Andres Loopmann, the latter by those of Krista Aru, Rutt Hinrikus, Eneken Laanes and Valter Lang.

Journals of the Academy Publishers see p. 100.

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

## INTERNATIONAL SCIENTIFIC RELATIONS

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Estonian Academy of Sciences represents Estonia in several international scientific organisations bringing together science community on issues that cross specialities, at the level of top researchers and science policy makers. Worth mentioning of the events in 2009 are the following.

The European Federation of National Academies of Sciences and Humanities “ALL European Academies” is headed as President by Vice-President of the Estonian Academy of Sciences Jüri Engelbrecht, whose first period in office expired in 2009. Supported by consensus of member academies of ALLEA J. Engelbrecht was elected as President for a second term (2009–2012). The outcome of election was approved and made public by the Steering Committee of ALLEA at its session in London on 31 March. Under leadership of J. Engelbrecht the conception of the ALLEA Strategic Plan 2010–2015 was drafted, over which thoughts were exchanged by representatives of over 46 member academies (incl. Vice-President of the Estonian Academy of Sciences Ain-Elmar Kaasik) at the ALLEA Extraordinary Strategy Meeting held in Amsterdam in November 2009. Besides the goals set and lines of action designed to achieve them through ALLEA working groups and standing commissions (incl. establishing the “European Young Academy”), the Strategy Plan specifies the partnership relations of ALLEA and cooperation programmes both with decision-making panels and also with other European and world scientific organisations, e.g. traditional ESF/ALLEA high-level meetings, EASAC, EUA, IAP/IAC, ICSU and others. Through ALLEA the Academy has an opportunity to make statements with more authority in broader science strategy and science policy issues; as representative of ALLEA J. Engelbrecht also participates in the governing bodies of EASAC and the ESF.

The European Academies’ Science Advisory Council (EASAC) is constituted by authorised individual members of academies, of whom from Estonia comes Secretary General Leo Mõtus. Chairman of the Marine Commission of the Academy Tarmo Soomere is participating in the Environmental Steering Panel of EASAC. Professor of Pulmonology of the University of Tartu Alan Altraja was acting as an expert nominated by the Academy in WG on Drug-Resistant TB of EASAC. The report of the said working group was made public in March 2009 ([www.easac.org/document.asp?id=31](http://www.easac.org/document.asp?id=31)).

The Academy participates in the European Science Foundation (ESF) together with the Estonian Science Foundation. Payment of the membership fee takes place through the Academy, funding of participation in programmes through the Estonian Science Foundation. Representatives of the Academy and the Estonian 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 Estonian Academy of Sciences is a member organisation of the ESF Marine Board, represented by Chairman of the Marine Commission Tarmo Soomere. Academy participates, in the person of Assistant Secretary General Galina Varlamova, in the work of the ESF Member Organisation Forum “Science in Society Relationships”. In the year of 2009 Estonian scientists participated through the Estonian Science Foundation in 18 ESF Research Networking Programmes. The Estonian Science Foundation has joined several programmes of ESF EUROCORES (“European Collaborative Research”) in various stages of development, the funding of three successful Estonian participation projects whereof the Estonian Science Foundation continued; it will start funding of two projects in 2010.

European member organisations of the International Council for Science (ICSU) hold annual conferences, which have become traditional since 2002. The meeting of that year, attended by Vice-President Ain-Elmar Kaasik was held in September in Podgorica (Montenegro). Because the activity of ICSU as a world-wide organisation focuses mainly on problems presenting global interest and significantly also on supporting the R&D activities of the developing countries, European members of the ICSU have specific interests caused by historical-cultural and economical differences of the continent, and therefore such conferences within the ICSU framework are useful for exchange of opinions and coordination of positions.

Union Académique Internationale (UAI) unites the academies concerned with the so-called “soft” sciences and focuses its activity mainly on the humanities. The Academy is represented by Peeter Tulviste (up to December 2009 Head of Division of Social Sciences and the Humanities). As member of the Bureau of UAI (elected in 2007) P. Tulviste represented UAI in Bergen (Norway) at World Social Science Forum of International Social Sciences Council (ISSC) and headed the additional session on topics of the relations between the humanities and social sciences.

Participation of the Academy in international scientific organisations makes it possible to bring the scientific approach to issues vital for Estonia to the international level. For instance, topical are the environmental aspects of building large-scale pipelines (Nord Stream) in the Baltic Sea. Insofar as the work of the Academy’s Marine Commission focused in 2009 on analysis of the documentation of assessment of the trans-boundary environmental impact of the Nord Stream gas pipeline, the Chairman of the Commission T. Soomere informed international expert panels regularly about the respective developments and problems. The problem range was considered twice at sessions of the EASAC Environment Panel. As a result the EASAC included in the memorandum addressed to new members of the European Parliament and new Commissioners of the European Commission the following generalising message “... *governance and coverage issues in handling the transboundary environmental matters of large-scale human interventions in marine con-*

*ditions (such as pipelines or oil platforms in vulnerable sea areas) are emerging priorities in sustainable use of marine and nearshore resources.”*

The Academy continued supporting contacts of the Estonian scientific community with international scientific unions, giving preference to ICSU member organisations. The Academy organised payment of membership fees with the help of a targeted allocation from the Ministry of Education and Research and supplied the Ministry with a review on the activities of respective national committees (see the list in Appendix 2 p. 186). National committees disseminated information materials, participated in the forums of scientific unions (due to economical reasons more moderately than in previous years), organised them within framework of international series in Estonia – for instance the International Year of Planet Earth final events, events dedicated to Ch. Darwin’s 200 anniversary (Darwin Year 2009), the International Year of Astronomy and others. Estonian scientists participated at working groups of scientific unions, networks, research projects; they could be elected and nominated into steering bodies of scientific unions (e.g. expert panels, candidates for awards, etc.). For instance the Estonian representative Toivo Maimets was elected in November 2009 President of the European Molecular Biology Conference (EMBC).

In common with many European academies, the Estonian Academy of Sciences 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. 189) serve as the formal basis for the exchange of scientists. For the purpose of renovating the cooperation programme for the following years, the Academy carried out the following competitions of bilateral joint projects in 2009: Estonia-Poland (together with Polish Academy of Sciences; 11 applications were submitted, 9 were accepted), Estonia-Hungary (together with the Hungarian Academy of Sciences; 14 applications submitted, 12 accepted) and Estonia-Spain (together with the Spanish Council of Scientific Research; 3 applications submitted, one accepted).

For the following three years (2010–2012) the cooperation agreement was prolonged with the Academy of Finland. The activity of programme of exchange of scientists is supervised by the Council for International Exchanges, comprising of representatives of the Divisions of the Academy and four main 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 (the receiving party covers the living costs in the host country) and gives preference over individual research to reciprocal visits within bilaterally accepted joint projects. As a rule, the sending Academy selects scientists, who are to be nominated to the receiving Academy for funding. The Estonian-Finnish exchange of scientists is an exception from that rule: a Finnish scientist has to apply to his Academy for the reception costs of his Estonian colleague (and contrariwise).

In 2009 the Estonian scientists made 71 study and conference visits, using the total of 755 days (the number of outbound visits was by 27% lesser than in 2008, however the number of days remained exactly the same, meaning that the average length of a visit increased). The EAS hosted 73 visiting scientists, working at Estonian universities and research institutions altogether 658 days (by 19% less than in 2008 – the number of visits clearly manifests the falling tendency since 2005). To cover the living costs of the visiting scientists 493.7 thousand EEK was expended (by 19% less than in 2008, hence the average daily expense remained on the same level).

As ever, the University of Tartu is the most active inviting party of the guests (share 47%) and also the most active applicant for trips (share 29%), to be followed by Tallinn University of Technology (shares respectively 24% and 37%). The predominant majority (59%) of visitors are concerned with exact and natural sciences, out of Estonians the major share (43%) is constituted by humanities scholars and social scientists. As ever, the exchange of scientists has been more active with academies of sciences of the Eastern and Central Europe. The exchange of scientists bases, in actual fact on the initiative of researchers and practical needs for cooperation. The opportunities for cooperation of Estonian scientists have significantly widened, the funding can be applied from various sources (including 7FP, programmes co-funded from structural funds, the state mobility supports). In the reporting year the economic position of the partner academies, too had a major impact.

Representatives of the Academy traditionally visited partner academies; attended scientific events, delivered lectures as invited speakers at international scientific forums. (For greater detail see “Chronicle” p. 7–15). The Academy supports direct contacts of young scientists with the top actors in the world of science. In the reporting year the Academy sent the doctoral students in chemistry of the University of Tartu Siret Saarsalu and Tavo Romann to participate in the Joint Meeting of Nobel Laureates and Talented Young Scientists in Lindau (Germany). The young talents numbering 580 from 67 states were delivered lectures and spoken to by 23 Nobel Prize winners, among them Foreign Member of Academy Richard Ernst, who spoke on the topic of “Passions and Activities beyond Science”. In autumn 2009 the Academy held a contest for participation in the interdisciplinary Lindau meeting in 2010 and elected three best candidates to be presented to the organising committee.

A natural part of the European Research Area, Estonia makes the expected emphasis on cooperation with the research institutions of the European Union and on active participation in EU structures, programmes, projects. For instance Vice-President Jüri Engelbrecht belongs to the FP7 project NETWATCH Advisory Board. The goal of NETWATCH is to create the information platform and search environment, in order to analyse cohesion of the state programmes carried out through ERA-NET scheme at development and funding of the cross-border research collaboration, to monitor the impact of that scheme and its efficacy as compared to other cooperation programmes. J. Engelbrecht



also belongs to the Advisory Group of the FP7 specific programme “People”.

The Estonian Academy of Sciences participated in the reporting year in two EU FP projects – Complexity-NET and the Researchers’ Night.

Empowered by the Ministry of Education and Research the Academy is active as partner in the FP6 project “Complexity-NET” (“Coordination of National Complexity Research and Training Activities”). The project having started in September 2006, originally planned for three and a half years under ERA-NET scheme is involving 11 states: Great Britain (as co-ordinator), Belgium, Estonia, Spain, Holland, Ireland, Italy, Greece, Denmark, Portugal, Hungary. For greater detail on the project see [www.complexitynet.eu](http://www.complexitynet.eu).

By the present moment the partners have reached the stage of actual joint activities. The main output is the pilot call for two-year multilateral research co-operation projects, where the Estonians could submit applications thanks to the state funding guaranteed by the Estonian Science Foundation (up to 125 thousand euros to finance the cooperation share of Estonian researchers participating in successful projects). The scientific topics of applications embraced the complex systems and complexity science in the wide sense. The first round of preliminary applications received altogether 117 Expressions of Interest, incl. 6 with Estonian participation. The Scientific Council of Complexity-NET selected 28 best applications, incl. one application with Estonian participation. The authors were submitted an invitation to present their Full Proposals in the second round. Full Proposals will be assessed by outside experts and the decision on funding will be accepted by the Complexity-NET project consortium at the end of April 2010.

The Estonian Academy of Sciences participated for the fourth year as a partner in the FP7 project “Researchers’ Night 2009”. The aim of the project is to popularise the researcher’s profession. For greater detail see p. 46.

The European Union considers it important to provide scientists with better work-related conditions and mobility, as well as preferential conditions for moving from country to country for the purpose of scientific or research work. Together with the Foundation Archimedes (the co-ordinator in Estonia), the University of Tartu, Tallinn University of Technology, the Estonian University of Life Sciences and Tallinn University, the Academy has since 2004 participated in the European Network EURAXESS (formerly named ERA-MORE). The Network has been called to life by the European Commission for the purpose of 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 about 200 organisations from 35 countries; the circle of topics covered by service centres is wide, embracing areas like visas, residence and work permits, recognition of qualifications, vacant jobs in the scientific sphere, taxation, social insurance, availability of medical aid, local everyday

utilities. 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 [www.smartestonia.ee](http://www.smartestonia.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. 54 of 12 February 2009,

SCIENCE PRIZE FOR LONG STANDING ACHIEVEMENTS IN RESEARCH AND  
DEVELOPMENT



awarded to Member of Academy *Dimitri Kaljo*

“My activities have been involved with research for shortly over a 50 year period, not exclusively anyway and at times not even prevailingly. My other commitments, thankfully, have also been essentially relating to science or stemming therefrom ... In short, I would like to point out that through all those years and various doings, both in the homeland and abroad, I have been fortunate to act together with many benevolent and helpful people...”

National Science Prizes, 2009.

SCIENCE PRIZE FOR OUTSTANDING RESEARCH AND DEVELOPMENT RESULTING  
IN INNOVATIVE PRODUCTS

awarded to collaborative research on topic “Elaboration and application of the theory, method, measurement technology and apparatus of integral photoelasticity for measurement of residual stresses in glass industry”:



From the right: Member of Academy *Hillar Aben* (head of team),  
Leo Ainola, Andrei Errapart, Johan Anton

“... All members of our group have released scientific publications and have derived from it satisfaction. Whereas the satisfaction, which we have obtained in glass, after we installed our apparatus and saw how eagerly factories experienced glass technologists hastened to use it, in order to see at last with the naked eye the residual stresses to be found in a given glass product, is even larger.”

National Science Prizes, 2009.

**NATIONAL DECORATIONS  
TO MEMBERS OF ACADEMY**

Awarded by resolution No. 423 of the President of the Republic of 4 February 2009

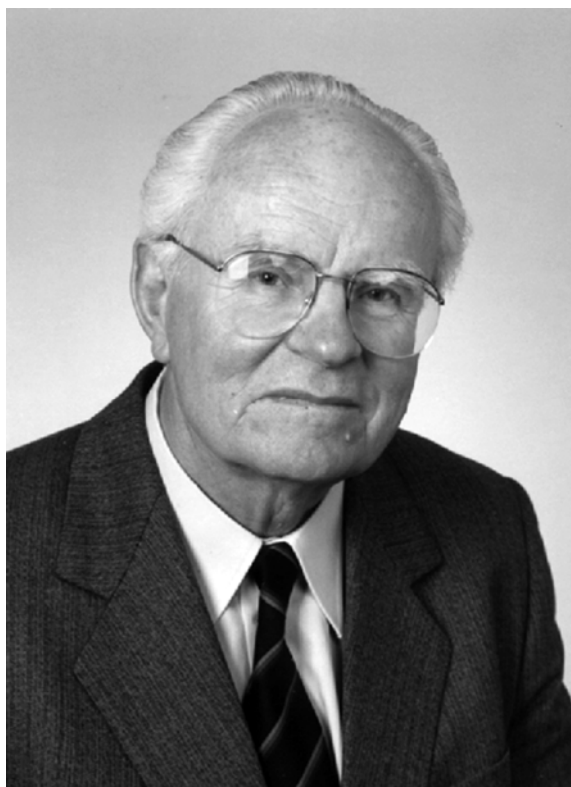
Order of the National Coat of Arms, 3rd Class

To Member of Academy *Jaak Järv*

## ANNIVERSARIES

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Foreign Member of Academy *Johannes Piiper*

Johannes Piiper was born on 11 November 1924 in Tartu, a son of Professor of the University of Tartu. In 1942 he graduated from H. Treffner Gymnasium and in 1952 from the University of Göttingen, Medical Department. He defended the degree of Doctor in Medicine in 1954 at the same University. After acquiring further professional training at the University at Buffalo in the USA, Johannes Piiper was habilitated at the University of Göttingen in physiology in 1960. He is Doctor *Honoris Causa* with the University of Fribourg (Switzerland) and the University of Tartu.

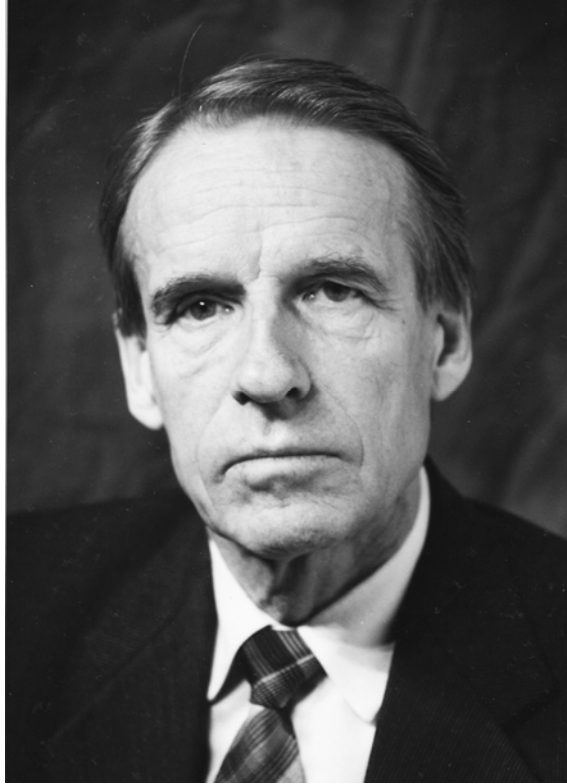
For over more than half a century Johannes Piiper's scientific activity has been connected with Max Planck Institute of Experimental Medicine. He has worked there since 1953 holding various offices from Assistant to Director

General. He was a long time head of Department of Physiology (1973–1992) and he has repeatedly been Managing Director of the Institute (1975–1977, 1987–1989). Since 1992 Johannes Piiper has been Professor Emeritus.

Johannes Piiper's primary research interests have been with respiratory physiology and comparative physiology. In that research area he has attained international acclaim. He has authored over 570 publications. He has been active in many professional societies, e.g. the Union of Pulmonary and Respiratory Researches, the International Union of Oxygen Transport of Tissues, the European Union of Comparative Physiology and Biochemistry, etc.

In 1991 he was elected Foreign Member of the Estonian Academy of Sciences in physiology.

In 2002 Johannes Piiper was awarded the Order of the White Star, 4th Class of the Republic of Estonia.



Member of Academy *Hillar Aben*

Hillar Aben was born on 3 December 1929 in Tartu to the family of a well-known linguist and translator. In 1948 he graduated from H. Treffner Gymnasium; in 1953 he graduated from Tallinn University of Technology as building engineer. After passing the post graduate programme he defended his Candidate's thesis in Engineering at the Estonian Academy of Sciences in 1957. In 1966 he defended the Doctor of Engineering degree with the thesis "Метод характеристических направлений в фотоупругости".

In 1956–1960 Hillar Aben worked as junior researcher at the Institute of Building and Building Materials. Thereafter his activity was during almost half a century connected with the Institute of Cybernetics, successively holding the posts of Head of the Department of Mechanics and Applied Mathematics (1960-1974), Assistant Director for Research (1967–1976) and Director (1976–1988). From 1989 he has been working as Head of the Laboratory of Photoelasticity and Leading Researcher.

Hillar Aben's object of research has been integral photoelasticity method, the theory of which belongs to the field of optics of the so-called distorted double refractory media.

The task of integral photo-elasticity method is to determine, non-destructively the stress situation occurring in transparent objects. The modern technology of measuring internal stresses in glass finds practical application in the limited liability company GlasStress, concerned under instructions by Hillar Aben with manufacturing realising the integral photoelasticity method and implementing it in glass industry.

Presently the high-tech polariscopes produced in Estonia are used for measuring the residual stresses of glass products by about 20 glass companies in Europe, USA, Japan, Brazil, etc.

Hillar Aben has also dealt with mathematical modelling of city construction problems with the aim of optimising the location of residential regions in the city. He has delivered the course of experimental mechanics at Tallinn University of Technology, has been Visiting Professor at Waterloo University (Canada) and at Poitiers University (France), has organised summer schools in glass residual stresses in Estonia as well as at the international mechanics research centre in Udine, Italy. Hillar Aben has authored over 200 research publications, incl. two monographs in English and under his supervision five Doctor's and Master's theses have been defended.

Hillar Aben was for a long time Member of Academic Council of the President of the Republic of Estonia (1994-2001) and committee National Science Prize (1999–2004). He belongs to the membership of the European Academy of Sciences, the European Academy of Sciences and Arts, the Finnish Academy of Technology and international scientific organisations in his area of study.

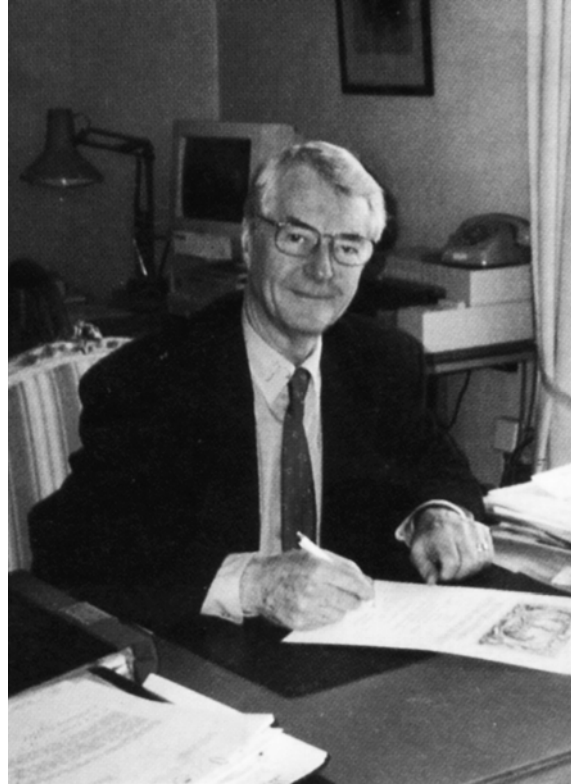
In 1995–2007 he was Editor-in-Chief of the Proceedings of the Academy of Sciences.

Hillar Aben has been twice awarded the National Science Prize: in 1994 in engineering for his monograph in English "Photoelasticity of glass" (co-authored by Claude Guillemet) and in 2009 as the head of research team for outstanding research and development resulting in an innovative product on topic "Elaboration and application of the theory, method, measurement technology and apparatus of integral photoelasticity for measurement of residual stresses in glass industry".

In 2001 Hillar Aben was decorated with the Order of the White Star, 3rd Class.

Foreign languages, music and sport have been Hillar Aben's favourite hobbies over decades. Now he gets most gratification from a game of tennis every Sunday in the company of good friends.





Foreign Member of Academy *Carl-Olof Jacobson*

Carl-Olof Jacobson was born on 24 April 1929 in Ör, South West Sweden. In 1948 he graduated from the Secondary School in Vänersborg and proceeded to study at Uppsala University, which he graduated in 1952 obtaining the Master's degree in zoology. The following academic degrees too (1958 – Licentiate, 1964 – Doctor) were defended by Carl-Olof Jacobson at Uppsala University.

After obtaining the Doctor's degree Carl-Olof Jacobson continued his research career at Uppsala University, where he has been on faculty for more than forty years (incl. in 1970–1989 as Professor in Zoo-morphology), holding in 1977–1989 also the posts of Dean of the Department of Engineering and Natural Sciences and Member of the University Board.

Since 1994 Carl-Olof Jacobson's academic activities continued as Professor Emeritus in the Department of Development and Genetics. In 1989–1997 he was Secretary General of the Royal Swedish Academy of Sciences, sitting

also on the Board of Directors of the Nobel Foundation. Carl-Olof Jacobson has worked as Visiting Fellow with Wistar Biological Institute in Philadelphia and, as Visiting Professor with Texas University in Austin in 1979.

Carl-Olof Jacobson's main research areas are applied neurobiology and ecology of clean water. His activities in the area of science organisation, communication of science and promotion of scientific cooperation have been in the least of equal significance. He is also a highly appreciated lecturer at the Swedish Folk High School.

Carl-Olof Jacobson is Chairman of the Swedish Linné Society, Member of the Royal Swedish Academy of Sciences and the Royal Swedish Academy of Engineering Sciences, the Royal Society of Sciences (Uppsala) and the Royal Society of Physiography (Lund).

He also belongs to the American Association for Promotion of Science and the European Academy of Sciences, Arts and Letters; he is active in several professional associations like the International Society of Applied Biologists etc.

Carl-Olof Jacobson was elected Foreign Member of the Estonian Academy of Sciences in 1995. In 2001 his long work in promotion of cooperation between Baltic and Nordic academies was acknowledged with the Medal of the Academies of the Baltic States.



Member of Academy *Jaan Einasto*

Jaan Einasto was born on 23 February 1929 in Tartu as the eldest son in a school teacher's family of eight children. In 1947 he graduated from H. Treffner Gymnasium. Already when at school, he displayed deep interest in astronomy. He enrolled at the University of Tartu, Department of Physics and Mathematics, where he could fortunately study astronomy according to an individualized program. He graduated from the University of Tartu in 1952 with the diploma of astronomer. In 1955 he defended his Candidate of Sciences degree on topic "On structures of regular galaxies in major sequence", in 1972 his Doctor of Sciences degree on the topic "Structure and evolution of regular galaxies".

After graduating from the University, Jaan Einasto proceeded to work at Tartu Observatory, where he has worked as researcher, senior researcher, Head of the Department of Astrophysics, Head of the Department of Physics of Galaxies and Head of the Department of Cosmology. Since 2004 he has been senior researcher at the same Department.

In 1981 Jaan Einasto was elected Member of the Estonian Academy of Sciences. In 1983–1995 he held the office of Head of the Division of Physics, Mathematics and Engineering of the Academy, later Secretary-Academician of the Division of Astronomy and Physics. As Member of the Board of the Academy, he was involved in reforming the science organisation in Estonia in 1988–1995.

Jaan Einasto has been on faculty of the University of Tartu since 1958, in 1992–1995 he was Professor of Cosmology. A great number of Diploma, Master's and Candidate's theses have been defended under his supervision. Jaan Einasto is Member of the International Astronomical Union, the Estonian Astronomical Society, Academia Europaea, the British Royal Astronomical Society, the US Astronomical Society and other international astronomical societies.

The domains of scientific work of Member of Academy Jaan Einasto have been research in structure and dynamics of galaxy systems, in devices monitoring the structure and dynamics of galaxies and satellites of the Earth. He has proved, in his studies the hidden mass of the Universe, the existence of the massive crown of Galaxy and the existence of the cellular structure of the Universe (the super-clusters consisting of chains of galaxy and empty spaces between them).

In 1998, Jaan Einasto was decorated with the Order of the National Coat of Arms, 2nd Class. The research group headed by him has repeatedly been awarded the science prize: in 1983 for his studies of hidden matter and cellular structure of the Universe, in 1998 in the area of exact sciences for the work "Research of the orderly structure of the Universe", in 2007 for an outstanding discovery affecting the paradigm of a branch of science and the world picture. In 2003 he was awarded the science prize for long-standing in research and development. Jaan Einasto has been elected by people of Estonia among the top 100 prominent figures of the 20th C., he is also holder of the Tartu Majuscule and he is an honorary citizen of the city of Tartu.

Jaan Einasto likes to while away his leisure time in his country cottage in the vicinity of Helme. He indulges in biking in summer and skiing in winter and is passionately fond of classical music.



Member of Academy *Ülo Lumiste*

Ülo Lumiste was born on 30 July 1929 at Vändra. In 1947 he graduated from the Vändra Secondary School and proceeded his studies at the University of Tartu majoring in mathematics. During his studies he developed interest in geometry, influenced by Professor Jaan Sarv, he was prompted to pick up modern mathematics by Professor Gunnar Kangro. In 1952 Ülo Lumiste graduated from the University of Tartu. He proceeded to work at the Department of Mathematics and promptly thereafter he was sent to Moscow University to get further training in differential geometry. In 1958 Ülo Lumiste defended his Candidate of Sciences degree at Moscow University, the Doctor of Sciences degree in 1969 at Kazan University.

Ülo Lumiste has worked at the University of Tartu since 1960: as Associate Professor, Head of the Department of Algebra and Geometry, in 1974–1980 as Dean of the Department of Mathematics. In 1993 he was elected Member of the Estonian Academy of Sciences. Since 1995 he has been Professor-Emeritus of the University of Tartu.

The main research direction of Ülo Lumiste has been differential geometry: submanifolds, theory of conjugacies and its applications, foundations of geometry and history of mathematics in Estonia. Ülo Lumiste has released over 260 scientific publications, whereof several textbooks and monographs. The last of them “Semiparallel Submanifolds in Space Forms” was released by Springer Publishers in 2008.

Ülo Lumiste considers the pedagogical work his most important activity. His lectures have been attended by majority of Estonian mathematicians, teachers of mathematics of many schools have been his students, course papers and diploma papers have been written under his supervision. He has supervised 13 Candidate of Sciences and Master theses and has been adviser for two Doctor of Sciences works. Ülo Lumiste was for among founders of the Estonian Mathematical Society (1987) and its first President. He has participated in the work of the Council of the European Mathematical Society and is member of the Estonian Naturalists Society.

In 1999 In 1999 Ülo Lumiste was decorated with the Order of the White Star, 3rd Class; in the same year he was awarded the National Science Prize in Exact Sciences. He is Honorary Doctor of Tallinn University and honorary member of the Estonian Mathematical Society. He has been awarded the Prize of Town Hall Fund of the University of Tartu and the Medal of the Academy.

Member of Academy Ülo Lumiste is a dedicated and uncompromising mathematician and student of the history of science. His hobbies have for a long time been physical culture and men’s choir singing. Lately he has taken a fancy to classical music.



Foreign Member of Academy *Henn-Jüri Uibopuu*

Henn-Jüri Uibopuu was born on 11 October 1929 in Tartu. In 1946 he graduated from the Secondary School in Hildburghausen, Germany. In 1964–1968 Henn-Jüri Uibopuu attended Graz University (Austria) majoring in law and the Russian language, defending the Doctor's degree in 1968.

From 1969 his activities have been related to Salzburg University, first as assistant, thereafter as lecturer. In 1974 Henn-Jüri Uibopuu was habilitated in international and Soviet political law, in 1974 he became Professor Extraordinary in international and comparative political law.

In 1977–1995 Henn-Jüri Uibopuu worked as Head of Department at Salzburg Institute of International and Comparative Public Law. As from 1995 he has been Professor *Honoris Causa* of International and Comparative Law with the Department of Law at Salzburg University.

Henn-Jüri Uibopuu has published over 150 scientific works (5 monographs) on international law, human rights, refugees' rights, contract law and compa-

native political law. He has been Counsellor to President of the Republic of Estonia on legislation and member of the Constitution's Legal Expertise Committee for the Government of Estonia.

In 1995 he was elected Foreign Member of the Estonian Academy of Sciences in law.

From 1992 Henn-Jüri Uibopuu has acted as Honorary Consul of the Republic of Estonia in Austria and he is presently Honorary Consul General in Salzburg. In 1998 Henn-Jüri Uibopuu was decorated with the Order of National Coat of Arms, 4th Class.





Member of Academy *Mihkel Veiderma*

Mihkel Veiderma was born on 27 December 1929 in Tallinn as the fifth child to the family of Aleksander Veiderma, a renowned figure in Estonian education and politics. In 1948 he graduated from Tallinn Secondary Science School; in 1953 he graduated from Tallinn University of Technology, Department of Chemistry. In 1965 he defended his Candidate's thesis at the Research Institute of Fertilizers and Insectofungicides in Moscow and in 1972 at the same Institute his Doctor's thesis on the topic "Research into processing obolus phosphorites into phosphor fertilisers and fodder phosphates". He was awarded Professorship in 1973. In 1975 he was elected Member of the Estonian Academy of Sciences in inorganic chemistry.

After graduation from the University, he worked for seven years at Maardu Chemical Combine (incl. 1956–1960 as Chief Engineer). Thereafter he proceeded to work at Tallinn University of Technology, first as Associate Professor at the Department of Chemical Technology, 1972–1997 as Professor and Head of the Department of Inorganic and Analytical Chemistry, 1978–1983 also as Dean of

the Department of Chemistry and 1965–1992 as Scientific Supervisor of the Laboratory of Mineral Fertilisers. Since 1997 Mihkel Veiderma has been Professor-Emeritus. In 1988–1999 he was Vice-President of the Estonian Academy of Sciences and in 1999–2004 Secretary General, from 2004–2009 Member of the Board. In the period 1992–1994 Mihkel Veiderma was Director of the Office of the President of Estonia.

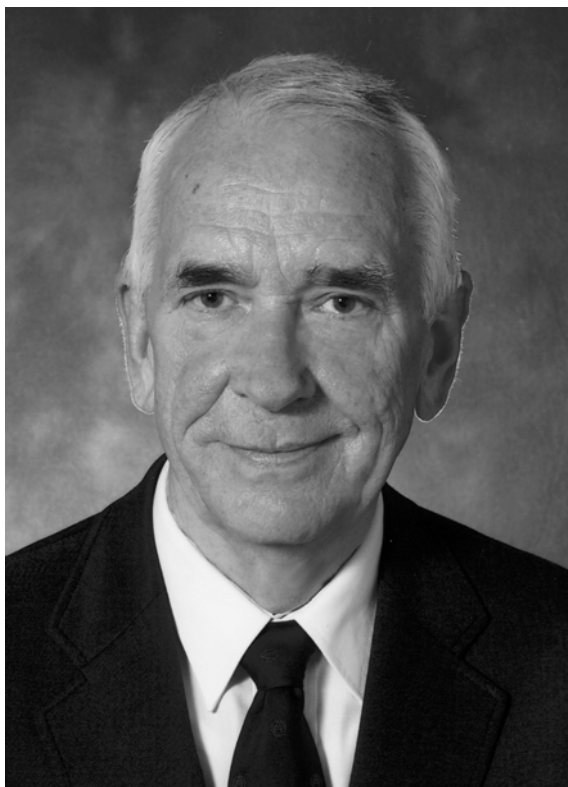
Mihkel Veiderma's scientific research is primarily related to the chemistry and technology of inorganic phosphor compositions. He has studied the composition of natural apatites, their properties and reactions, phase transfers and thermal processes in phosphate containing systems. Meriting his attention have been new technologies and areas of use, safe disposal and use of industrial waste. The long-term Chairman of the Academy's Energy Council, he has been concerned with key problems relating to the use of Estonian mineral resources (phosphorite, oil shale) and energetics.

Mihkel Veiderma is the author or co-author of over 230 scientific articles, author, compiler or editor of 12 books and collections of articles, co-author of several author certificates.

He has been supervisor of many Doctoral theses and Diploma papers. He is Honorary Member of the Estonian Chemical Society and the Estonian Naturalists' Society, Foreign Member of the Finnish Academies of Technology, and Corresponding Member of the Finnish Chemical Society and also member of several councils and committees.

In 1998 he was decorated with the Order of the White Star, 3rd Class. In 2001 for his long lasting work for promotion of co-operation between academies he was awarded the Medal of Academies of the Baltic States and in 2006 the National Science Prize for long-standing achievements in research and development.

Beside his main work Mihkel Veiderma has been keen on the history of Estonian science and education, politics, theatre and music of the 20th C. He has contributed to the activities of several cultural and hobby centres.



Member of Academy *Ain-Elmar Kaasik*

Ain-Elmar Kaasik was born on 2 August 1934 in Tallinn in the family of an educationalist. In 1953 he graduated from Nõmme Gymnasium in Tallinn and from the University of Tartu, Department of Medicine in 1959. After taking the post graduate programme, he defended his Candidate's degree in 1967. In 1972 he was awarded Doctor's degree in Medicine finalised in Tartu and Lund. In 1975 he was awarded Professorship. Since 1991 he has been Honorary Doctor of Uppsala University.

After graduating from the University Ain-Elmar Kaasik worked for two years in the Põltsamaa regional in-patient clinic. Since 1961 his activities have been involved with the Neuropathology Clinic of the University of Tartu, where he was also practising when a student. Until 1964 he worked as intensive treatment physician and neurosurgeon. Since 1968 Ain-Elmar Kaasik has belonged to the academic faculty of the University in the position of Assistant, Associate Professor, Professor and Head of Clinic. He has worked as Dean of the Department of Complementary Studies of Physicians and Pharmacists

(1975–1980), Assistant-Dean (1981–1984) and Dean (1984–1989) of the Medical Department. Since 1999 he is Professor-Emeritus.

Ain-Elmar Kaasik has obtained clinical training in neurology and neurosurgery, has studied at N. N. Burdenko Institute of Neurosurgery in Moscow and at the Laboratory of Brain Research at Lund University Clinic of Neurosurgery, has operated in the leading areas of neurosurgery. The main areas of research of Ain-Elmar Kaasik have been pathology of blood circulation and metabolism in acute brain damages; vascular pathology of brain; dissemination, diagnosing and treatment of neuropathy, especially the problems of intensive treatment. He has worked as Visiting Professor in Pennsylvania University Clinic of Neurology and as Visiting Lecturer at the universities of Uppsala, Copenhagen and Kuopio as well as at continuing education courses for physicians organised by the Montana-Wyoming Department of the American College of Surgeons.

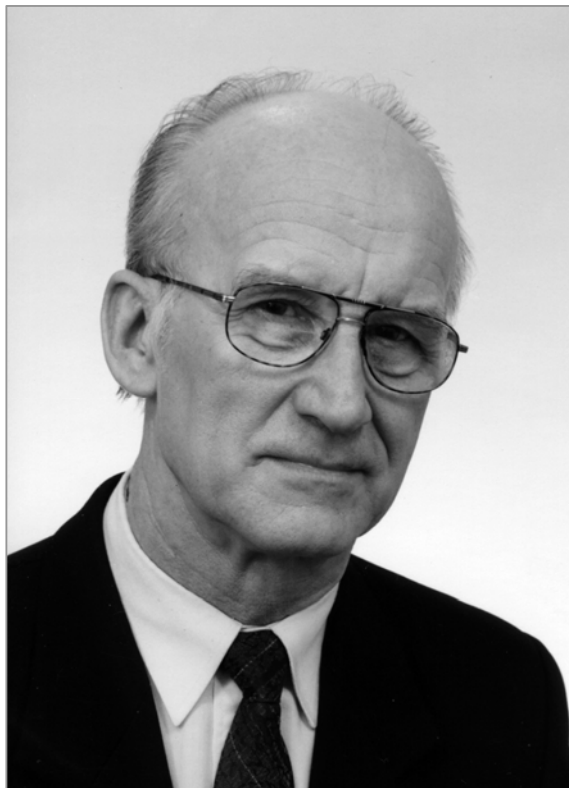
The list of publications by Ain-Elmar Kaasik contains over 500 references, among them three monographs (as a co-author) and ~ 280 full volume scientific articles. He holds the author's certificate to invention "Treatment method of Parkinson disease". Under his supervision 16 Doctoral theses and Candidate theses in Medicine have been defended.

He was elected member of the Estonian Academy of Sciences in 1993 in neurology. In 2004–2009 Ain-Elmar Kaasik was Vice-President of the Academy.

Ain-Elmar Kaasik has over decades participated in the activities of numerous scientific and professional organisations. Ain-Elmar Kaasik is Corresponding Member of the Scandinavian Society of Neurosurgeons and the American Academy of Neurology, Member of the Royal Society of Medicine (UK), the European Academy of Sciences and Arts and Polish Medical Academy. He has belonged to various associations of national importance, including the Estonian Research and Development Council, the National Science Prize Committee, the Estonian Science Foundation. He has headed as Chairman of the Board the Estonian Co-operation Forum, is member of the Steering Committee of the national programme "Compilation and Publishing of Textbooks in Estonian for Higher Education" and member of the Commission of Sustainable Development at the Government of Estonia.

In 1998 Ain-Elmar Kaasik was decorated with the Order of the White Star, 3rd Class. He has been acknowledged with many scientific award, among them the National Science Prize for long-standing research and development in 2003. In 2004 he was elected honorary citizen of Tartu.

Ain-Elmar Kaasik enjoys skiing, biking and long-distance running. A man of healthy way of thinking he has been an epitome to his students, colleagues and partners in science and elsewhere.



Member of Academy *Udo Margna*

Udo Margna was born on 18 November 1934 in Viljandi. In 1952 he graduated from the Viljandi 2nd Secondary School and enrolled in the University of Tartu, Department of Medicine, to study pharmacy. He graduated from the University cum laude in 1957 as major in pharmacy. He passed the post-graduate programme at Institute of Experimental Biology of the Academy of Sciences (IEB), in plant biochemistry and defended his degree of Candidate in Biology in 1963. In 1983 he defended the degree of Doctor in Biology at the Institute of Botany of the Georgian Academy of Sciences with the thesis “Образование флавоноидов в растениях: взаимосвязь с основным обменом, регуляция и биологическое значение”.

Udo Margna obtained his first experience in carrying out experimental research as a student in the Department of Pharmacognosis. After graduating from the University he worked for a couple of years at a chemist's shop on Muhu Island. Since 1959 the scientific path of Udo Margna has for over 30

years evolved under the roof of IBE in Harku, where he held various positions from junior researcher to head researcher and head of laboratory.

In 1987 Udo Margna was elected Member of the Estonian Academy of Sciences in plant physiology and biochemistry. In 1990 he was elected Secretary General of the Academy and he worked in that office until 2000.

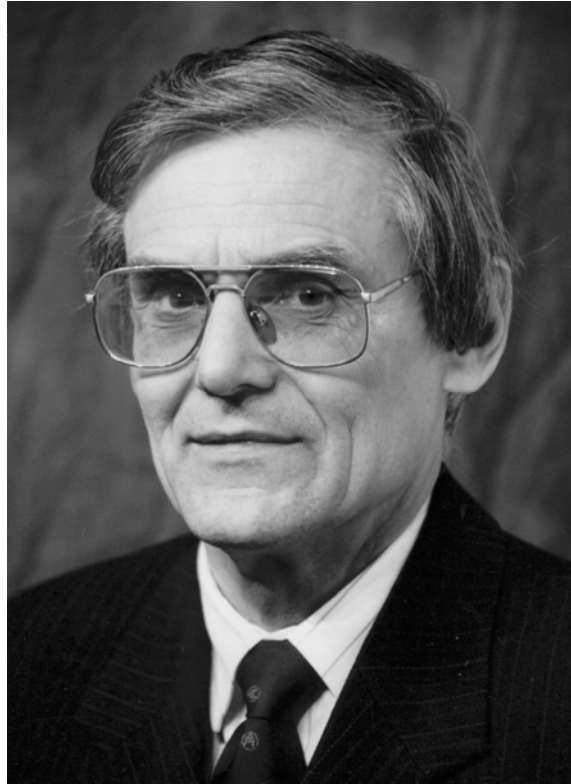
The aim of research by Udo Margna has been to investigate the metabolic background of biosynthesis and regulation mechanisms of flavonoids. He has released over 120 research publications, including four monographs and textbooks. Under his supervision 7 Doctor's and Master's theses have been defended.

Beside the research work Udo Margna has been for a long time been connected with the science organisation activity. In 1965–1987 he worked as Director for Research of IBE, in 1971–1990 he headed as Chairman the activities of Estonian National Plant Physiology and Biochemistry Problem Committee. He has been over 35 years in the composition of editorial board of the Proceedings of the Estonian Academy of Sciences, series “Biology. Ecology”. In 1996–1999 Udo Margna was Chairman of the National Panel to the Baltic Assembly Literature, Art and Research Prizes.

Udo Margna has for over 25 years been on faculty of the University of Tartu, Tallinn University and Estonian University of Life Sciences as visiting lecturer and Professor Extraordinary. In 1994, he sojourned as visiting Professor in Münster University in Germany. From 2000, his pedagogical activity has been connected with Tallinn Health Care College. He has worked as curator-teacher of pharmacy and head-lecturer at the Chair of Pharmacy; where he is presently Lecturer Extraordinary.

In 1987 Udo Margna was recognized with the highest award of the Estonian Academy of Sciences – the Medal of the Academy. In 1998 he was awarded the Karl Ernst von Baer memorial medal for outstanding achievements in life sciences and geography, and he was granted the annual prize of the Estonian Pharmacists' Association for long-standing research. In 2006 he was awarded the Order of the White Star, 4th Class.

For Udo Margna science is a mission, however in his life he considers the balance between work, family and hobbies of no leer importante His long-term favourite area in sports has been orienteering.



Member of Academy *Jüri Engelbrecht*

Jüri Engelbrecht was born on 1 August 1939 in Tallinn to the family of a craftsman. In 1957 he graduated from Tallinn 7th Secondary School and in 1962 from Tallinn University of Technology with diploma of a building engineer, he passed the post-graduate programme in the same place and on 1968 defended the thesis of Candidate of Engineering in mechanics. In 1982 he was awarded the degree of Doctor in Physics and Mathematics in 1984 – Professorship. Since 1999 he has been Honorary Doctor of the Budapest University of Technology.

Jüri Engelbrecht proceeded to work in Department of Building Structures of Tallinn University of Technology already during his studies and upon graduation from the University. Further on the scientific path of Jüri Engelbrecht has been during four decades connected with the Institute of Cybernetics, where he also completed his doctoral paper on theory of wave propagation and has held different positions. In 1999, upon his initiative the Centre for Non-Linear Studies (Estonian centre of excellence in research in 2002–2007) was formed, whose head he has been until today.

Beside scientific research Professor Engelbrecht has since 1984 participated in the teaching effort of Tallinn University of Technology. He has delivered basic courses of mathematics and theoretical mechanics, more recently the special courses of non-linear mechanics and mathematical modelling and supervised degree students. At the present time he is Head of the Department of Mechanics and Applied Mathematics at the Institute of Cybernetics at TUT. He has worked in various European Universities, among others in Prague, Cambridge, Paris, Turin, Aachen, he has belonged to the bureau of International Union of Theoretical and Applied Mechanics (IUTAM), and he is member of several Academies of Sciences and scientific unions. Main directions of scientific research of Jüri Engelbrecht have been mathematical physics and theoretical mechanics: non-linear wave propagation and dynamics, specificity of complex systems in symbiosis of complexity and simplicity, incl. modeling of dynamics of heart rhythm. He is (co)author of nine monographs and three textbooks. He has authored over 300 articles, among them about 200 in peer-reviewed journals, and under his supervision 6 Doctoral and 7 Master papers have been defended.

Jüri Engelbrecht was elected Member of the Estonian Academy of Sciences in 1990 in mechanics. In 1994–2004 he was President of the Academy and he has been Vice-President since 2004.

Since 1994 Jüri Engelbrecht has been involved in elaboration of Estonian science policy and he has extensive experience in implementation and counseling of the European science policy. He was member of the European Research Advisory Board. Presently he is President of the European Federation of National Academies of Sciences and Humanities, member of councils of the European Science Foundation and European Academies' Science Advisory Board, member of several ad hoc commissions acting at European Union etc. As Chairman of the Estonian Research Council (1997–2003) Jüri Engelbrecht brought into the present Estonian science and the communication between scientists the term of 'excellence in research' – meaning that research should be done on the level, which is competitive in every corner of the world. He also launched the centres of excellence in research programme.

For scientific research and science policy activity Jüri Engelbrecht has been recognized with national orders of Estonia, Finland, France, Poland and Belgium and he has been awarded several science prizes, incl. twice the National Science Prize of the Republic of Estonia (1992 and 2008), A. von Humboldt Science Prize (1993), Medal of the Baltic Academies (2000).

Symbiosis of complexity and simplicity is fascinating Jüri Engelbrecht also beyond his research area; the sphere of his interests includes philosophy, music, languages etc. From the school days he has been exercising sports, being particularly fond of skiing and running.





Member of Academy *Ülo Jaaksoo*

Ülo Jaaksoo was born on 16 April 1939 at Mõisaküla to the family of employees. In 1957 he graduated from Mõisaküla Secondary School and in the same year proceeded to study at Tallinn Polytechnic Institute majoring in automatics and telemechanics, graduating in 1962. He defended the degree of Candidate of Science on the topic “Adaptive control systems with active information collection” as post-graduate student of Institute of Cybernetics in 1969 and the degree of Doctor of Engineering on the topic of interactive analysis of multidimensional control systems at the Institute of Electronics and Computer Technology of the Latvian Academy of Sciences in 1982.

In autumn 1961 Ülo Jaaksoo was employed by the Institute of Cybernetics as Junior Researcher. During his more than 30 years long career at the Institute he held several offices: senior researcher, Head of Department of Control Systems at the Special Construction Division of Computer Engineering, Director for Research of the Institute and as Director (1989–1997). Since 1997 Ülo Jaaksoo has been Chairman of the Management Board of Cybernetica LTD.

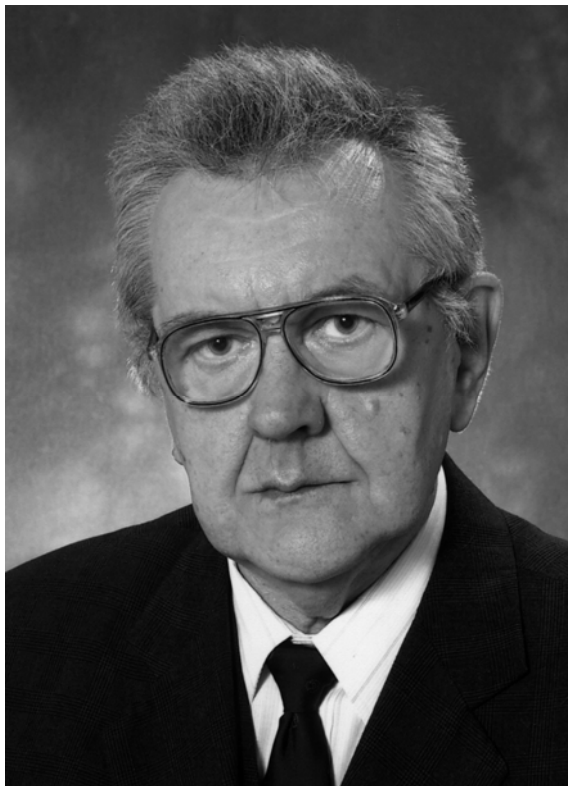
For years Ülo Jaaksoo has taught control theory at Tallinn University of Technology. In 1985 he was awarded Professorship and in 1989 elected Member of the Estonian Academy of Sciences in informatics.

Ülo Jaaksoo has been active also in several science organisation and administrative offices. In 1993–1995 he was Vice-President of the Estonian Academy of Sciences and member of the the Council of the Estonian Science Foundation, in 1993–2000 member of the Estonian Science and Research Council. At present he belongs to the composition of commission of innovation policy and council of informatics at the Ministry of Economy and Communications and is Chairman of the Appraisal Commission of the technology and innovation domain of Enterprise Estonia Foundation. Ülo Jaaksoo has been also active outside Estonia, being Deputy Chairman of Policy Committee of IFAC, Estonian representative of the NATO Science Committee and member of the European Security Research Advisory Board (ESRAB).

As his main interests in research, the jubilarian names the adaptive systems with active information collection, analysis of interactivity of multi-dimensional automatic control systems and security of information systems. His activities, however, have always had tangible, applicable goals. For instance, he has participated in process management works at “Kiviter’s” formalin workshop and in Kohtla-Järve nitrogen fertiliser plant.

Ülo Jaaksoo was acknowledged with the Prize of the Soviet Estonia in 1967. In 2004 he was awarded the National Order of the White Star, 3rd Class and in the same year he was granted the “Thinking Man” Prize.

From his childhood Ülo Jaaksoo has inherited love of music, which has, among other things, led him in his youth to play in Horre Zeiger *Big Band*.



Member of Academy *Arvo Krikmann*

Arvo Krikmann was born on 21 July 1939 in Virumaa as son of a small farmer. In 1957 he graduated from Väike-Maarja Secondary School and in 1962 the University of Tartu in the Estonian language and literature. In 1970–1972 he took the post-graduate programme at Institute of Language and Literature of the Estonian Academy of Sciences and in 1975 defended there the degree of Candidate in Philology. In 1998 Arvo Krikmann defended at University of Tartu the dissertation of Doctor in Philosophy.

In 1962–1969 Arvo Krikmann worked in Department of Folklore of the Estonian Literary Museum as researcher and senior researcher, continued his scientific path from 1973 in Institute of Language and Literature. As from 2000 Arvo Krikmann has been working as senior researcher in Estonian Literary Museum.

Main directions of Arvo Krikmann's research work have been Estonian proverbs, paremiology and phraseology, riddles, geographic spread of folklore

and frequency distribution of genre stock, metaphor and figurative speech theory, popular humour and humour theory. He was the first among Estonian folklorists to use mathematical methods. Further he focused on the so-called content matter of proverbs. As a result of over 20 years work the manuscript of an academic edition of Estonian proverbs was compiled under Arvo Krikmann's supervision, which was released in six volumes under the title "Proverbia Estonica" in 1980–1988. Simultaneously prepared was the "Proverbia sep-tentrionalia" reflecting the Fenno-Baltic common proverbs and the scientific issues of Votic, Vepsic and Livonian proverbs, followed by preparation of the academic publications of riddles, adages and phraseologisms. His scientific works of the latest period are mainly related with the study of funny stories and publication in that area of a thorough anthology is planned. Arvo Krikmann has authored ca. one hundred scientific publications, incl. 4 monographs and 2 textbooks. He has started entry into computer of folklore texts.

Since 1992, besides the scientific work Arvo Krikmann has been on faculty at the University of Tartu, in 1992–2002 he delivered special courses at Department of Estonian and comparative folklore on short forms of folklore and funny stories. Under his supervision 3 Doctoral and 5 Master's theses have been defended. Arvo Krikmann has been Member of Council of the Estonian Science Foundation and chairman of Expert Panel for the Humanities, Member of the Steering Committee of the National Programme "The Estonian Language and National Culture", Head of the Centre of Cultural History and Folkloristics, member of the Steering Committee of the National Programme "Estonian Language and National Memory".

In 1997 Arvo Krikmann was elected member of the Estonian Academy of Sciences in the Humanities. In 1999–2001 he was Head of Division of the Humanities and Social Sciences.

He is a member of Academia Scientiarum et Artium Europaea, the Finnish Literary Society, the Kalevala Society, the international association Folklore Fellows, the Academic Folklore Society and the Mother Tongue Society, Honorary Member of the International Society for Folk Narrative Research (ISFNR), Member of the Editorial Board of the magazine "Keel ja Kirjandus" (Language and Literature) and the international yearbook "Proverbium" issued in Vermont.

In 1998 Arvo Krikmann was awarded the Order of the White Star, 3rd Class. He has been awarded the National Science Prize in the Humanities (1999), the Culture Prize of the Baltic Assembly in science (2004) and the science prize of the Cultural Endowment of Estonia (2004).

Arvo Krikmann truly appreciates computers, Internet and other functionalities of modern information technology and he keeps on average 12 hours per day and night operating in the virtual world.



Foreign Member of Academy *Grigori Mints*

Grigori Mints was born on 7 June 1939 in St. Petersburg. In 1961 he graduated from St. Petersburg State University in mathematics and in 1965 defended at the same University the degree of Candidate in Physics and Mathematics and in 1990 the Doctor's degree.

In 1961–1979 he worked as senior laboratory assistant and junior researcher in the St. Petersburg Division of Steklov Institute of Mathematics. His activities on faculty started in 1962 at St. Petersburg State University, where he delivered the majority of logic courses up to 1979. For a shorter period Grigori Mints has been concerned with practical programming in a software company and with translating for the Mir Publishers. In 1981 Grigori Mints proceeded to work at the Estonian Academy of Sciences, Institute of Cybernetics, where he worked in the position of researcher and senior researcher until 1991, when he was elected Professor of Stanford University in philosophy. Presently he fulfils in that University additionally to the above mentioned

functions, the obligations of Professor in Computer Science (since 1999) and Mathematics (since 2002).

Grigori Mints was one of the leading members of St. Petersburg school of proofs theory. Together with colleagues from St. Petersburg he created for the use of classical logic the strategies of search for proof and programmes for their application, among others the first natural derivation programme basing on user interface of the natural language (1964). The circle of scientific interests of Grigori Mints is wide; his main areas of research include the mathematical logic with an accent on proof theory, substitution method, dynamic topological logic, constructive mathematics. His works in the proof theory have found implementation in computer science, among others in the programming systems PRIZ and NUT created in Estonia.

The first contacts of the renowned computer scientist Grigori Mints with Estonian science date from the end seventies of the previous century, when he spoke at a joint summer school of the Department of Programming of the University of Tartu and the Institute of Cybernetics at Elbi near Pärnu. The topic of the lectures was temporal complexity of algorithms. In 1991 he held for a short time the part-time position of Professor of the Department of Programming at the University of Tartu, delivering a course in the theory of proofs. The development of Estonian computer science and logic was influenced by this presently world-famous scientist in logic most of all in those ten years, when he worked at the Institute of Cybernetics. His multifaceted activities embraced teaching to colleagues the basic laws of logic, participation in research projects, publication of printed matter explaining the logical principles of programme synthesis, delivering lectures, organising scientific events, promotion of international scientific contacts, etc.

During his academic career, soon reaching half a century, Grigori Mints has worked as a visiting Professor in Stockholm University of Technology, in UC Berkeley University and Ludwig Maximilian München University and as adviser in Californian Palo Alto Kestrel Institute. He has been supervisor of many Doctoral theses and author and editor of scientific publications.

Grigori Mints is member of several scientific and professional unions, incl. Symbol Logic Association, American Mathematical Society, St. Petersburg Mathematical Society and he has over years belonged to numerous programme and organisation committees of his domain, councils and editorial boards of scientific journals. His extensive science-related activities are aptly characterised by the fact that he has written over three thousand reviews to well-known abstract magazines Mathematical Reviews, Zentralblatt für Mathematik, Computer Abstracts, Referativnyi Zhurnal Matematika, etc.

In 2008 Grigori Mints was elected Foreign Member of the Estonian Academy of Sciences in computer science. Anniversaries of 2009:

More anniversaries in 2009:

65th anniversary

Member of Academy *Ene Ergma*

Member of Academy *Richard Villems*

60th anniversary

Member of Academy *Mart Saarma*

Member of Academy *Mart Ustav*

55th anniversary

Member of Academy *Jaak Aaviksoo*

## MEMBERS OF THE ACADEMY

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As of February, 2009\*

**Olav AARNA**, born 4.11.1942, elected 1990, informatics. Tallinn University of Technology 1965. Member of the Board, Estonian Qualification Authority (2008); Mustamäe tee 16, 10617 Tallinn ESTONIA, Tel: +372 679 1750, E-mail: olav.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, E-mail: aben@cs.ioc.ee. HOME ADDRESS Hiiu-Maleva 30-2, 11619 Tallinn ESTONIA, Tel: +372 657 2407. Married, two sons.

**Mihhail BRONSHTEIN**, born 23.01.1923, elected 1975, agricultural economics. St. Petersburg State University 1949. Professor emeritus, University of Tartu (1993). HOME ADDRESS Kolde pst 104-44, 10316 Tallinn ESTONIA, Tel: +372 5662 9275. Widower, 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, E-mail: 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, E-mail: J.Engelbrecht@akadeemia.ee. HOME ADDRESS Trummi 34J, 12617 Tallinn ESTONIA, Tel: +372 672 6045. Married, son and daughter.

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\* Organisations are presented according to their current names.



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

**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 5645 3175, E-mail: 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, E-mail: 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: +372 738 3017, Tel/Fax: +372 737 5570, Fax: +372 738 3033, E-mail: 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: +372 639 7991, Fax: +372 639 7992, E-mail: 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, E-mail: 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; E-mail: 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, E-mail: kaljo@gi.ee. HOME ADDRESS Raja 7A-6, 12616 Tallinn ESTONIA, Tel: +372 672 6551. 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, E-mail: mati.karelson@ut.ee, HOME ADDRESS Mõisatamme 27, Vahi, 60534 Tartumaa ESTONIA, Tel: +372 734 8399. Married, two sons.

**Harald KERES**, born 15.11.1912, elected 1961, theoretical physics. University of Tartu 1936. Professor emeritus, University of Tartu (2000). HOME ADDRESS L. Koidula 6, 51006 Tartu ESTONIA, Tel: +372 742 2383. Widower, two daughters.

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Estonian Academy Publishers continued in 2009 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 2009 the journals were issued in the following volume:

Title	Number of issues per year	Total volume in printed sheet
Acta Historica Tallinnensia	1	12.0
Estonian Journal of Archaeology	2	9.5
Estonian Journal of Earth Sciences	4	43.0
Estonian Journal of Ecology	4	21.0
Estonian Journal of Engineering	4	23.5
Linguistica Uralica <sup>1</sup>	4	20.0
Oil Shale	5	34.1
Proceedings of the Estonian Academy of Sciences	4	33.0
Trames	4	26.8
Total	32	222.9

<sup>1</sup> Appeared Vol.3 of *Supplementary Series to Linguistica Uralica* "Salis-Livisches Wörterbuch", consolidating from printed and manuscript materials the whole lexis, which is known of the dialect of the Livonian language onetime spoken in Livonia (in the district of Salaca of present Latvia), which became extinct in the 19<sup>th</sup> C. Authors of the book are G. Eberhard Winkler (Göttingen, Germany) and Karl Pajusalu (Tartu).

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.

Journals are electronically available at website of the Estonian Academy Publishers and through mediation of well known electronic publishers EBSCO

and C.E.E.O.L. Starting from 2006, the website of the Publishers offers free access to full texts of all articles of all journals.

In 2008, Estonian Academy Publishers made an agreement with Google on placing full texts of articles of journals of the previous annual volumes in Internet.

Starting from 2008 all scientific articles of the journals have been supplied with the *doi*-indexes (*Digital Object Identifiers*), creating better opportunities for availability of articles, increasing readership and rate of citation.

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

As of now, 7 journals out of 9 issued by the Publishers are reflected in the ISI *Web of Science* databases.

Since 2008, abstracted in that database are the journals *Trames*, *Linguistica Uralica*, *Estonian Journal of Archaeology* and *Acta Historica Tallinnensia*. From the same year, that list has included *Proceedings of the Estonian Academy of Sciences*, series *Physics. Mathematics* which merged at the beginning of the reporting year with the *Chemistry-series*, and is released now under a common title *Proceedings of the Estonian Academy of Sciences*. Instead of the *Geology-series*, for the third year already the journal *Estonian Journal of Earth Sciences* has appeared whose articles have been since 2007 also in the ISI database. From the earlier period, since 1994 that database (incl. *Current Contents*®) has included the journal *Oil Shale*.

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

In 2009 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 Archaeology* 13/2: Special issue on Maritime Cultural Landscapes. Editor M. Mägi.
2. *Estonian Journal of Earth Sciences* 58/1: Special issue on the Seventh Baltic Stratigraphical Conference). Editors D. Kaljo and O. Hints.
3. *Estonian Journal of Earth Sciences* 58/4: Special issue dedicated to the International Year of Planet Earth, 2007–2009. Guest editor A. Soesoo, Institute of Geology of Tallinn University of Technology.

4. Estonian Journal of Ecology 58/2: Special issue on mammals in the Baltic States. Guest editors T. Maran, Tallinn University and A. Miljutin, Zoological Museum of the University of Tartu.
5. Estonian Journal of Ecology 58/3: Special issue on mammals in the Baltic States. Guest editors T. Maran, Tallinn University and A. Miljutin, Zoological Museum of the University of Tartu.
6. Estonian Journal of Ecology 58/4: Special issue on the structure and functioning of marine communities. Guest editors J. Kotta and I. Kotta.
7. Estonian Journal of Engineering 15/1: Selected papers of the 6th International Conference of DAAAM Baltic, Industrial Engineering. Guest editor R. Küttner, Tallinn University of Technology.
8. Estonian Journal of Engineering 15/2: Selected papers of the 6th International Conference of DAAAM Baltic, Industrial Engineering). Guest editor R. Küttner, Tallinn University of Technology.
9. Estonian Journal of Engineering 15/3: Special issue on oceanography, meteorology and coastal engineering. Guest editors T. Soomere, Institute of Cybernetics of Tallinn University of Technology and S. Keevallik, Marine Systems Institute of Tallinn University of Technology.
10. Estonian Journal of Engineering 15/4: Selected papers of the 18th International Baltic Conference on Engineering Materials and Tribology, BALTMATTRIB 2009. Guest editor P. Kulu, Tallinn University of Technology.
11. *Linguistica Uralica* 45/4: Special issue on Livonia and South-Estonia.
12. *Oil Shale* 26/3s: Special issue on the EU energy and climate policy impacts the future energy mix in Estonia. Guest editor Ü. Rudi.
13. *Proceedings of the Estonian Academy of Sciences* 58/1: Special issue on polymer science. Guest editor A. Öpik, Tallinn University of Technology.
14. *Trames* 13/3: Special issue Regional development challenges of EU border regions in the context of the interaction between the EU and countries of its immediate neighbourhood. Guest editors E. Berg and G. Roll, University of Tartu.

Following are some topics having been under consideration.

How large should be the share of articles by foreign authors in the journals? It is opined by some that the share is presently too low for the journal to be an international edition. Whereas there are opinions to the contrary – why should Estonian support the release of foreigners' articles?

The table hereunder presents the number of Estonian and foreign authors as regards all pieces of writing of nine journals of 2009. Differentiated are full-

volume scientific articles and short pieces of writing: Editor's Page, Foreword, Review, Short Communications, News etc.

Title of journal	Total number of articles 2009			Number of long scientific articles as per authors			Number of short pieces of writing as per authors		
	Total pieces of writing	Long scientific articles	Other short pieces of writing	Estonian authors only	Estonian + foreign authors	Foreign authors only	Estonian authors only	Estonian + foreign authors	Foreign authors only
Acta Historica Tallinnensia	7	7	–	7	–	–	–	–	–
Estonian Journal of Archaeology	11	10	1	6	–	4	1	–	–
Estonian Journal of Earth Sciences	33	31	2	17	12	2	2	–	–
Estonian Journal of Ecology	32	29	3	10	2	17	3	–	–
Estonian Journal of Engineering	36	32	4	10	7	15	3	1	
Linguistica Uralica	44	22	22	12	2	8	9	–	13
Oil Shale	56	41	15	20	6	15	14	–	1
Proceedings of the Estonian Academy of Sciences	31	30	1	10	8	12	1	–	–
Trames	22	22	–	12	3	7	–	–	–
Total	272	224	48	104	40	80	33	1	14

The share of foreign authors in case of long scientific articles is 35.7%; in case of short pieces of writing 29.1% and of total number of pieces of writing 34.5%. The Publishers consider such participation as normal.

In 2009, in total 272 pieces of writing were released in 32 issues of nine journals, of them 224 scientific articles and 48 short pieces of writing. All journals appeared under schedule.

In connection with the economic crisis the budget of the Publishers was cut by ~ 600 thou kroon in 2009 and it will decrease further in 2010, the size of cut is not yet known.

Besides journals, there appeared as commissioned works three more works, among them Enn Pirrus' monograph "Large rocks of Estonia. The story of boulders" (hardback, 168 p., incl. 48 pages of colour illustrations).

Publication of books has steadily dwindled due to the lack of demand. There are a number of reasons to account for that however the main of them is the circumstance that the Estonian Academy Publishers are not, regardless of several proposals of Tallinn University of Technology and University of Tallinn, in the list of publishers, earmarked by ETIS. Therefore the authors are not attributed due acknowledgement.

# **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 anti-thetic 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 col-



lection 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. Tuglas, M. Under and A. Adson),
- Older Estonian and Baltic German written culture in the 13th-19th C., German legacy in the development of modern Estonian culture,
- Mechanisms of creation of identity of the Estonian written culture (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 2009, the most important scientific event of the Literature Centre was the 5th International Symposium on Baltic Written Culture “Politische Dimensionen der deutschbaltischen literarischen Kultur / Baltisaksa kirjakuultuuri poliitiline pale”, held in 18–20 September in Tartu (main organisers Liina Lukas and Jaan Undusk). Starting from 2001, the Literature Centre together with different partners in Estonia and abroad has organised the international Baltic German symposia every second year. This symposium was held in cooperation with the University of Tartu Library and the Estonian Goethe Society and it was attended by 20 scholars from Germany, Estonia,

Latvia and Finland. Under scrutiny was mainly the Baltic written legacy in German and Latvian of 17–19 C. as a politically orientated text corpus, the topic of serfdom (incl. from the feminist point of view), enlightenment as ideology of “spirit of laws” or “bourgeois advancement”, political views of the gentry, the motive of guilt in enlightenment publicist literature, the Baltic German literature as the colonial literature etc.

The second highlight event was opening of the first review exposition of art collection of the Literature Centre “Under the changeful rainbow” in Adamson-Eric Museum on 6 November. On display at that exposition are 83 works out of the art collection of the Literature Centre numbering over one thousand works of art. Featuring among them is also the oil painting “Konrad Mägi’s portrait” (1908) by Nikolai Triik recently restored by Alar Nurkse. It is one of the most famous Estonian portraits. 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. For the exposition, a research catalogue “Under the changeful rainbow” was compiled, published as the fourth issue of the series “Under and Tuglas cultural history collections” (compiler Eha Rand). The authors of the catalogue include Jüri Hain, Jüri Kuuskemaa, Alar Nurkse and Heige Peets. The exposition will stay open until 21 March 2010. The exposition is seconded 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. It was opened with lecture by J. Undusk “Uncensored Tuglas” on 26 November. The programme will continue in 2010 once per month until closing of the exposition.

In the past year, a landmark result was also achieved in cooperation with Latvian and Lithuanian literary scholars. As a result of joint effort of three literature institutes, the lexicon of Baltic Writers “300 Baltic Writers: Estonia, Latvia, and Lithuania. A reference guide to authors and their works” appeared in Lithuania. Editor of the reference book on part of Estonia was Anneli Mihkelev, among authors were also Piret Kruuspere, Aare Pilv, Rein Undusk, J. Undusk.

November 18–20 – the 8th conference of the Baltic literary scholars “The Baltic Memory: The Beginning of the End. Literary Processes from 1968 to 1988” was held in Vilnius organised by Lithuanian Institute of Literature and Folklore, with papers delivered by A. Mihkelev and A. Pilv.

In 2006–2008 A. Mihkelev held the grant from the Estonian Science Foundation “Intertextual contacts as sources of strategies and ideologies”, in the framework of which several Estonian-Latvian literature seminars were organised. In 2009, she handed over to publishers, as outcome of that work, the omnibus volume containing 18 articles on comparative analysis of Estonian and Latvian literature “Turns in the Centuries, Turns in Literature: Compara-

tive Approach to Estonian and Latvian Literatures in European Context” (Collegium litterarum, no. 23. 228 pp.). Among authors is also A. Pilv.

In 2009 researchers of the Literature Centre released two works in the scope of a monograph. Eneken Laanes released the monograph on the basis of doctoral thesis defended in the University of Tartu “Unresolved dialogues: subjectivity and memory in the post-Soviet Estonian novel” (*oxymora*, no. 6. 327 pp.). The book was presented on 2 October in the Museum Department of the Literature Centre at Nõmme. The monograph has been nominated for the annual prize of the Literature Endowment of Estonia in the category of non-fiction. J. Undusk compiled, as commissioned by the Publishers “Avita” the Friedebert Tuglas' author anthology “Selection of prose”, bridging the gap of 70 years when the texts of that Estonian classic could not be read in the uncensored form, and complemented it by a study of Tuglas' prose in the volume of a monograph (224 pp.). The work received the annual prize of the Literature Endowment of Estonia.

There were a number of other important scientific events. Researchers of Estonian literature have penchant to the series of seminars of modern Estonian literature of the Literature Centre, held traditionally at Käsmu. The fourth seminar of the series focussed on Friedebert Tuglas' novel “Felix Ormusson”, was held on 13–14 November with participation of 12 speakers (moderator Mirjam Hinrikus).

March 6 – the interdisciplinary seminar “Cultural transfer, cultural exchange, postcolonial theory: impact of modern keywords on research of Estonian history and culture” (moderator Ulrike Plath), aimed at theoretically mapping the background of the governmental research project of the Literature Centre “Autogenesis and transfer: Formation of the modern culture in Estonia” (2008–2013). The seminar was attended by members of faculty and scholars from all universities and research institutions concerned with social sciences and the Humanities.

May 21 – seminar “Early history of Estonian literature: possibility of new approaches” (with papers delivered by L. Lukas and J. Undusk), preparing the writing of the early history of Estonian literature on the conceptually new basis within the framework of governmental research project fulfilled at the Literature Centre. At the seminar held in Tartu on 18-19 December, researchers of the Literature Centre met with Latvian and German scholars for fulfilment of the same task.

In 2009, impetus was propelled also to small-scale seminars of researchers of the Literature Centre in the Roosikrantsi house. The topics considered were “From ugliness to beauty and vice versa” (A. Mihkelev), “Estonian theatre in the 20th C.” (P. Kruuspere), “Trinity dogma and the idea of infinity” (R. Undusk), “The right to forget?” (A. Pilv).

In 2009 researchers of the Literature Centre delivered 40 scientific papers, of which 17 at international scientific events. Besides the aforementioned they also spoke at conferences “East and Central European History Writing in Exile – International Dissemination of Knowledge” (Stockholm), “History of Literature as a Factor of a National and Supranational Literary Canon” (Tartu), “The Phenomenon of Beauty and its Horizons” (Vilnius), “Transformations of the European Landscape: Encounters Between the Self and the Other” (Vilnius), “The Baltics as an Intersection of Civilizational Identities. 8th Conference on Baltic Studies in Europe” (Kaunas), “How Art Performs History” (Tallinn), “Culture of Communication, Communication of Culture. 10th World Congress of Semiotics” (La Coruna) etc., as well at the Helsinki Book Fair.

In 2009 the researchers of the Literature Centre authored 21 scientific articles in foreign language and 21 scientific articles in Estonian both at home and abroad.

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

Within the framework of the state programme “The Estonian language and cultural memory”, the Museum Department is fulfilling the scientific project “Intellectual heritage of Friedebert Tuglas, Marie Under and Artur Adson” (1009–2013, supervisor of project Õne Kepp). The goal has been to mediate the legacy of Elo and F. Tuglas and M. Under and A. Adson as historical cultural assets to the public by way of academically edited issues, through art exhibitions etc.

One of the main goals of the project is completion of the “Collected Works” by F. Tuglas, edited text-critically and supplied with forewords and detailed commentaries. In 2009, the 13<sup>th</sup> volume of the series appeared, containing Tuglas’ monograph “Eesti Kirjameeste Selts” (edited by Ü. Kurs, T. Haug, epilogue by M. Laar. 430 pp.).

The work with the collections of the cultural history of the Literature Centre took place until 2008 within the framework of the state programme “The humanitarian and natural science collections”. Since 2009 the works with collections have been funded directly from budget of Ministry of Education and Research. The goal is streamlining the collections of scientific and historical value, improvement of the maintenance conditions and optimising the opportunities of use. In October 2009 the Centre transferred from electronic database KVIS to a new database MuIS. In 2009, 1872 entries of the archival library were added to the database. Altogether the data of 12640 holdings have been entered. The database is available through server of the Ministry of Culture.

In the process for preparation for the review exposition “Under the changeful rainbow” held in 2009, the graphics collection was framed anew and the frames of the collection of paintings were restored. From all exposed works, high quality photo reproductions were prepared (photograph Stanislav Stepaško) for use in the exposition catalogue. The exposition has met with vibrant interest of the public and it has been visited, as of end 2009 by 1114 people. During the year the holdings of the Museum Department were used for research work by 62 people, with respect to altogether 2053 holdings.

The House was visited by 1154 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 972 works put on display.

## FINANCIAL ACTIVITIES

The budget of the Estonian Academy of Sciences for 2009 and its execution  
(thou kroons)

	Budget	Implemen- tation
<b>INCOME</b>		
<b>ALLOCATIONS TO THE ACADEMY OF SCIENCES FROM THE STATE BUDGET</b>		
	20 298.81	20 298.81
incl. for basic activities of the Academy	14 368.76	14 368.76
for fees of Members of Academy	3 960.00	3 960.00
for fees of research professors	1 620.00	1 620.00
for effecting National Science Prizes	350.05	350.05
<b>OTHER REVENUE</b>	<b>3 605.01</b>	<b>3 582.28</b>
Target allocations of Ministry of Education and Research (MER)	945.60	945.60
incl. membership fees	845.60	845.60
for investments	0.00	0.00
for renovation of Kohtu 6	0.00	0.00
for radio programme "The Falling Apple"	100.00	100.00
Income from rent of rooms	470.00	447.27
Income from the analysis ordered by MER	1 428.31	1 428.31
Receipts from sale of printed matter and commissioned works (Academy Publishers)	761.10	761.10
<b>ALLOCATIONS TO UNDER AND TUGLAS LITERATURE CENTRE</b>		
	3 871.72	3 871.72
Through Ministry of Education and Research	3 702.42	3 702.42
incl. targeted financing of research	2 164.32	2 164.32
for infrastructure expenses	607.56	607.56
basic funding	300.67	300.67
for fulfilment of the state programme	590.47	590.47
for study loan	39.40	39.40
for investments	0.00	0.00
for renovation of the Literature Centre	0.00	0.00
Appropriations for specific purposes	53.00	53.00
From sale of printed matter	116.30	116.30
<b>TOTAL INCOME</b>	<b>27 775.54</b>	<b>27 752.81</b>

## EXPENDITURES

### GENERAL BREAKDOWN

Main activities of the Academy (through Academy Office)	9 531.16	9 447.33
Estonian Academy Publishers	4 419.70	4 419.70
Fees of Members of Academy	3 960.00	3 851.95
Fees of research professors	1 620.00	1 620.00
Prizes, grants and medals	200.00	186.44
incl. N. Alumäe medal	5.00	5.00
Prize for the students' research papers	195.00	181.44
Scientific Societies	1 249.00	1 249.00
incl. Estonian Naturalists' Society	450.00	450.00
Mother Tongue Society	123.00	123.00
Estonian Geographical Society	107.00	107.00
The Society of Estonian Regional Studies	94.00	94.00
Estonian Union of the Philosophy and History of Science	90.00	90.00
Estonian Literary Society	90.00	90.00
Learned Estonian Society	90.00	90.00
Estonian Musicological Society	90.00	90.00
Estonian Physical Society	90.00	90.00
Estonian Association of Engineers	25.00	25.00
Membership fees to internat. science organisations	845.60	845.60
Capital repairs of the Academy House	300.00	482.71
National Science Prize Committee	350.05	350.05
Analysis ordered by MER	1 428.31	0.00
Under and Tuglas Literature Centre	3 871.72	3 553.80

TOTAL EXPENDITURES 27 775.54 26 006.58

MAIN ACTIVITY OF THE ACADEMY (THROUGH ACADEMY OFFICE)		
Wages	4 709.50	4 688.24
incl. permanent staff	4 100.00	4 092.58
other than permanent staff	500.00	489.16
fees to Emeritus Professors	49.50	49.50
allowances to widows of Members of Academy	60.00	57.00
Social tax and unemployment insurance premium	1 650.00	1 632.11
Office expenses	311.66	321.65
Maintenance expenses of the property and premises	1 350.00	1 334.47
Investments	80.00	77.79
Transport	110.00	100.51
Mission expenses	250.00	236.67
Representation and entertaining expenses	200.00	200.00
Young scientists and popularisation of science	220.00	216.05
incl. radio programme "The Falling Apple"	100.00	100.00
Training expenses	10.00	9.89
Expenses for committees and divisions	55.00	51.29
Expenses for Foundation for International Exchanges	500.00	493.66
Juridical service, accounting and auditing	40.00	40.00
Publications, etc.	45.00	45.00
TOTAL EXPENDITURES OF THE OFFICE	9 531.16	9 447.33
ESTONIAN ACADEMY PUBLISHERS		
Wages	2 232.40	2 232.40
incl. permanent staff	2 173.80	2 173.80
other than permanent staff	58.60	58.60
Social tax	757.70	757.70
Administration expenses	288.80	288.80
Printing expenses	379.70	379.70
Expenses related to commissioned work	761.10	761.10
TOTAL EXPENDITURES OF THE PUBLISHERS	4 419.70	4 419.70
UNDER AND TUGLAS LITERATURE CENTRE		
Wages	2 080.00	2 063.70
incl. permanent staff	1 950.00	1 937.70
other than permanent staff	130.00	126.00
Social tax	720.00	713.40
Research and administration expenses	1 031.72	750.70
Study loan	40.00	26.00
TOTAL EXPENDITURES OF LITERATURE CENTRE	3 871.72	3 553.80
Explanation:		
1428.31 thou EEK	analysis ordered by MER	
304.37 thou EEK	residual balance of targeted financing of Under and Tuglas Literature Centre research topics	
13.55 thou EEK	residual balance of Under and Tuglas Literature Centre study loan	



## **ASSOCIATED INSTITUTIONS**

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.

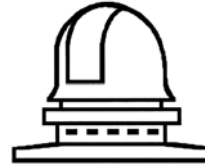
One form of cooperation between the Academy and the institutions associated with it is the reciprocal exchange of information. Surveys of the activities of the institutions associated with the Academy have been published in the Academy Year Book since 1998. Included reviews differ from one another by 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 2009 activities of the institutions associated with the Academy have been presented in the chronological order of their association date:

Tartu Observatory .....	115
Institute of Ecology at Tallinn University .....	118
Academic Library at Tallinn University .....	121
Institute of the Estonian Language .....	124
Estonian Literary Museum. ....	127
Institute for International and Social Studies at Tallinn University. . .	130
Estonian National Museum .....	132
Jõgeva Plant Breeding Institute.. ....	137

## TARTU OBSERVATORY

Associated with the Estonian Academy of Sciences  
8.05.1998



Founded 1808

Personnel: 78, of whom 48 researchers

Address: 61602 Tõravere, the Tartu County, ESTONIA

aai@aai.ee

<http://www.aai.ee>

Acting Director: Laurits Leedjärv, Tel: +372 741 0265, Fax +372 741 0205,  
leed@aai.ee

Head of Information Team: Mare Ruusalepp, Tel: +372 741 0261,  
mare@aai.ee

The performance and level of the work of research institutions is first and foremost assessed on the basis of internationally acknowledged criteria. Such approbation is to be faced by the Estonian science in 2010. Summing up the year of 2009, it is worth emphasising also the other aspect, which is perhaps particularly important with smaller countries – the research institutions and researchers must be visible in the society, they must convey the message of their work to the public in the comprehensible manner. In that sense the past year was very important for Tartu Observatory: 2009 was declared by the UN the International Year of Astronomy (IYA 2009). Over 140 countries of the world marked the event, when 400 years ago Galileo Galilei turned for the first time the telescope into the sky. The main goals of the IYA 2009 were to show how important astronomy is in the culture and history of humanity, to explain the modern picture of the world, to awaken broader interest to science in general, especially among the youth.

Astronomers of Tartu Observatory participated actively in organisation of the IYA 2009 events. Take for instance the undertakings like public star gazing nights every month, exposition of astronomical photos (in many places in Tartu, Tallinn, Narva, Pärnu, Võru), competition of pupils' drawings and essays, competition of computer drawings (the latter took place in cooperation with EENet), series of pieces of writing and special issue on telescopes in the magazine "Horisont", days with papers at Rõuge, Kohtla-Järve etc., seminar "200 years of wondering at Universe in Estonia" in the Academy of Sciences Hall. Of course, throughout the year regular activities for popularising the astronomy continued – reception of excursions in Tõravere, lectures at schools etc., talks in written and spoken media. On the occasion of IYA 2009 the annual gathering of Estonian amateur astronomers was held, at that time again in Tõravere. In the process of the latter, an important cultural event was the concert of Virumaa chamber orchestra in the hall of our main building,

where the music of renowned astro-composer Urmas Sisask was played. IYA 2009 prompted the Estonian Literary Museum to dedicate the 53<sup>rd</sup> Kreutzwald Days to mainly the sky and stars – among speakers were several astronomers of Tartu Observatory.

Quite naturally the primary and main activity of a research institution is scientific work. Its topics are characterised in the broad plan by titles of the three target financed topics. “Dark energy, dark matter and formation of structure in the Universe“ (supervisor of the topic Enn Saar) considers Universe as an integrity, researches its building and history both by means of theoretical models of curved space geometry and by use of modern bulky observation data. “Observational and theoretical investigation of stars and their envelopes during advanced evolutionary phases” (supervisor of the topic Tõnu Kipper) is concerned with certain specific and small-numbered star types, taking into account and developing the star physics foundations. The most Earth-bound scientific topic “Remote monitoring of optically complex natural environments” (supervisor of the topic Andres Kuusk) is especially extensive by its content and embrace, studying the environments in air, on land and in water. The research methods too are multiple: observations from satellites and aircraft, land and water surface field works, laboratory measurements and naturally creation of theoretical models.

In 2009 the Estonian Science Foundation supported the research work of Tartu Observatory with 13 research grants and two post-doctor grants. Furthermore, at least a dozen contractual works and projects were handled. The most important among the latter is EU 7th Framework Programme project EstSpacE for developing the Estonian space research potential and for establishing contacts with other European space research centres. In 2008, with the help of that project much was invested into the scientific instruments, however in 2009 more interest was accorded to seminars-summer schools and recruiting new specialists. Regardless of reduced budgetary financing in the conditions of economic slowdown the number of personnel of Tartu Observatory grew to 78 by the end 2009, mainly thanks to the EstSpacE project.

The number of published scientific articles amounting to nearly 50 turned out somewhat modest as compared to some earlier years, the number of popular science articles was not large either, regardless the IYA 2009. However such fluctuations are natural in a sense, we are looking forward to a new rise in 2010. The numerous preprints allow us to anticipate it. The earlier research work however was conferred several tokens of distinction, the most important among which is surely the Marcel Grossmann prize to Member of Academy Jaan Einasto. That prize is granted by International Centre for Relativistic Astrophysics (ICRA, Italy) and by the related network of research institutes ICRANet. Marcel Grossmann was the Swiss mathematician, schoolmate of Albert Einstein, the laureates of the prestigious award named after him number several Nobel Prize winners. The prize for 2009 was awarded to

Member of Academy Jaan Einasto for his pioneering contribution in discovery of dark matter and cosmic web and promotion of research work in the historical Tartu Observatory. The prize was handed over at the opening day of the 12th Marcel Grossmann Conference in Paris in UNESCO headquarters. In 2009 Jaan Einasto celebrated his 80th anniversary. One of birthday gifts he obtained was an asteroid in the sky named after him. On occasion of his birthday, in Library of the University of Tartu an exposition “Per aspera ad astra” was opened. Senior researcher Uno Veismann has long been noted due to his energetic activity at popularising science. That work too was duly recognised in the past year with the 1st prize at competition for the prize of popularising the Estonian science.

Tartu Observatory attempts to stimulate in the first place research by youth. In September the scientific council distributed the memorial prizes or stipends already traditional: Juhan Ross memorial prize was awarded to doctoral student of the University of Tartu Margit Prüssel, Ernst Julius Öpik prize was split between two students of the University of Tartu – Jaan Laur and Juhan Liivamägi.

The present synopsis does not naturally embrace all doings of our scientists in 2009. The traditional Annual Report of the Tartu Observatory has appeared where those interested will find a much more detailed treatment.

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

Associated with the Estonian Academy of Sciences  
16.06.1998



Founded 1992

Personnel: 32, of whom 24 researchers

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Scientific Secretary: Kadri Vilumaa, Tel: +372 6199 827,  
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In 2009, scientific research was carried out within the framework of 39 topics of different levels and projects, incl. 2 target-financed topics by Ministry of Education and Research of Estonia, 6 Estonian Science Foundation grants (incl. 2 Mobilitas grants) and 31 applied co-operation agreements. One international co-operation agreement was concluded. The institute participated in several international programmes. Research work was also carried out within framework of 5 Doctoral theses.

The Institute participated in international cooperation projects, of which the most comprehensive were COST Action FP0601: Forest Management and the Water Cycle (FORMAN), Coordinators on part of Estonia: M. Pensa, E. Lode; COST Action 639: Greenhouse gas budget of soils under changing climate and land use (BurnOut), Coordinator on part of Estonia E. Lode; II Post-POLLANDCAL – NordForsk Researcher Network, a formal network of palynologists, Participants on part of Estonia M. Kangur, T. Koff, S. Sugita; LandClim – NordForsk Researcher Network, Participants on part of Estonia: M. Kangur, T. Koff, S. Sugita.

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

Topic: Lake-level fluctuations during the postglacial period: causes and impact on lake ecosystems (project leader Professor [Jaan-Mati Punning](#)/Jaanus Terasmaa). The researchers composed the databases of changes of lake water levels and pollen diagrams for Estonian (and some Latvian and Belarus) lakes. The databases enables to draw conclusions about regional regularities in the fluctuation of water levels and vegetation history in the Northern Baltic region. Results of preliminary analyses of pollen diagrams database suggest that on the regional scale the evolution of Estonian vegetation cover has followed different paths. It was proved that the model worked out by analysis of spatial

variation of surface sediments and the reconstructed palaeobasins of the lake can be used in analysis of temporal variations. Results showed that in Peipsi s.s. the sediment type, nutrients' content and distribution pattern of diatom communities and distribution of concentrations is related to water depth and distance to the shore. Surface sediments in Peipsi s.s. fall into three groups: sand, till and silt. It was found that in Peipsi s.s. a sediment layer with a thickness of 5-cm contained 490 tonnes of total phosphorus per year. Novel methods such as CAT-scan, analysis of morphotypes of carbonate concretions and XRF analysis was introduced. A methodology of grain-size analysis suitable for the study of cohesive lake sediments has been developed. A novel calculation of diatom cell concentrations was introduced for the first time in Estonia.

Topic: Impact of disturbances on wetland ecosystems in Estonia (project leader Margus Pensa). By reference to testate amoebae communities, the change of mire water levels was reconstructed in Selisoo, in the impact zone of underground mining. The initial results from the northern part of Selisoo show that in the recent decades the average level of mire water has lowered. That trend relates to improvement of tree growth and the twice increased carbon emission from soil, as compared to Selli bog in Alam-Pedja nature conservation area. The post-fire recovery of vegetation was analysed in the Ves-kijärve and Tänavjärve bogs, burning in 2008, and in Fjodorisoo bog, burning in 2006. In those areas long-term observations are planned in permanent transects. The researches carried out on coastal wetlands show that the share of the storms with very strong and high sea water levels (*ca* +1 m) has increased in the recent decades. This increase has resulted in a turnaround of prevailing processes in West and North-West Estonian coasts (which are located in land-lift area), where erosion has become predominant instead of accumulation - regression has been substituted by transgression. For instance, the main part of changes occurring in the Kiipsaare survey area have taken place due to frequent coincidence of very strong storms and high sea level.

30 scientific articles were published by the staff members of the Institute in 2009, incl. 19 articles in peer reviewed international scientific publications. Besides the above, 15 abstracts of conference, plus 4 popular science articles and a popular science book came out. The compendium "Viimsi parish 90" came out co-edited by U. Ratas. 23 papers were delivered at international conferences and meetings, 13 papers at national events and 29 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. The volume of applied researches related to issues of ecological restoration and projects forming the state's environmental policy increased. As new initiatives, the programme-based co-operation was launched in regional networks, involving local companies, self-governments and academic institutions. To invigorate the research transfer,

with several companies the innovation participatory interests offered by Enterprise Estonia Foundation were used.

In autumn 2009 an international conference LandClim – Nord-Forsk Researcher Network was held – the cooperation project of pollen, plant canopy and climate modellers for assessment of early human impact in North Europe. The Institute participated at organisation of the national inter-university autumn symposium of young geographers “If there were no forest obstructing the view”, delivering also papers. At competitions of students’ papers the Bachelor papers supervised by researchers of the Institute were conferred distinction on.

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

## ACADEMIC LIBRARY OF TALLINN UNIVERSITY

Associated with the Estonian Academy of Sciences  
17.06.1998



Founded 1946

Personnel: 132, of whom 2 researchers

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Number of users 46 651

Number of copies in the circulating collection 2 511 121

In 2009, the budgetary cuts notwithstanding, several important developments took place both in advancing the Library's librarian and information services and the Library's R&D activity.

Availability of science information became better through two new electronic science databases. In 2009 the Library acquired the collection *Project MUSE Premium*, containing nearly 400 peer-reviewed social and humanities journals from the publishers of leading world universities. The access has been provided to 10 latest annual issues. The second important purchase was access to the social, humanities and natural sciences collections *Arts & Science* I, II, III, IV of the scientific journals of the archival database JSTOR. The database contains digitised annual issues of journals since their inception, however due to the restriction imposed by the publishers the latest 3-5 annual issues of the journals are not available as yet.

For updating the library services, a 24h book-return point-of-services was activated at the main entry to the Library building. The said service is provided to all readers of the Library using the ID card for the reader's card.

In connection with the need to vacate for building works the University premises at Narva Rd 29, the student library collections were moved to the Academic Library House. Added to the Academic Library collection were study and recreation zones in the 1st and 2nd floors, various alterations were done in the foyer.

One of the tasks of the Library is compiling retrospective bibliographic databases, for which the Library is responsible in the following scope: book in Estonian 1525–1917; journalism in Estonian 1766–1940; books related to Estonia in foreign languages, having appeared in Estonia and elsewhere up to 1940; periodicals related to Estonia in foreign languages, having appeared in Estonia and elsewhere 1675–1940. In 2009, focus was made in the first place on description of works in foreign languages printed prior to 1830 in Tallinn;



finalised was compilation of national bibliography of the books in Russian having appeared in Estonia until 1940 (entries are recorded in electronic catalogue ESTER). Over 9000 of Library's entries of the early printed book were loaded into the European Heritage of the Printed Book Database.

The Library's early printed book collection includes over 30 000 titles of printed rarities. When adding the books having appeared until 1940, the volumes now number *ca.* 370 000. The core of the collection is the library of the St. Olaf Church from the 16th C. It was seminal to the Baltic-German collection beginning to come into being in 19th. C. Present Baltic collection and Baltic reading halls derive their name from that original collection. With the early printed book, of essence is not only the content but also the binding, paper, additions or drawings which convey a potent message. All that information makes the early printed book laden with implication and is therefore a well-spring for research by art historians, historians, social scientists, bibliophiles. In 2009 the Baltic collections were replenished with bibliographic legacy of Professor in Germanistics Karl-Heinz Borck, containing numerous titles of *Estica/Baltica* printed matter.

The most intriguing event of that year is related to a rare discovery from the cover of an early book – a book by the Italian theologian Angelo Carletti di Chivasso *Summa angelica de casibus conscientiae*, completed in Nurenburg (Nürnberg) in Anton Koberger Printers' on 28.08.1488. The volume arrived in Tallinn as early as in the first half of the 16th C. In the process of opening in the Library's Restoration Department of the protective sheet of the front cover of the volume, a sheet covered with black print-ink carrying on one side a text from Bible in Latin was revealed. The Estonian memory repositories have only just few incunables having arrived here centuries ago. Hence the attributed fragment of an incunable is a significant discovery to all those interested in the history of books.

The Centre for Early Printed Book organised several events in 2009. The exhibition "Literary life in Tallinn in the 17th C." provided an overview both of the 17th C. occasional printed matter and literature of that period. Meriting special mention are volumes having belonged to Paul Fleming up to now preserved in the Library's Baltic Department. At the exposition "International Year of Astronomy" the historical astronomy-related literature from the Baltic Department was presented. Put on display was selection of the works by family of the world-famous Struve, and also works by Mädler and a number of other works related to Tartu or known in the whole of Europe. Traditional expositions presenting printed matter from Baltic collections were continued in the reading hall, so were the virtual expositions from Baltic collections: *Hortus Librorum* 8; 9.

In 2009, international cooperation continued within framework of Consortium of European Research Libraries (CERL). June witnessed the joint Early Prin-

ted Book Seminar of the Library and CERL at Tallinn University. The papers delivered provided to the audience an overview of virtual and hard copy collections in Europe containing the bibliology of the 15th –18th C. and the databases reflecting thereof.

The 20th anniversary of the Restoration Department, established in the composition of the Library on 2 January 1989 was marked with the exposition “Conservation activity in the Academic Library”. The Restoration Department is concerned with monitoring of microclimate of the repositories, restoration of the rarities and research into history of binding. The exposition had on display various working implements and conservation, restoration and binding materials, as well as literature presenting the history of the early printed book and conservation, having appeared in the Department.

As a science library the Academic Library is also vested with the task of compiling bibliographic databases. By the end 2009 the website of the Library held available to users 11 bibliographic and 2 biographic databases. Starting from 2008 bibliography of the compatriots’ book has been compiled, where 242 new entries were recorded in 2009, and 3 230 entries were corrected.

Centre of Estonian Literature in Exile organised in March the international conference “Estonian scientists in exile”, where 20 papers were delivered, 8 of them by compatriot authors. The goal of the conference was to present the scientists of Estonian descent having acted and acting abroad, whose contribution to the world science has been outstanding, whose activity, however is little known in their home country. In October, the collection of articles completed on the basis of papers of the conference was presented, featuring 22 articles.

In 2009 researchers of the Library continued the earlier started research topics, on the basis of which a number of papers were delivered and publications released. Kaja Tiisel continued her research on the topic “History of mentality of Tallinn of the 1st half of 19th C.”, Anne Valmas continued research of culture and publishing activity of Estonians in exile within the framework of the research topic “Exile book in Estonian cultural picture”.

Head of Restoration Department Rene Haljasmäe is continuing the doctoral research work in the Estonian Art Academy on the topic “Incunables. Ratio of damage and restoration in books printed in 15th C.”. The research analyses the incunables located at Academic Library and seeks the best solutions for their preservation and further use. The output of the research is creation and replenishment of web-based database of Estonian incunables to be compiled by the Academic Library of Tallinn University. In connection with the doctoral thesis Rene Haljasmäe obtained a grant and sojourned in March on a 21-day research tour at Duke August Library in Wolfenbüttel, in October at international seminar of conservators at Copenhagen University, delivering a paper “Book as an artefact, how to make closer reality in digitalisation?”

**INSTITUTE  
OF THE ESTONIAN LANGUAGE**

Associated with the Estonian Academy of Sciences  
11.05.1999



Founded 1947

Personnel: 73, of whom 21 researchers

Lexicographers, terminologists and language planners 22

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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 Fenno-Ugric Languages and Dialects, Head M.A. Sven-

Erik Soosaar

Language Planning Department, Head Dr. Peeter Päll

Department of Dictionaries, Head Dr. Margit Langemets

Terminology Department, Head Tiina Soon

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

DEPARTMENT OF LINGUISTICS AND LANGUAGE TECHNOLOGY fulfilled in 2009 the target funded project “Modelling intermodular phenomena in Estonian”, supervised by PhD Meelis Mihkla. The project aims at studying the relationships between the modules of language, with particular attention to the relationships of prosody with other language levels and extra-linguistic factors, and the interrelationships between lexicon, grammar and semantics. The goal of the project is to test and to develop current intermodular theories, using data from modern Estonian. Solutions that bring together different types of linguistic information are also seen to be central to the development of linguistic applications.

A 2-part international conference “Finiteness and non-finiteness in Finno-Ugric languages. Synchronic, diachronic and cross-modular issues” was organized in cooperation with the Department of Fenno-Ugric Languages and Dialects.

Within the framework of The National Programme for Estonian Language Technology“ (2006–2010) the Department fulfils three projects:

The Estonian Emotional Speech Corpus, project leader H. Pajupuu;

Corpus-based speech synthesis for Estonian, project leader M. Mihkla;

Lexicographer’s workbench, project leader Ü. Viks.

For greater detail on every project see  
<http://www.keeletehnoloogia.ee/projects>

Main activities of the DEPARTMENT OF FENNO-UGRIC LANGUAGES AND DIALECTS in 2009 were:

- editing the 21st fascicle of the Dictionary of Dialects;
- editing the 6th volume of the Dictionary of the Votic Language;
- editing of the Etymological Dictionary;
- research of Estonian dialects and Fenno-Ugric cognate languages.

On 26–27 November the international Urals typology days were held, attended by over 20 language typologists from 10 countries.

The Department participates in the international projects “Atlas Linguarum Fennicarum” and “Atlas Linguarum Europae” (ALE).

#### LANGUAGE PLANNING DEPARTMENT

The language planners have continued, as their basic work delivery of recommendations, explanations and consultations on language. The consultations by telephone and letter (e-mail) are free of charge. To an ever wider scope, the Department has attempted to make the necessary advice and aids available through electronic media, so that those interested would get their answers by themselves. The language advice basis contains over 113 000 entries, out of which the recurring and important questions have been selected and delivered to the public notice (see <http://portaal.eki.ee/keeleabi>).

The adults' training has continued (incl. the teacher training conferences in Tallinn and Tartu) as well as the Euro Language Care. Open is the Euro Language Care website, featuring a selection of news, new terms and language advice, forum etc. (see <http://eurokeelehoole.eki.ee>). Completed has been the collection “Do the euro-texts have room for beautiful and clear language?”

The Department is concerned also with the Orthological Dictionary and Lexicon of Foreign Words. The structure and orientation of the next Orthological Dictionary (2013) has been discussed at public seminars together with editors of newspapers and publishing houses, with Language Board and Language Inspectorate.

#### DEPARTMENT OF DICTIONARIES

In the domain of dictionaries, compiling and editing of dictionaries of the Estonian general language has been continuing. All lexicographic works are being done in the Institute's vocabulary system EELEX.

The highlight of the year was completion and publishing of the six-volume “The Explanatory Dictionary of the Estonian Language” and making it available free of charge on website [www.eki.ee](http://www.eki.ee). Completed also was the last

volume of “The Estonian-Russian Dictionary” (it will appear in print in February 2010).

Developed further has been the database of the word-families of Estonian.

The Department organised the 8th applied linguistics conference (in common with the Estonian Applied Linguistics Union and Tallinn University) in April 2009. By conference, the “Year Book 5 of the Estonian Applied Linguistics Union” appeared.

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 is streamlining and elaboration of the military and security and defence policy terminology in cooperation with Ministry of Defence: in 2009 at 24 meetings 2715 terms with definitions were tackled.

The follow-up projects of the Department are the 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.

A new project is streamlining, as commissioned by the Migration Foundation, of the migration and asylum related terminology for the European Migration Network.

In cooperation with Ministry of Defence and Ministry of Foreign Affairs, the NATO MCTC (Military Committee Terminology Commission) organised a five-day session (participants 34, from 13 states).

The Department is also concerned with development of a common term base jointly with software developers.

In the previous year M. Langemets defended the doctoral thesis on the topic “Systematic polysemy of noun in Estonian and its presentation in Estonian language-ware”.

## **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: 103, of whom researchers 39, librarians and bibliographers 13  
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<http://www.kirmus.ee>  
Director: Janika Kronberg, Tel: +372 737 7701, Fax +372 737 7706,  
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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.

Underlying the activity of the Estonian Literary Museum as a science and research institution are five target-financed topics, supported by grants from the Estonian Science Foundation, the state programmes and to a lesser extent by other financing sources. The major problem pestering the Estonian Literary Museum over years has been the lack of regular funding, indispensable for preservation of bountiful and unique collections providing sustainability of national culture deposited in the Museum.

In 2009, four researchers of the Estonian Literary Museum defended the doctoral degree at the University of Tartu: from Estonian Folklore Archives Ave Tupits, from Department of Folklore Tõnno Jonuks and from the working group of Estonian Cultural History Archives Jaak Tomberg and Katrin Puik. Under supervision of researchers of the Museum 2 doctoral degrees were defended, supervisors were Mare Kõiva and Virve Sarapik. Regarding the research work the Estonian Literary Museum abided by the earlier set objective: endeavouring to become the acknowledged science publishers; with issues published under the name of Scientific Publishers of the Estonian Literary Museum, the international Collegium and peer-reviewing is practiced.

Upon publishing by Estonian Literary Museum or authored and edited by our researchers in cooperation with other publishers, the total of 50 titles were released in 2009, of which under the aegis of the Scientific Publishers 13, 4 dissertations, in cooperation with other publishers or research institutions 16 issues and 10 net issues. The highlight of the publishing effort was certainly the fact that the journal appearing since 1996 “Folklore: Electronic Journal of Folklore” was awarded the highest scientific classification. At the end 2007 the peer-reviewed journal “Folklore: Electronic Journal of Folklore” embar-

ked on the quest of accession to the list of journals reported in Thomson Reuters and as an outcome of the year-long scrutiny the journal was incorporated, starting from issues of 2008 into Thomson Reuters database Arts and Humanities Citation Index (AHCI). That database reviews in full 1400 journals in the Humanities, of which only 5 are published in Estonia. The EBSCO database "Humanities International Complete" too proceeded to mediate and review the said journal. Worth bringing into perspective among other printed items are *The Old Psalter: Folk Songs from Lügänuuse parish* from the series *Monumenta Estoniae Antiquae*, the life work of Ruth Mirov. As the fifth part from the same series, *Anthology of Estonian Folktales* was launched recently, its first volume *Fairy Tales* edited by Risto Järv, Mairi Kaasik and Kärri Toomeos-Orglaan. The selection of articles composed by Arvo Krikmann and Liisi Laineste "Permitted Laughter. Socialist, Postsocialist and never-Socialist Humor" embraces research into humour dating from Socialist and Postsocialist eras of East-European scientists. The book is introduced by the programme article by the top expert in ethnic humour Christie Davies (England) "Post-Socialist, Socialist and Never-Socialist Jokes and Humour: Continuities and Contrasts" and summed up by a theoretical summary by Liisi Laineste. Because it was the anniversary year of long-term researcher of the Estonian Literary Museum Member of Academy Arvo Krikmann, several events and publications were related to his name; the conference "From Language to Mind 3", attracted to Tartu scores of outstanding researchers of figurative speech, short forms and humour from the whole world. Edited by the leading paremiologist Wolfgang Mieder, a volume of collected articles of A. Krikmann was published by the Vermont University (USA), being a singular recognition bestowed on an Estonian scientist. A major recognition too is the fact that a pupil of A. Krikmann, Liisi Laineste was awarded the Lennart Meri memorial prize for scientific work. Related to the second major highlight event, the anniversary of Archival Library begotten within the Estonian Literary Museum, was the release of the memorial collection "Bewitched by repository".

Estonian Folklore Archives was effectively concerned with the project supervised by Anu Korb, consisting in collecting, archiving and digitalising of the heritage of Siberian Estonians, being in possession of private individuals. In the process of the project many interviews were made in various locations of Estonia. Broad-scale homeland field works took place in the Juuru parish: it was underpinned with all archival texts recorded into the database of local lore from the respective parish. Before the field works, the existing archival texts were systematised and in field works, the landscape heritage was related to the present nature with the help of GPS-coordinates. In that manner, the local lore is recorded in sound, picture, film and also on the map layer. The reporting year also witnessed employment of the long-prepared ERA database and its linking with as many archival processes as possible. In cooperation with the Estonian Cultural History Archives and Institute of Finland, the

competition of Finland-focused memories was held, bringing to the omnibus collection a number of vivacious remembrances and pieces of heritage.

In the research topic of sociological aspect of the Department of Ethnomusicology on relations of music and identity, during the year the total of 1325 people in the age bracket 15–93, in various ways related to Estonia were interviewed. The results show that the expatriate Estonians evaluate to the highest the ethical traditions and music; the strongest link with Europeans are experienced by patrial Estonians (the Russian minority of Estonia following closely suit!). The theme is very topical and holds perspective in research of open identity.

The most important output of the research topic of the Estonian Cultural History Archives were various conferences, the outcomes whereof are on the backburner to take the form of articles and researches. In the area of earlier book history the Estonian and German researchers were brought together by the conference organised by Vello Paatsi and Kristi Metste “Printed matter in Estonian and foreign languages in the Baltic”. The BaltHerNet conference organised by Piret Noorhane brought again into the limelight the problems of research of the Baltic diaspora and conservation of archives. The highlight of the year was undoubtedly organisation of the interdisciplinary 100th Uku Masing anniversary conference in September jointly with the University of Tartu, as a result of which a voluminous collection of articles is underway. On part of the Estonian Literary Museum the organisation of the conference was coordinated by Külliki Kuusk. Tiina Saluvere was vested with responsibility of organising, together with art critics, the conference marking Kaarel Ird’s 100th anniversary and the respective exposition. In cooperation with the Tallinn University Leena Kurvet-Käosaar organised in May the conference of one’s life story “Enchanted by writing the story of one’s life: one’s life story in the Estonian history of culture”. The main avenues of the target financed topic of the Estonian Cultural History Archives can be summed up as follows: 1) biography and remembrances; 2) Estonian literature in exile; 3) history of literature and digital environment (net projects “SERVITI” and “Kreutzwald’s century”) and 4) Soviet Estonian literature.

Conclusively, the achievements of all departments in fulfilling the scientific topics reveal broader integration into international nets and cooperation with foreign research institutions. For instance, complementary to the above participation is the project fiche of the European Science Foundation “First Person Writings in European Context”, and the work in the International Auto/Biography Association (IABA) Europe. Closely knit international cooperation is continuing also with Helsinki and Turku universities and Finnish Literary Society. Rutt Hinrikus is continuing cooperation in research of biographies with Nordic Council of Ministers (project “Education through Oral History Fieldwork. Understanding Social through Individual“, programme “Nordplus Neighbour“) and Marin Laak in the area of research of digital memory in the international cooperation network “Interdisciplinary Net” in Oxford.



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

Associated with the Estonian Academy of Sciences  
28.01.2003



Founded 1988

Personnel: 40, of whom 30 researchers

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<http://www.iiss.ee>

Director: Airi-Alina Allaste, Tel: +372 6199884, Fax +372 6199860,  
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The research activity of the Institute was successful in 2009. The full-time researchers of the Institute released 29 scientific publications, conspicuously standing out of which is E. Saar's article "Changes in intergenerational mobility and educational inequality in Estonia: comparative analysis of cohorts born between 1930 and 1974", *European Sociological Review*, 5 (November), 1-17.

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

The first issue of the journal "Studies of Transition States and Societies" was published. It is a peer-reviewed journal with international editorial board, issued jointly by Institute for State Sciences and Institute for International and Social Studies of Tallinn University. Planned release frequency is two issues annually and; it will publish papers from social science by both the domestic and international authors.

In the reporting year the Institute fulfilled three grants of the Estonian Science Foundation and three target financed topics. The Institute continued the target-financed topics "Changes in attitudes and life styles of Estonian residents in 1985–2013: horizontal stratification" (supervisor Airi-Alina Allaste), "Impact of Lifelong Learning on Life Course and Social Cohesion in Estonian Society" (supervisor Rein Vöörmann), "Consolidation of Democracy in Multicultural Society" (supervisor Raivo Vetik).

2009 witnessed the start-up in international cooperation of the new project of the EU 7th Framework Programme "Sensitive Technologies and European Public Ethics", STEPE (supervisor Jüri Ruus). It is a cooperation project, where 14 other partner universities are involved. The goal of the project is to

comparatively study the public opinion of 25 European states on sensitive technologies and the related ethical dilemmas. Continued was the 6th EU Framework Programme project “Towards Life-long Learning Society in Europe: The Contribution of Educational System” (coordinator Professor Ellu Saar), as well as “EUROSPHERE: Diversity and the European Public Sphere. Towards a Citizens’ Europe” (supervisor from Estonia Mikko Lagerspetz) and the survey funded by the Council of Europe “Standardizing Measurement of Alcohol Related Troubles” (supervisor on part of Estonia Airi-Alina Allaste).

Continued also participation in the European research networks: TIES (Integration in Europe of the second generation), in the framework whereof there was completed the manuscript of the book “Segregation, Disparity, Reactivity: the Russian Second Generation in Two Estonian Cities”, to be published in the Amsterdam University Publishers. The second network, where the Institute is involved, bears the title “TransEurope” and it embraces the researchers concerned with links of education and labour market. As a result of the energetic activity of personnel of the Institute, the annual meeting of researchers engaged in the network was held in Tallinn in 2009, chaired by head and coordinator of the network, researcher of international stature Professor Hans-Peter Blossfeld.

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

The structure of the Institute was complemented by one sub-unit: the centre of gender studies was set up at the Centre of Life Styles studies, approaching gender issues on the broadest plan, focussing besides women studies also on the masculinist and queer studies, which have been less in focus in Estonia until now.

## **ESTONIAN NATIONAL MUSEUM**

Associated with the Estonian Academy of Sciences  
21.12.2006



Founded 1909

Personnel: 94, of whom 17 researchers

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<http://www.erm.ee>

Director: Krista Aru, Tel: +372 735 0403, Fax +372 742 2254,  
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The Estonian National Museum has five departments: Collections Department, Research Department, Preservation and Conservation Department, Exhibitions and Museum Study Department, Management Department.

2009 was a special year – Estonian National Museum marked its 100th anniversary. Besides many undertakings, events and pieces of printed matter keenly delighting the senses and exciting aesthetic pleasure, it was the year of summing up, retrospective surveys of the past and contemplation of new plans. The pivotal place in the plans was held by designing the edifice of the Estonian National Museum in the Raadi fields and preparation for the building, hopefully to be started at end 2010.

All festive and working gatherings of the year were however bound into an integral unity by the question, what the role of the Estonian National Museum should be like in Estonia of the 21st C. The Estonian National Museum having evolved from the institution collecting the popular antiquities and consolidating the people's self-consciousness into a memory, science and research institution, feels its responsibility as a vehicle of the popular cultural memory, ever more poignantly perceiving its obligation to take part on an ever broader scale in creating estimates, attitudes and knowledge impacting on everyday life. Isn't the national museum just the institution, upholding the general human values in parallel with home and school, supplying ideas and skills to promotion of entrepreneurship basing on popular culture and nourishing the creative power of the culture? The museum can be successful in fulfilling those multiple and responsible tasks only provided it is knowledge-and-science-centred in every facet of its activity.

### RESEARCH TOPICS AND COOPERATION

The Estonian National Museum supervises two grants of the Estonian Science Foundation: "Development of the Museum's communications in the ambient information of the 21st C. (2009–2012)" and "Rise of nationalism: Ethnicity, science and politics in the inner periphery of the Russian Empire from the

beginning 19th C. – 1920s (2007–2010)”. The goal of the first grant is to help the Museum ever better to communicate and relate to the society, its various communities and stakeholders. The second grant handles the principled issues of history. The knowledge of history is indispensable for understanding ethnical processes in the contemporary world and for elucidating those processes in the language of the museum – as expositions.

The accents of all other research topics involving participation of researchers of the Museum are also the societal processes-and-changes-centred. For instance the topics: “Dynamic perspectives of the identity policy– dialogue and conflict analysis”, “Complexity of the cultural communication and methodological challenges of research into culture”, “The land use in the past, its impact on mainland and water environment”, “Children and youth in the information and consumer society under formation”, “Cultural heritage in the digital era: transformation and reception problems” etc.

Scientific and research work are based on cooperation. Besides the common topics with the University of Tartu, University of Life Sciences, Tartu Higher Arts School and Estonian Academy of Arts, the Museum participates in several international cooperation projects. Together with the Nordic museums the Estonian National Museum studies our daily food – bread (“Bread in the Nordic countries – the cultural-historical project on history of bread”). Together with scientists of Iceland, Scotland, Denmark and Norway a project has been launched, which should enable larger involvement in the future of the public in evaluation and interpretation of cultural values (“TellMus: Telling stories together: sharing views of culture memory in future museums”). Setting of the problem of the said project is simple: the electronic media has rendered unimportant the geographic distances and physical location of the individual, in the meaning of intercourse and communication. How has the individual’s relation and sharing in the world of digital cultural values altered, and what forms does it take? The central goal of that project is to find the answers, how to employ the means of electronic media so that while presenting the cultural values, they would contribute to the growth of knowledge and general human values. With their practical and applied output – digitalised, visible and available cultural values together with meta-data explicating their content – the same goal is being pursued also by several other projects of digitalising the national cultural heritage carried out at the Museum. Partner in the European project between the EU member states, one among twenty five partners in the project Europeana, the Estonian National Museum has been vested with the obligation to make electronically available 170 000 images from cultural heritage stored in the Museum. Within the framework of the project carried out by financing of EU structural funds through the State Information Systems Development Centre, the Museum has digitalised 3 000 national carpets. As early as in spring 2010 those carpets will be visible as electronic gallery to all researchers and those otherwise interested. Besides the

carpets, during the said project, from the Museum's photo collection 20 000 glass negatives and 10 000 photos will be digitalised.

#### MUSEUM HAS THE WILL, KNOWLEDGE AND OPPORTUNITIES

The Museum has multiple opportunities for application of the results of research; besides the publications they give birth also to expositions, educational and guide programmes, workshops and performances. Among twenty one items of printed matter released in 2009 by the Museum, there are issues both to those just interested in history of culture, and to the specialists. A collection of articles appeared, reflecting the generation and evolution of the idea of the national museum, operating of the museum as the national ethnographic museum and the fight for re-use of the name Estonian National Museum up until the Museum's problems in 2009 ("Estonian National Museum is one hundred years", Tartu 2009). The readers also had the benefit of re-print of Ilmari Manninen's monograph having appeared in 1927 "History of Estonian folk costumes" (Tartu, 2009), thoroughly edited, supplied with new photos, drawings and photographs taken of items. For modern design and paper use, the said item of printing was awarded the winning prize at competition "25 best Estonian books". In the series "From antiquities collection tours", the description of the renowned theatre artist Voldemar Haas of antiquities collection tours in Karula, Hargla, Rõuge, Tõstamaa and Kihnu in 1920 and 1921 appeared. Published with comments, there appeared in the same series also the tale of Henrik Visnapuu about his collection tours in 1912–1914 to Kambja, Mustjala and Jõhvi. Those issues in the form of diaries are an indispensable material for learning to know the ethnographic life of the homeland, while they are also the cultural-history corroboration to the surmise that the Museum's collections are created by the people, collected and donated by the people.

In the work of the Museum Study Department, in 2009 the fulcrum was research of regional cultural heritage, its presentation and teaching. The activists of the Museum visited Põlvamaa, Ida-Virumaa, Pärnumaa, Harjumaa, Võrumaa and elsewhere to present the artefact and written antiquities collected from parishes of those counties during the century by the Museum and deposited here. The rise of larger interest to the parish cultural heritage is certainly related to one of the major undertakings of the jubilee year of the Museum – marking of historical boundaries of parishes in all Estonian main and adjunct roads. The said marking of historical boundaries of parishes was performed thanks to the Ministry of Economic Affairs and Communications and the National Roads Administration. Through agency of the regional units of the National Roads Administration, over Estonia 443 brown-based traffic signs were established, indicating the cultural monuments as tourism objects. Marking of historical boundaries of parishes as of 1918 should contribute to

increase of the sense of community and elevate interest to collecting the local cultural heritage, to its preservation and research.

The jubilee year was knotted into a telling integrity also by all expositions of the Museum in 2009. Pivotal and summing up, rising to spotlight among the alternating expositions was the anniversary display “National Museum. ERM 100”. The idea of that exposition – people have created a Museum, have given the best of their life to the Museum and now, in the decades ushering in the 21st C., the Museum has high time to make everything anew visible to people – is also one of the postulates of the activity in proximate years of the Museum. The travelling exposition “Estonian Pride: Made in Estonia” travelled through Estonia and broke the visiting records in parishes of Ida-Virumaa and Peipsi district. The Fenno-Ugric cultures were the focus of the exposition “Matter of Honour” on display in 2009, presenting the Museum’s collections and the history of their creation. The Fenno-Ugric topic was also the focus of the travelling exposition “Samoyed and Fenno-Ugric people”. From 2009 the European capital cities were the venue of the tour of an exposition presenting Estonian mitten patterns and mitten culture history. The exposition of Estonian national textile art presented the Museum in St. Petersburg in Russian National Ethnographic Museum and in Pihkva and Petseri.

2009 was also the first year, when the Estonian Post Museum worked in the composition of the Museum (until October 2008 the museum belonged to the company Eesti Post, being in departmental subordination). For the Museum, that does not only mean the rich and unique stamp, seal, envelope etc. collections, but it also heralds a new avenue of activity. As it is, the story of Eesti Post is part of the history of our communications and intercourse, a wide and extensive area calling for research. Besides research that area also needs constant and attractive presentation, so that the younger generation would know, what is stamp and envelope and how to write a letter by hand. Collections of the Museum’s Post Museum found a place in Raadi, however the exhibition activity is continuing in the previous location of the Estonian Post Museum in Tartu at Rütli St.

The donation of the textile artist Anu Raud to the 100th anniversary of the Museum – the Heimtal Museum established by Anu Raud, together with its collections, house and appurtenant land – is now also in the administrative domain of the Museum. The Viljandimaa-based Heimtal Museum should retain its place and importance as a national handicraft study and development centre also as affiliate of the Museum, providing an immediate contact between people and authentic national handicraft. The new and modern building of the Museum to be erected in Raadi and the Heimtal Museum house in its time-honoured authenticity will complement one another in the future – the national handicraft, seen at expositions of the Museum building and workshops, can be tested out by the visitor in Heimtal by the feel of hand.

The year of 2009 was fine and successful to the Estonian National Museum. People called and greeted the Museum at its round anniversary; they wrote and donated to the Museum items, accompanied with a story from a person's life. People made a gift to the Museum of their day filled with dreams, proceeding with matters and meetings (in reply to the call of the Museum "Give off to the Museum a day from your life" over 400 contributions were received). However what is most important for development of the Estonian National Museum – that year confirmed unequivocally and persuasively that the people need their museum.

## **JÕGEVA PLANT BREEDING INSTITUTE**

Associated with the Estonian Academy of Sciences  
23.09.2008



Founded 1920

Personnel: 102, including 26 researchers

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Director: Mati Koppel, Tel: +372 776 6903, Fax +372 776 6902,  
mati.koppel@jpbi.ee

The main areas of activities of the state research and development institution Jõgeva Plant Breeding Institute are variety breeding of agricultural crops, maintenance breeding of existing varieties, elaboration and enhancing of variety based agrotechnologies, production and marketing of breeders, pre-basic and certified seeds of agricultural crops, maintenance of varieties and valuable breeds in gene bank, plant breeding fundamental and applied research, development activity and innovation, publishing of research results, advisory activity and organization of training within its competence.

The Scientific Council approved the Development Plan of Jõgeva Plant Breeding Institute for 2009–2015 in May. According to the vision presented in the Development Plan, Jõgeva Plant Breeding Institute is an institution, continuously developing, in active cooperation, the internationally recognized innovative research and development in the areas of plant breeding and sustainable production of plants. Further development of the institute is directed at: increasing the level of plant breeding and research, bringing up to date the research directions according to changes in agricultural sector and plant sciences, development of the organization and increasing its capabilities, development of national and international research cooperation, upgrading of infrastructure, improvement of the propagation system of research results and increasing of numbers of their users.

Contribution of our predecessors has always been highly acknowledged at the institute. A seminar to celebrate the anniversaries of founders of Estonian plant breeding was organized together with Estonian Agricultural Museum in February. The presentations covered contribution of count Friedrich Berg, Mihkel Pill, Julius Aamisepp and Herbert Tuppits in development of breeding science and practice.

Eight articles published in peer-reviewed international journals in 2009 covered questions of plant breeding, organic agriculture, grassland science, entomology, plant pathology, plant protection and nutrient deficiency. Sixty se-



ven published scientific and popular-science articles were directed at farmers and agricultural advisers. Fifteen information and field days organized in areas of plant breeding, seed production, plant protection and plant production were attended by more than 1000 participants.

The establishment of “Plant breeding program for 2009–2019” by the Estonian Ministry of Agriculture means essential increase of stability of financing the plant breeding activities enabling long-term planning and execution of breeding programs. The most important achievements of current breeding programs are continuation of registration trials with new varieties of *Festuca ovina* and *Lupinus angustifolius*, and entering two new winter wheat varieties into the official testing. Spring barleys Leeni and Viire, spring wheat Mooni and potato Reet, registered as new varieties in 2007 have met with recognition among Estonian farmers. Institute has increased the activities related to organic agriculture. The new trial field for organic trials was taken into the use in 2009. The studies deal with agro-technology of cereals, potatoes and vegetables and selection of suitable cereal varieties for organic production. Stability analysis of cereal varieties in cultivation in the farmers’ fields was started as a new initiative. In addition to reaction of varieties in different soil and climatic conditions those trials provide valuable information about performance of varieties at use of modern agro-technology.

Important achievement is certification of official recognition of efficacy testing facility of Jõgeva Plant Breeding Institute according to Good Experimental Practice, subject to standards laid down in Commission Directive 93/71/EEC. Efficacy trials performed in the certified testing unit are accepted throughout the European Union. The best indication for quality of the performed efficacy trials is continuous increase of their number. 40 efficacy trials were carried out according to orders from the world leading chemical companies BASF, Bayer CropScience, Dow AgroSciences, DuPont and Syngenta in 2009. Participation in Nordic-Baltic Pesticide Resistance Action Group NORBARAG and studies in development of internet based decision support system are other essential activities in the area of plant protection. The implementation of directive on sustainable use of pesticides aim at reduction of risk related to use of plant protection products, including reduction of pesticide use without decreasing efficiency of pest control. The widespread use of pesticides increases risk of development of resistance in populations of diseases, pests and weeds. The studies are directed at identification of existence and scope of pesticide resistance and providing practical tools for efficient use of plant protection products.

The gene bank has in long term preservation 2300 accession of cereals, pulses, oil crops, graminous and leguminous grasses, and vegetables. The activities are carried out in the framework of state development plan “Collection and preservation of plant genetic resources for 2007–2013”. Quality control of preserved accessions, regular rejuvenation and reproduction, description of

biological and economical properties, collection of seeds of grass plants and mapping of the natural habitats, data documentation, preservation of reserve accessions in the Nordic Centre of Genetic Resources (NordGen), and exchange of material with other gene banks are major activities of Jõgeva gene-bank. Collaborative project in pre-breeding of cereals and grasses is in the making, to increase the use of preserved accessions.

The Institute has been negatively influenced by the worldwide economic crisis. The number of employees had decreased by 10 people, by the end of year. Mooste Experimental Station concerned with studies in agro-technology and product development in fiber and oil crops was closed to cut down on expenses.

## **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.

In 2009 association agreements were signed with two societies: the Estonian Biochemical Society on November 13 and the Estonian Semiotics Association on December 15.

Reviews on the 2009 activities of the institutions associated with the Academy have been presented in the chronological order of their association date:

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Estonian Semiotics Association	166

## **ESTONIAN NATURALISTS' SOCIETY**

Associated with the Estonian Academy of Sciences

23.01.1998



Founded 1853

Membership: 709 active members,  
16 honorary members, 635 trustees

Subunits: 23

Location: Struve 2, 51003 Tartu, ESTONIA

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

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

Estonian Naturalists' Society has 23 subunits. Subunits that work as sections are as follows: the section of amateur meteorologists, of anthropology, of biology, of botany, of entomology, of forestry, of geology, and of theoretical biology; the Commission of Lakes, the Estonian Malacological Society, the Estonian Mycological Society, the Estonian Teriological Society and the Jakob von Uexküll Centre. Commissions with special tasks focus on the history of natural sciences, the library, natural education, observation networks, and the terms of ecology and plant names. In addition, the Society has assemblies of ecology, of honorary members and the round table of nature conservation. Commission of botanical rarities was found in summer 2009.

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

The Naturalists' Day was XXXII in succession and it was held in Mustvee and its neighbourhood, the topic for presentations was Lake Peipsi. On the first day of the event, several presentations were heard about Lake Peipsi on relicts of ice-age up to researches of water-quality and pollution problems, the meteorological station at Tiirikoja was visited and Ain Kallis talked about the meteorological observations. On the second day an excursion was organized by Ene Ilves on the coast of Lake Peipsi and the Saare manor. Traditional book of presentations was not published.

The Society participated in the organising committee of the conference "Diversity and evolution", dedicated to the 200th Anniversary of Charles Darwin in the hall of the University of Tartu on February 12. Society also participated in the organising committee of the 1st conference on phylogenetic and systematics "The Origin and Information of Diversity", on November 24 and

25 which was dedicated to the 150 anniversary of the publishing by Charles Darwin of “Origin of Species”.

Traditional events carried out by subunits of the Society were: The Spring School of Theoretical Biology “Theory of Origin” at Karilatsi on May 29–31, the Autumn School of Geology “Geology without borders”, at Viljandimaa on October 16–18 and Autumn School of Teriology at Soomaa on September 11–13. The topics considered were reflected in the volumes issued in connection with the events. The Jakob von Uexküll Centre organised on July 31–August 02 jointly with the Institute of Philosophy and Semiotics of the University of Tartu the Summer School of Ecosemiotics that has become a traditional event, too. On March 23 the anthropology section organised jointly with the Institute of History of Tallinn University the Science Day dedicated to Karin Mark’s 87th anniversary and in October, the traditional conference commemorating Juhan Aul’s anniversary was held jointly with the Centre of Physical Anthropology of the University of Tartu. This event also celebrated the 70th anniversary of the section and presented Papers of Anthropology XVIII.

The subunits organised their traditional scientific meetings and other activities: there was a gathering of Friends of Mosses at Läänemaa, the Mycological Society organised two mushroom camps, in spring and in autumn, and it participated at organisation of several mushroom expositions, held topical lectures on mushrooms, supervised Study Days and Hikes. Within the framework of Naturalists’ Day there was a meeting of the amateur meteorologists. The members of different sections participated in environmental and species monitoring, observational and scientific projects, working groups of expert assessments and participated in different conferences with presentations and reports.

The Society participated in fulfilling the projects funded by the Ministry of the Environment, the Foundation of the Environmental Investments Centre, Environmental Board, the Centre of Forest Protection and Silviculture, the Tallinn Environment Department, the Financial Mechanism of European Economic Area and the Financial Mechanism of Norway, Open Estonia Foundation, the Estonian Union of Terminology, the Union of Setomaa Parishes, the Foundation Tuuru and the NGO Läänemaa Bird Club, Estonian Road Administration and Tallinn Botanical Garden.

The Society completed the protection organisation plan of Vapramäe, it composed several expert opinions concerning assessment of environmental impacts and a detailed plan, participated in European Water Policy directive, carried out the inventory of the forests suitable to flying squirrels and inventories of different botanical species.

The Society continued to develop the databases of observations of nature and their presentation in cooperation with the information network of biological

diversity. The public database is a good and interesting study aid to schools and nature centres, which can be used by everyone over the Internet. The Society continued to monitor the diversity of Estonian biota and landscapes; within a national programme of monitoring of the water bodies, macroinvertebrates were monitored this year.

As of December 31, 2009 the library of Estonian Naturalists' Society had 161 550 printed items. Within a year library reviewed 145 new books and 117 periodicals. The publications were exchanged in the reporting year with 58 institutions and organisations from 18 countries.

#### PUBLICATIONS

In 2008, 5 pieces of printed matter and 1 Internet journal were published by the Estonian Naturalists' Society. Released from print were:

1. "Geology without borders" (*Schola Geologica* 5) (160 pp)
2. *Lepinfo* 18 (92 pp)
3. Linda Kongo: bibliography 1957-2008 (40 pp)
4. *Folia Cryptogamica Estonica*. Fasc. 45 (94 pp)
5. *Folia Cryptogamica Estonica*. Fasc. 46 (88 pp)
6. Internet journal "Friend of Mosses", no. 12 (40 pp)

## **ESTONIAN GEOGRAPHICAL SOCIETY**

Associated with the Estonian Academy of Sciences  
27.01.1998



Founded 1955

Membership: 411 active members, 22 honorary members, 5 foreign members

Address: Kohtu 6, 10130 Tallinn, ESTONIA

President: Jaan-Mati Punning (deceased on 21.11.2009)

Vice-President: Anto Raukas, Tel: +372 672 6031, +372 501 1827,  
anto.raukas@mail.ee

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

In 2009, three sections were active in the composition of 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 Peipsi and Võrtsjärv (Elvi Tavast).

**SCHOOL GEOGRAPHY** with the following subtopics:

- Development of geography curriculum (Lea Koppel);
- 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** (supervisor heino mardiste)

- Map collection by J. von Krusenstern of the Pacific Ocean

**HISTORY OF GEOGRAPHY** ( supervisor Erki Tammiksaar)

- 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: the 11th part of series of publications of the Society "Agu Sihvka renders account: Collection of articles of the autumn symposium of young geographers".

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

April 19 – General Meeting of the Society. The scientific paper “Is the renewable energy an outcome from impasse?” was delivered by Member of Academy Anto Raukas.

April 24 – The conference hall of the University of Tartu was venue of the cartography conference “Atlas in Estonian 150”. An exposition of geographical atlases in Estonian was opened (Geography Department of the University of Tartu, Estonian Geographical Society, Heino Mardiste).

In October at Alatskivi, the Youth Club organised together with young geographers of Tartu the autumn symposium dedicated to Juhan Liiv “If there were no woods obstructing the view” (Kait Antso). The papers presented at the symposium will be published in the series of publications of the Estonian Geographical Society as a separate book, bringing the research by youth to the attention of wider public. Young geographers contributed to organisation of competition of students’ papers moderated by Section of Geology of the Estonian Naturalists’ Society and issued the special prize of Youthclub of the Society.

The section of school geography of the Society (Ulvi Urgard) participated, as usual, in regular cooperation with Institute of Geography of the University of Tartu and Ministry of Education and Research at solving the scientific-methodical problems of teaching geography, preparation for state examination in geography of the gymnasium and analysing the results of the examination, as well as promotion of the environmental education and self-education of teachers (Lea Koppel, Ulvi Urgard).

February 12 – discussion of geography curriculum was held with participation by most active members of the body of geography teachers of Tallinn and Harjumaa.

April 17-18 – participation at spring days of geography teachers in Tartu (Ülle Liiber, Ulvi Urgard).

September 19-22 – participation at the trip to Courland with school geography section of Tallinn and Harjumaa (Ulvi Urgard, Kersti Ojassalu).

In autumn the serial event “Let’s educate in Harjumaa” continued upon moderation of Harju-Rapla Nature Protection Centre, attended by school geographers of the Society. Organisation of topical days of geography to school students continued – in February at Turba Gymnasium “Africa” (Merike Palts), in April at Viimsi Secondary School “Mediterranean area of Europe” (Andres Tõnisson and Kersti Ojassalu) and in October at Saue Gymnasium “Estonian nature” (Ulvi Urgard and Andres Tõnisson).

The club nights (8) heard travelling impressions and news in geography.



The traditional county excursion of the Youth Club took the participants to Western Harjumaa on January 25–26; in May, the Club visited the island Pakri. The bicycle trip of young geographers having become traditional started in Tartu and led the hikers to South-Estonian kaleidoscopic landscapes.

On 1 May the Club of Bog Friends visited the Kastna mire, on 20 June they hiked from Roosna-Alliku through Iiripilli mire over the Jägala river, on 20–22 July a group of geographers visited Vilsandi. On 28 July a hike on Viimsi Peninsula took place.

In August a busload of geographers headed to the traditional summer excursion of the Society in Saaremaa and Abruca, supervised by active member of the Society Urve Kirss and hostess of the Abruca House Mari Tuulik, where a lot of interesting matters was learned about the nature and people of islands, both of past and future. At end August, a joint trip of Estonian Geographical Society and Estonian Lighthouse Society took place to the island Naissaar.

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: 226

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

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

In 2009, the Society of Estonian Areal Studies became 70. Respectively, the year turned out more eventful as usual.

The Society held its general meeting in Tallinn on 3 April 2009. The regular agenda of the annual gathering was consummated by the paper of the guest speaker, head archivist of the Estonian National Museum Tiina Tael “Estonian National Museum – established and gathered by people”.

To mark the jubilee year, a conference was held in Tallinn on 22 May 2009 with a number of guests. The papers, appropriate for the day were delivered by Member of Academy A.-E. Kaasik, Member of Academy A. Raukas, H. Palamets, J. Tamm and also by the newly elected Chairman of our Finnish sister organisation Suomen Kotiseutuliitto L. Saressalo. The relevant topics were also deliberated on by members of the Society A. Ristkok, A. Lavi and T.-H. Schmitte. By the time of the conference, released from print was the collection of instructive materials – hard-cover “Guide of the Areal Studies Activist” completed in defiance of hardship. The book was presented at the jubilee conference by member of the editorial board Kaljo Laas, who also happened to be its compiler. August 6–9 – Chairman of Board A. Ristkok was at the reciprocal visit in Finland at the native-place days at Tahko of Suomen Kotiseutuliitto marking its 60th anniversary.

Several events of the anniversary year were arranged on the basis of action plan organised as a separate programme “Regional studies research and education programme 2009”, headed by member of Board Ene Luka. Insofar as much attention in the programme was accorded to youth work, the action plan was also supported by the Estonian Youth Work Centre.

In spring, six counties witnessed the school youth conferences and thematic days on regional studies. Organisation of school events was shouldered also by culture and education departments of county governments, several unions of local self-governments and county museums. In the 2008/2009 academic year the total of 261 regional studies research works were completed, of which 76 were submitted to the national panel for appraisal. The national

youth regional studies research conference (the 41st in succession!) was held in Tallinn on 16 October. In that year, published again besides the list of pupils' works was the collection of articles presenting the best works, in the sequence the 26th. In August, a several-day joint expedition of young guides and experts in regional studies was organised to look at Järvamaa.

The anniversary year was marked by a number of events, presenting the activity of the specialists in regional studies to the public and bringing them together in several places. The Days of Areal Studies were held at: Koeru (May, upon organisation by NGO Järvamaa Kodukant), Tallinn-Nõmme, the called Glehn Days (also in May, upon organisation by Nõmme Museum), Valga (in October), Viljandi (in November), Pärnu (in December). At the Valga Day of Areal Studies the local activists decided to consolidate into a standing group.

Board of the Society prepared the travelling exposition reflecting the birth and progress of regional studies. Everybody could look at the exposition during the events held in the second half of 2009. Published as an aid to the exposition was the brochure presenting major actors in the area "Who is who in areal studies".

Within framework of the programme "Areal studies research and education programme 2009" the study day of cultural heritage was held in Raplamaa. The techniques of identification, description, marking and storage were presented in place by J. Kusmin and A. Sarv.

With the monetary means falling shorter than usual, the Society still managed to organise the annual study tour. The organisation work was assumed by the Pärnu society of regional studies. The three-day route was composed under the title "On paths of the War for Liberation, 1919" and on turn of July-August it led through Valga to Livonia, straight to Võnnu and back.

In cooperation with Estonian National Heritage Protection Society and Estonian Genealogical Society the Society released the "Year Book 2009". The build-up of content of the Year Book is taking on a fixed scheme: The review of the Society's work for the past year, the personnel section, making note of those departed or celebrating the anniversary, methods guidelines, some short summaries about regional studies; this year, for the second year running, there is also an example about research of a young enthusiast of regional studies having successfully participated at competition.

Upon request of board of the Society the members notify the board, insofar as possible about their own initiatives and activity in place. That testifies to the ongoing good reception of the area in public. Here are the events the Board was notified about: meetings with papers organised in districts, celebration of local lore red-letter days (nearly 30), the expositions collected (over 40), numerous study tours supervised (over 20) and scores of articles published, shorter information materials and results of regional studies released as books and even monographs (more details review of bibliography see [www.ekus.ee](http://www.ekus.ee)).

## **ESTONIAN MOTHER TONGUE SOCIETY**

Associated with the Estonian Academy of Sciences  
4.02.1998



Founded 1920

Membership: 341 active members, 8 honorary members

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

Librarian: Helju Kaal, Tel: +372 644 9331

In 2009 the Estonian Mother Tongue Society held two conferences, an annual meeting, six meetings with papers, one international seminar, eight field language days and eight language days in Estonian schools.

Outside Estonia, upon co-organisation of Ministry of Education and Research and local Estonian societies there were held language days in St. Petersburg, in Australia in Melbourne, at Thirlmere Estonian village, in Sydney (2), in Dublin, in Göttingen and in Moscow. Topics of the papers were widely different, as regards of what was talked about, the proposals and expectations of local Estonian community were taken notice of. The topic range featured reviews about teaching Estonian and mastering of Estonian, language use in media, Estonian language policy, identity, changes in Estonian, impacts of other languages in Estonian, new angles of view in linguistics, dictionary work, literature, and folk poetry. Göttingen's language day was held at the local university; it was in German and it was designed for presenting to Germans too the problems of Estonian. In Göttingen, presented for the first time was the series in German of different reviewer-posters considering topics of the Estonian. At field language days the total of 34 papers were delivered.

June 27 – Tartu was venue of the traditional language conference dedicated to J. V. Veski. Elected as topic of the XLII J. V. Veski Day had been “Name and its language”. The programme featured four papers from Estonian name researchers. Peeter Päll spoke on the topic “Multilingualism in Estonian names”. Title of Evar Saar's paper was “Multilingualism and eye striking name-giving principles in the Internet age cadastral names”. Lenne Ojamets spoke about the phonetic concord of first names and surnames and Annika Hussar about the Estonian first names in 1900.

Traditional student conference, also marking the Day of European Languages, was held at Tallinn University on 25 September. Speaking about their language research works were Bachelor and Master programme students of Tal-

linn University and University of Tartu and Tallinn University of Technology, delivering altogether 12 papers.

At Estonian Mother Tongue Society's annual meeting on 27 March 2009 the academic paper on topic "Expatriate Estonians and Estonian" was delivered by Assistant Chairman of the Board, Professor Jüri Viikberg. The report for the Society's 89th (2008) year of activity was delivered by Scientific Secretary Annika Hussar. The Society elected new Board and three honorary members: Viivi Maanso, Ellen Uuspõld and Tiit-Rein Viitso.

Besides Institute of the Estonian Language, Ministry of Education and Research, Language Inspectorate, Väike-Maarja Gymnasium and Väike-Maarja Parish Government, the Estonian Mother Tongue Society is one of organisers of Ferdinand Johann Wiedemann Language Day. The Language Day was held in Väike-Maarja on 30 April. Laureate of the Wiedemann Prize for 2009 Professor Ilse Lehiste delivered a paper at the conference titled "The nominative conjunctions by Wiedemann and presently". The papers were also delivered by candidates of the Wiedemann Language Prize 2009 Krista Kerge ("Tongueless solitude and cohabitation") and Jaan Kaplinski ("How Fenno-Ugrian is Estonian?"). Student of the Väike-Maarja Gymnasium Keili Pohlak spoke about the amateur linguist and activist in regional studies Eduard Leppik.

At meetings, 20 papers were delivered. 2009 was ushered in with the anniversary meeting. On 29 January the 75th anniversary of the linguist Helmi Neetar was celebrated. The papers were delivered by the jubilarian Helmi Neetar ("Historical information in dictionary"), Urmas Sutrop ("*Metsapoole*") and Vilja Oja ("Reflections of dialectal vocabulary"). Also presented at the meeting was the anniversary collection composed at the Institute of the Estonian Language "Home language and home of the language". On 19th February, on agenda was the topic "Mastering Estonian as the second language". Speaking were Anna Verschik, Raili Pool and Pille Eslon. The blanket title of the meeting of 14th May was "Estonian child language as seen by a psychologist". Papers were from Tiia Tulviste and Pirko Tõugu. On 4th November the journal Language Typology and Universals (STUF) topical issue "Estonian in typological perspective" (2009, 1/2) was presented. Editor of the issue was Helle Metslang, authors of articles Reili Argus, Martin Ehala, Mati Ereht, Petar Kehayov, Helle Metslang, Karl Pajusalu, Renate Pajusalu and Reeli Torn-Leesik. Deliberating about the issue of the journal were Helle Metslang, Martin Ehala, Reili Argus and Petar Kehayov. The meeting with speeches of 19th November was titled "80 years of language editors". Speaking at the meeting were Heido Ots, Reili Argus, Anu Rooseniit and Anu Vane. At the last meeting of the year held on 17 December, the international seminar was focussed on the topic "Language development plans of the neighbours". The papers were as follows: Valts Ernštreits (Riga) "Language policy of the Republic of Latvia", Ilmar Tomusk (Tallinn) "Main directions of the Lithuanian language policy 2003–2008", Maksim Krongauz (Moscow) "National organi-

sation of Russian: problems and perspectives”, Raimo Raag (Uppsala) “From simple-mindedness to perception of reality: recent turnabout in the Swedish language development”, Jüri Valge (Tartu) “The future plan of Finnish”.

Initiated by Board of the Society and Ministry of Education and Research, and moderated by member of Board Annika Kilgi, the tradition of organising the school language days of the Society was wider invigorated in 2009. Speaking at school language days were Estonian philologists of different areas: faculty members, researchers, Master students, Doctoral students, a representative from linguistic issues. The language days were designed mainly to the youth of periphery. They were delivered altogether 26 papers.

The Mother Tongue Society organised publication of reviewer-posters considering the issues of Estonian. Reviewer-posters appear in five languages (Estonian, Russian, French, English, and German) and they present the history of formation of Estonian, dialects, history of literary language, sub-languages, language planning, teaching of language, research of language, language technology and issues of language policy, Estonian outside Estonia and the activity of the Mother Tongue Society. The reviewer-posters in Estonian were handed over to representatives of the counties at the Mother Tongue Day.

The language working group of the Society held four meetings in 2009 and adopted three decisions (regarding the words in Arabic on an Estonian text; corrections in Ukrainian-Estonian letter-table; laying down norms of the meaning of conjunctions PEALE and PÄRAST). The other topics of note were the role of language planning in the new development plan of Estonian (2011–2017) and the draft Language Act being drawn, for which the language working group presented a critical opinion. Various issues of morphology were discussed however no resolutions were handed down. The language working group discusses the use of names Gruusia and Georgia, deciding to keep basically to the former recommendations. In June 2009 a joint seminar of the language working group and language planners of the Institute of the Estonian language was held, discussing the problems of the following Dictionary of Orthology.

Under the agreement made with Estonian National Library in 2008, cataloguing and making visible of documents of the Society in e-catalogue ESTER continued in 2009. Input of the data of printed matter contained in the Society’s library into e-catalogue will enable their use by a significantly wider circle of those interested.

Released in print in 2009 were:

- Year Book of the Mother Tongue Society 54 (2008). Editor in chief Mati Erelt, editor Tiiu Erelt. Mother Tongue Society of the Estonian Academy of Sciences. Tallinn 2009. 272 pp.;
- Language magazine Oma Keel no. 1, 96 pp.;
- Language magazine Oma Keel no. 2, 104 pp.

The library of the Estonian Mother Tongue Society was replenished in 2009 by 66 items of printed matter, obtained by exchange, donation and purchase. The library keeps on record 6125 inventory items of printed matter.

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

Associated with the Estonian Academy of Sciences  
4.02.1998

Founded 1967

Membership: 72 active members,

7 honorary members (of whom 4 outside Estonia)

9 corporate members

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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 2009, and the general meeting was held in Tartu on 15 May. The general meeting approved the activities report for 2008 and the working plan for 2009. The most important scientific project of the Union in 2009 was compiling the last 4th volume of the Biographical Lexicon of the Estonian Science.

In 2009 the 3rd volume of the Lexicon was proof-read and the manuscript is essentially ready for printing. However, the Union has not heretofore located the funds for printing of the book. Until the situation improves, consideration should be given to the idea of putting the 3rd volume of the Lexicon on website of the Estonian Academy of Sciences like the book "History of the Estonian Academy of Sciences: Developments and Conclusions". That would provide availability of information to those interested. Compilation of the 4th volume of the Lexicon is in its final stage. Out of nearly 1800 biographies to be included into the volume, 1020 have been composed. Funding of the project ends at end 2010.

In the reporting year the Union helped Department of Philosophy of Tallinn University of Technology to prepare the XXIV Conference of Historians of

Science of the Baltic, to be held on 8–9 October 2010. Members of Board of the Union Peeter Mürsepp and Ülo Kaevats are members of the organising panel of the conference.

Tallinn Branch of the Union gathered after general meeting held in Tartu, in the process whereof an overview was given about resolutions of annual meeting. Meetings of the Tartu Branch stopped at beginning 2009 due to backing out of the Board of the Academic Baltic German Culture Society after six-year activity. The new Board could not be put in place. At the beginning of 2010, however Baltic German Culture Society restarted work. Tartu Branch of the Union participates at meetings with papers.

## **ESTONIAN LEARNED SOCIETY IN SWEDEN**

Associated with the Estonian Academy of Sciences  
19.03.1999

Founded 1945

Membership: 86 active members and 4 honorary members

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

In the reporting year, the Society held its annual meeting and six meetings with papers, one of them as a symposium with five papers on ethics. All the meetings took place at the Estonian House in Stockholm.

The meetings dealt with various topics: “The change of attitudes in education of children in Estonia after the Reliberation” (Tiia Tulviste), “The Riddarholm Church – oldest in Stockholm?” (Tiiu Valmet), “From peasant vernacular to official (Estonian) language” (Raimo Raag), “Problems of translation of the Bible” (Toomas Paul) and “The morbidity of tuberculosis in Estonia” (Rain Jõgi).

The papers of the Ethics Symposium were: “Values and ethical choices in the Estonian community” (Margit Sutrop), “On Christian ethics” (Tiit Pädam), “What will be valued by the Estonian pupil?” (Inger Kraav), “The Estonian Democratic Renovation” (Tõive Kivikas) and “The professional medical ethics in olden times, more recently and presently” (Ants Anderson).



On the 29th of November the 90th anniversary of the Estonian University of Tartu was celebrated. A scientific paper was delivered by Professor Ülo Langel on the topic “Intracellular targets” – some results of the research awarded with the Science Prize of the Republic of Estonia of the year 2009. Songs by the singer Mariliina Vilimaa von Uexküll.

The Society participated in the conference “Estonian Scientists in Exile” in March 2009 in Tallinn by presenting a paper “About the activities of Estonian Learned Society in Sweden”.

At the annual meeting of the Southern Swedish Department of the Society on 15 March the scholar Piret Lotman delivered a paper “The Estonian book and the Soviet occupation”.

On 24 May Docent Paavo Roos delivered a paper “Philostratos and ancient gymnastic training”.

On 11 October Professor Indrek Martinson delivered a paper “Raoul Wallenberg and his half-brother Guy von Dardel”.

At the anniversary public meeting of the University of Tartu on 22 November Professor Tõnu Pullerits delivered a paper “Solar energy”.

## **ESTONIAN LITERARY SOCIETY**

Associated to the Estonian Scientific Academy  
January 23, 2001

Founded in 1907

Members: 293 members (incl. 35 life-time, 16 honorary and 21 regional representatives)

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In 2009, the activities of the Estonian Literary Society (hereafter Society) were mostly connected to several large-scale undertakings and naturally continuing traditional undertakings.

At the beginning of the year much energy was spent on a joint undertaking of the Society and railway firm Edelaraudtee Ltd *Rongiluule* (Railway Poetry), during which on the windows of the trains of the firm the work of Estonian poets was set up. The opening event of this continuing undertaking took place

on February 23 in Tallinn; in October a second selection of poetry was set up, to open which a poetry reading was organized in Tartu.

In February once again the theory seminars known as Tudengi Teooriatuba, TTT (Student's Theory Room) were started. The seminar took place during the whole spring term, regularly on each Wednesday, the teacher at the seminar was the associate professor of the University of Tartu Arne Merilai.

In March the Estonian Literary Society collaborated with the Work Group of Literature and Culture Theory of the Estonian Literary Museum, helping to organize a conference *Unustuse arheoloogia* (Archaeology of Forgetting). This was a conference related to the conference of the previous year *Unustuse arhiiv* (Archive of Forgetting). The aim of the conference was opening the literary, philosophical, historical, psychoanalytical, and juridical conditions of forgetting as a phenomenon.

On April 2 the traditional session of the annual review of literature took place where the 2008 Estonian prose, poetry, drama, memoirs, autobiographies, and directions in Estonian publishing politics were discussed.

At the beginning of May the big and traditional Tartu literary festival *Prima Vista* took place, taking its activities also to Viljandi for a day. The main organizers of the literary festival are the non-profit society Festival Prima Vista, Estonian Literary Society, Tartu Town Library, and the Library of the University of Tartu. The patron of Prima Vista 2009 was poet and publicist Andres Ehin, the honorary guests were the Italian writer and semiotician Umberto Eco and the Russian writer, author of popular crime novels Aleksandra Marinina, the guests of the festival were also Hungarian writer László Darvasi and British poet Jean Sprackland. The slogan of the festival at that time was *Lehekülg minevikust, lehekülg tulevikust* (A Page from the Past, a page from the Future), those themes were discussed during the festival at the seminars and panel discussion (A Page from the Past and at the forum "Do We Read and What We Shall Read Tomorrow?")

In the middle of May the Tallinn literary festival took place for the first time, the programme of which also included the festival *Sotsia* that traditionally has annually taken place in April in Tartu. Within the framework of *Sotsia* literary excursions took place during the Tallinn festival; in Tartu, Pärnu, and Viljandi a poetry contest *Poetry Slam* started as a preparatory event which culminated during the Tallinn festival; events of rap, music, poetry, and discussion also took place during the festival.

In June for the second time a joint undertaking of Estonian Literary Society and the Institute of Cultural Studies and Arts of the University of Tartu, a spring school of students of literature, took place where the students could present their work, to introduce their themes of research and take part in dis-

cussions. As a guest of the spring school Triin Soomets, a poet was present who spoke about her poetry and answered the students' questions.

In September preparations for a serial seminar about the *samizdat* publications of the 1960s and 1970s Memories of a Literary Undercurrent started. In collaboration with the Radio Theatre the memories of the people connected to independent publishing will be recorded and radio broadcasts prepared. The first conversation where Jaan Isotamm and Olev Remsu participated took place as radio recoding only, further on the recordings will take place in the course of the seminars.

In October a poetry event took place in Tartu to mark the exposition of the second selection of railway poetry. The poets represented in the selection read their poems and spoke about trains and experience in connection with trains. The public had an opportunity to stick the poems on the windows of the train.

As 2010 has been declared a year of reading by the Estonian Ministry of Culture and as within the framework of this enterprise many organisations participate, the Estonian literary Society was already in 2009 connected to preparatory work, meaning several introductory events, setting up the homepage of the year of reading and planning events for 2010.

As early as in the end of 2008 preparations to present Tartu as a candidate for the title of a UNESCO creative city as a city of literature were started. The worldwide network of the UNESCO creative towns was set up in 2004 and it joins with the purpose of collaboration, developing of several cultural spheres both locally and internationally, introducing and preserving cultural values almost 20 towns all over the world. In spring 2009 a working team was formed at the Estonian Literary Society to prepare the necessary material; its activities continued in autumn and work goes on for preparing the application by the middle of 2010 at the latest.

The representative office of the society in Tallinn organized traditional seminars of criticism during the year, also seminars of children's and youth literature where attention was paid separately to the boys' and girls' literature. In organizing the seminars the office collaborated in summer with the Central Library of Tallinn and the Estonian Centre of Children's Literature to organize a photo contest "Let's Go and Kick Our Heels Above Tallinn", the best works of the contest got prizes at the night of city poetry in September where poetry inspired by the town space was read.

Published in 2009 by Estonian Literary Society:

- Igihaljas Vilde (Evergreen Vilde), edited by Livia Viitol. (129 pp)
- Roos, Jaan. Läbi punase öö V (Through the Red Night V). (391 pp)

## **ESTONIAN LEARNED SOCIETY**

Associated with the Estonian Academy of Sciences  
23.01.2001



Founded 1838

Membership: 108 active members, 16 honorary members

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

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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 providing opportunities to get experience in academic presentation for the younger scientists.

In 2009, 17 meetings with papers were held with 418 participants. 17 papers were delivered, by topics: history 11 (incl. 2 on matters of archiving), history of law 2, archaeology 1, history of arts 1, linguistics 1, and history of literature 1. The attendance was at its highest at H. Valk's paper "The novel data on South-Estonian sites of ancient settlements" (47 people) and H. Piirimägi's paper "The options at establishing the Estonian University" (45 people) and and A. Must's paper "Archival discovery: The Young Communist League organisation of the Tori parish in the post-war years" (44 people).

In 2009, the Estonian Learned Society Year Book of 2008 appeared. The Society continued organisation of the stipend contest to the best article published in Year Book (see Statute on website of the Society). The stipend (2500 kroon) was assigned by decision of the Board to Elvi Nassar for the article published in the Society Year Book 2008 "Agricultural Exhibitions in Tartu, Tallinn and Moscow in 1940-1941". Handed over to the Publishers was the manuscript of "History of Estonia" Volume V (1816-1918).

The Society carried out archaeological salvage excavations in Ristipalo burial mounds near Räpina, where the seat of one destroyed tumulus was studied as well as surveillance of the nearest vicinity of one tumulus was performed; the same was done in the Võmmorski village in Setumaa, where the extent and character of a settlement stratum discovered in the building process had been discovered.

## **ESTONIAN MUSICOLOGICAL SOCIETY**

Associated with the Estonian Academy of Sciences

21.06.2004

Founded 1992

Membership: 68 active members, (of whom 6 outside Estonia),  
1 honorary member

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<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 the interest to scholarly study of music and supports practicing of all areas of music in Estonia.

The most important achievement of 2009 was releasing the first 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 first issue released a number of articles also from foreign authors. The issue is prevalently in Estonian however it contains resumes of articles in English or German.

In 2009 the Society also participated at publishing a voluminous of scientific issue, completing the years-long research project headed by Professor Urve Lippus: “Eesti helisalvestised 1939 / Estonian Sound Recordings 1939”, released as a book and set of 12 CDs.

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 Tartu Day of 18.04.2009 the star guest was senior researcher of Danish Royal Library Ole Kongsted with the paper “New discoveries concerning the musical history of the Baltic Sea Area in the 16th century. Results of an investigation of the holdings of ab. 150 libraries in Europe undertaken 1988–2008”; papers were also delivered by Anto Pett, Anne-Liis Poll, Hendrik Saare, Dali Kask, Kaire Maimets-Volt.

The autumn Leichter Day in Tallinn held on 19.10.2009 united the Society’s regular annual meeting and the academic joint lecture “Musical composition as an eco-system: the interactive impact of instrument and style on tonal structure” (Jonne Kotta, marine biologist, senior researcher of Estonian Marine Institute of the University of Tartu; Kerri Kotta, theoretician of music, Docent of Estonian Academy of Music and Theatre).

For presenting the specialty of musicology and for its propagation the Society organised in the reporting year the contest of essays in music to gymnasium students, the festive finale of which took place on 17 April at Estonian Academy of Music and Theatre.

It is tradition with the Society is also organisation of culture-lore trip at beginning of September: in 2009 it visited Viljandimaa.

## **ESTONIAN PHYSICAL SOCIETY**

Associated with the Estonian Academy of Sciences

14.06.2005



Founded 1989

Membership: 244 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 17 and 18 March in Tartu. The Physics Days were organised by Kaido Reivelt, Ilmar Kink, Jaak Jõgi and Aigar Vaigu. Within the framework of the Physics Days the general meeting of the Society was held on 17 March, approving the activities' and economic report of the Board of Society. The working day was concluded by the night gathering of the Society in cafe at Tähe 4.

At Estonian Physics Days, the annual prize of the Society was awarded to Els Heinsalu for defence of the doctoral thesis "Normal and anomalously slow diffusion under external fields". The letter of honour of the Society was granted to Arvi Freiberg "for implementing biophysics related research and teaching effort in Estonia and in connection with the 60th anniversary", to Arvo Kikas "for contribution at heading the Estonian Physical Society and Estonian physical community" and to Ergo Nõmmiste "for long successful activity at heading the Institute of Physics of the University of Tartu".

The Society's school student prize was awarded to Riinu Ots for the work "Impact of thermal rise of the stream of smoke on calculation of air pollution propagation after the example of oil shale power plants" (supervisor Marko Kaasik). Martin Järvekülg was acknowledged as meriting the Society's student prize was "for generating in liquid of the new type metal-oxide precipitation of roll-structure and elucidation of that phenomenon".

Year Book 2008 of the Society appeared (editors Anna Aret, Helle Kaasik and Piret Kuusk). The Society's list [seltsid.efs@lists.ut.ee](mailto:seltsid.efs@lists.ut.ee) and [www.fyysika.ee/efs](http://www.fyysika.ee/efs) was administered by Kaido Reivelt.

March 7–8 – at the 56th Physics Olympiad of Estonian school youth the special prize of the Society (annual subscription to “Scientific American”) was granted to Kadi Liis Saar (10th form, Tallinn Science Secondary School /English College).

Various events of the Society popularising physics continued. Upon leadership of Taavi Adamberg the Science Bus “Ursa Major” continued its work. The Science Bus did altogether 120 trips. 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 were organised.

June 25–27 – the successive summer school of teachers of physics at Nõo Science Gymnasium. This onerous task was vested in the board of division of physics teachers of the Society and the school was held under aegis of the Open University of the University of Tartu. Researchers of the University of Tartu, Tartu Observatory, and Estonian University of Life Sciences, Institute of Chemical and Biological Physics and researchers of Tallinn University of Technology delivered papers. The summer school was attended by 28 teachers.

November 6–7 – autumn seminar of teachers of physics at Voore Leisure Centre, held there for the first time. Attending were 103 teachers of physics, participants numbered 121. During two days the matters relating to new physics syllabi and development of network of teachers of physics were discussed.

Since October, the web journal of the Estonian Physical Society has been appearing. It is a summary of monthly activities related to the Society and it also contains presentations of an article by an Estonian physicist. This monthly magazine is sent to members of the Society by e-mail at end of every month. The archives of the Society’s monthly web magazines can be seen at: [www.fyysika.ee/omad/kuukiri.php](http://www.fyysika.ee/omad/kuukiri.php).

Upon leadership of the Society’s young physicists division, the Society’s autumn school 2009 of exact sciences was held from 30 October - 01 November at Voore Leisure Centre. Attending were the total of 97 students, researchers and members of faculty. They heard over 25 hours of lectures and seminars. Work carried on simultaneously in two study halls. Considered were the topics on space and nano-technologies, non-linear physics and quantum mechanics. Moderators were Taavi Adamberg, Kaido Reivelt, and Aigar Vaigu.

In 2009, 49 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.

## **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: 11 members-legal entities, incl. 1200 individual members  
Address: Liivalaia 9, 10118 Tallinn, ESTONIA  
[http:// www.engineer.ee](http://www.engineer.ee)  
President: Arvi Hamburg, Tel: +372 630 3130, +372 516 2026  
[inseneronlooja@hot.ee](mailto:inseneronlooja@hot.ee), [arvi.hamburg@gaas.ee](mailto:arvi.hamburg@gaas.ee)

Estonian Association of Engineers is 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, innovation and respective education policy. Contribution to effective operation of the common chain of values Researcher & Engineer & Entrepreneur

VISION: knowledge- and innovation-based society. Society is expected to attribute value to knowledge.

Members of the Association in 2009:

- 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



The organisational events of work of the Association:

- General meeting of Association held on 31.03.2009
- Meetings of Board - 7

Main areas of activity of the Association in 2009

1. Mapping of schools delivering engineer instruction for the purpose of consolidation of information and its dissemination

The respective summary compiled includes the list of trainers of engineers, the specialities delivered, the opportunities for enrolling in universities, applied higher schools, vocational study institutions and additional information about organisation of instruction and the opportunities of extra-curriculum hobbies.

2. Systematising of engineering and the output of production

Organising the structure of the journal “Engineering”, and raising topics of discussions to be published.

3. Compiling the instruction materials

The Association has compiled and published the textbook “Innovation – theory and practice”.

4. Talk-shops, roundtables

- Talk-shop “Science and engineering”. Goal: Relation of science and engineering as a practical output.
- Talk-shop “Science organisation, financing schemes, entrepreneur’s co-financing”. Goal: creation of a common values chain, finding out about cooperation opportunities, informing the cooperation partners.
- Roundtable “Engineering education, engineer’s profession, labour market” Sections I, II. Goal: linking higher education standard and vocational standard with the need for labour.

5. Engineer’s vocation

Attributing value to engineer’s vocational qualification, creating the demand in cooperation with Estonian Qualification Authority.

The main issue is cohesion between the academic degree and vocational standard:

Applied higher education, Bachelor	engineer	(EQF 6)
Master	diploma engineer	(EQF 7)
Doctor	authorised engineer	(EQF 8)

It is also necessary to look into possibilities of awarding the first professional degree to graduates of a higher school.

6. The Association is participating in programme of Ministry of Education and Research “TeaMe”, in the work of advisory board of Foundation Archimedes.

The general goal of the programme is to increase the population’s awareness about impact of the R&D activity on economy and competitiveness, to inform the youth and persons influencing them about professions and options for a career, related to the domain of natural and engineering sciences, and to propagate the scientific way of thinking. As a result of the activities of the programme 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.

The 5 year long programme will extend from 2009–2013; funds will be raised from European Social Foundation.

7. Participation at fair “Instrutex 2009” in cooperation with the journal “Engineering”

8. Engineer is the Follow-Up of the Creator 2009

Cooperation network set up for that purpose was expanded. Important within framework of the project was popularising the engineering culture and engineering education, attributing value to engineer’s vocational qualification, creating demand.

9. Estonian Association of Engineers participated, in cooperation with INN EUROPE within the framework of Innovation Year 2009, at organisation of two information days in the European House and in research of innovation awareness.

10. 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 (30.09–03.10 in The Hague).

Members of Association met with Chairmen of Engineering Associations of the European countries and visited an academic session; they also visited the engineering higher school of The Hague.

11. It was decided to hold the traditional celebrations marking the Engineers Day every year on 10 December.

The II Engineers Conference was held on 10.12.2009 at the Estonian Academy of Sciences Hall.

On the occasion of the 21st activities year of the Estonian Association of Engineers, under discussion was sustainability of state and engineering in a legal and economical context. Speaking were Jaak Leimann and Jüri Raidla.

12. Holding the contest for conferring honorary titles of Innovation Year

Elected Engineering Student of Year 2009 was Siim Viilup.

Elected Engineer of Year 2009 was Udo-Rein Lehtse.

## ESTONIAN BIOCHEMICAL SOCIETY

Associated with the Estonian Academy of Sciences

13.11.2009

Founded 1959

Membership: 110

Address: Akadeemia 15, 12618 Tallinn, ESTONIA, [info@biokeemiaselts.ee](mailto:info@biokeemiaselts.ee)

<http://www.biokeemiaselts.ee>

President: Jaak Järv, Tel: +372 737 5246, [jaak.jarv@ut.ee](mailto:jaak.jarv@ut.ee)

Academic Secretary: Vello Tõugu, Tel: +372 620 4411, [vello.tougu@ttu.ee](mailto:vello.tougu@ttu.ee)

Estonian Biochemical Society (EBS) supports and promotes research and teaching in the field of biochemistry and in other theoretical or practical related disciplines, spurs public interest in achievements in these fields and supports its members in their professional activity.

In the past year the Society celebrated its 50th anniversary, organizing a scientific seminar and a festive meeting in the Estonian Academy of Sciences on November 13, 2009. These events attracted more than 120 participants, including the members of the FEBS Executive Committee, visiting Tallinn on the occasion of the regular fall meeting of this Committee.

The following presentations were included into the program of the seminar:

- NOVEL GLUTATHIONE ANALOGUES AND THEIR EFFECTS IN BIOLOGICAL SYSTEMS, Professor *Ursel Soomets*, Medical Faculty of the University of Tartu
- CDK1 INHIBITOR SIC1 AS MOLECULAR SIGNAL PROCESSOR, Dr *Mart Loog*, Institute of Technology of the University of Tartu
- METALLATION OF MITOCHONDRIAL CYTOCHROME C OXIDASE, Professor *Peep Palumaa*, Faculty of Science of Tallinn University of Technology
- FROM SNAKE VENOMS TO DIAGNOSTICS AND DRUGS, Dr *Jüri Siigur*, National Institute of Chemical Physics and Biophysics
- FLUORESCENCE ANISOTROPY AND RADIOLIGANDS IN LIGAND BINDING STUDIES TO MELANOCORTIN 4 RECEPTORS, Professor *Ago Rincken*, Institute of Chemistry of the University of Tartu
- RIBOSOME REPAIR BY PROTEIN EXCHANGE, Professor *Jaanus Remme*, Institute of Molecular and Cell Biology of the University of Tartu

The following festive meeting was opened by introductory address of the President of the Society Jaak Järv. Professor Israel Pecht, Secretary General of FEBS, provided an overview of different forms of activity of the Federation of European Biochemical Societies. Those speeches were followed by a series of presentations by Professor Mihkel Zilmer (Biomedicum and Clini-

cum of the University of Tartu), Professor Juhan Sedman (Institute of Molecular and Cell Biology of the University of Tartu and Estonian Biocenter), Professor Ago Rinke (Chemicum of the University of Tartu), Dr Jüri Siigur (National Institute of Chemical Physics and Biophysics, Estonia), Professor Peep Palumaa (Faculty of Science of Tallinn University of Technology) and Professor Mart Ustav (Institute of Technology of the University of Tartu), providing a general overview on research in biochemistry and life sciences in Estonia. As highlight of the Meeting, the Act of Association of EBS with the Estonian Academy of Sciences was signed by the President of the Academy R. Villems and by the President of the Society J. Järv. The meeting was followed by reception, organized by the Society for its members and guests of the Meeting.

Following those events, the President of FEBS Prof. Dr. Andreas Hartig wrote in his e-mail to the Society and the Estonian Academy of Sciences: "Thank you very much for hosting the FEBS ExCom meeting in Tallinn and setting up the perfect organization of all events and meetings."

Estonian biochemists have had a long-lasting tradition to organize a spring school for members of the Society and other interested scientists. In 2009 that event took place on May 8–9 in Veski sporting camp near Otepää in the south of Estonia. Participants arrived from Tartu and Tallinn and following the traditions of that event, all those 40 students and academics had to take floor for short presentation. Two schooldays accommodated also the barbecue party and sauna. Picture gallery of the event can be visited at the Society's homepage.

Several biochemists from Estonia attended the 34th FEBS Congress in Prague and presented posters. President of the Society presented Estonia in the FEBS Council Meeting, which was held after the Congress.

## ESTONIAN SEMIOTICS ASSOCIATION

Associated with the Estonian Academy of Sciences  
15.12.2009



Founded 1998

Membership: 69 members

Address: Tiigi 78-312, Tartu ESTONIA

Chairman: Peeter Torop, Tel: +372 7376155, peeter.torop@ut.ee

Vice-chairman: Andreas Ventsel, andreas.ventsel@ut.ee

Estonian Semiotics Association (ESA) unites entities performing research in semiotics and in the theory of culture in Estonia. 2009 was a year of strategic changes for ESA. On the general assembly on April 24 it was decided that preparations were to be made in order to associate with the Estonian Academy of Sciences. Thereafter, on the 24th of May the association's board approved ESA's plan of development for the years 2009-2011 aiming to define its action guidelines for the subsequent period. In the given plan the following targets were set:

- Strengthening the ties with its members and introducing the association to young researchers in Tallinn as well as in Tartu;
- Acknowledging the activeness of its members and other semioticians;
- Furtherance a dialogue with societal institutions;
- Increasing the effectiveness of project proposals;
- Developing ESA's journal *Acta Semiotica Estica*.

The board commenced to implement the development plan with the introduction of practical steps in the same year. For instance, a statute of the annual award, specified in the plan, was agreed upon at a board meeting in December 10. According to the latter, ESA confers distinction on the best paper on semiotics of the previous year in abundance by the following criteria: an increase of the level of semiotics; opening new perspectives; presentation of semiotics to the general public. At the end of the year the association process with the Estonian Academy of Sciences eventually reached the conclusion with the signing of the association treaty on December 15. On the substance of the matter of ESA's activities, three aspects are to be mentioned: conferences and seminars, publications, participation in the international cooperation.

Amongst the research seminars, worth highlighting is John Deely's talk on the activities and future plans of the American Semiotics Association following ESA's general assembly in Tartu on April 24. In addition to that, the 10<sup>th</sup> Autumn School of Semiotics "Fiddling about is for real" (*Mängult ongi päris*) was held in Mooste from May 2 to May 3. In the course of two days several noteworthy topics were touched upon: Anzori Barkalaja talked about playing as a form of subsistence adaptation, Sandra Jõgeva deliberated on playing as an art practice, Margus Ott made a presentation on the complexity of games,

Valdur Mikita spoke about the language game, Madis Kats dwelled on everyday games and Mari Niitra looked into the reasons why children play.

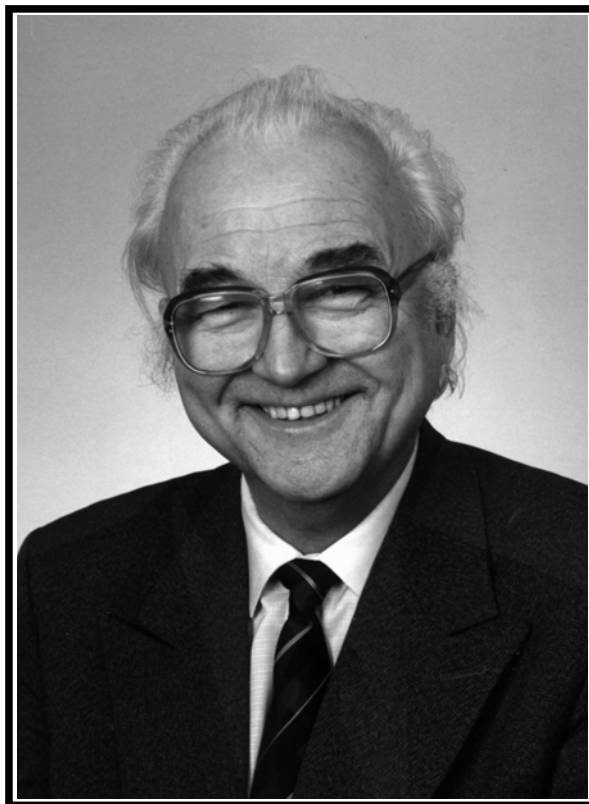
Likewise, three "Semiotic Parlour" evenings took place organized for students of semiotics and young researchers by Mattias Merilai. Semiotic analysis of various classical films was focussed on, for the most part.

Apropos publications, the sixth edition of ESA's journal *Acta Semiotica Estica* appeared in print. It's main body is constituted by the articles that originated from the discussions held at the conference "Semiotics in place and out of place" at the end of 2008. A number of articles focus on relations between the object and the methods of study. Peeter Torop's article delves into analyzability of culture and the adaptation of the research methods to a culture as a specific object. Silver Rattasepp scrutinizes the different ways of comprehending time. Tiit Remm considers the issues of time and space, and the "beginning" and "end" when studying a city. Linnar Priimägi ponders on specifics of space organization through the Velázquez painting "Las Meninas". Peeter Selg and Andreas Ventsel analyze the role of naming in a hegemonic signification process after the example of the singing revolution's discourse. Maria-Kristiina, Mihhail and Rebekka Lotman continue their treatment of the auto-meta description in the Estonian poetry which they begun in the previous issue. Poetry is also studied by Katre Väli, though from the perspective of performance and embodiment and its allocation to certain time and space. Katre Pärn observes the development of the cinema language model at the time of the structuralistic semiology of cinema. In the section of "Sightings" (*Märkamised*), which is bulkier than ordinarily, an afterword "Literary leitmotifs" (*Kirjanduslikud leitmotiivid*) to a book by Boris Gasparov, a member of the Tartu-Moscow school, can be found (translated by Eva Lepik). It also contains Mihkel Kunnus' brooding on the influence of the religion on man, an article on the rhetoric of reality demonstrations by Malcom Ashmore, Derek Edwards and Jonathan Potter, four semiotical thought exercises by Meelis Kaldalu and an homage to a Russian sociologist, Vladimir Jadov as a teacher of Ülo Vooglaid.

ESA's involvement in the international semiotics cooperation was realised in the participation at the X World Congress of Semiotics in A Coruña, Spain. Peeter Torop took part of board meeting of the International Association for Semiotic Studies. Kalevi Kull and Peeter Torop were also engaged in the management of the congress, organizing accordingly the sections of "Biosemiotics" and "Semiotics of culture I". All in all 17 members of ESA made their presentations at the congress: Kalevi Kull, Andres Kõnno, Kati Lindström, Mari Niitra, Timo Maran, Anneli Mihkelev, Ave Paulus, Tanel Pern, Ülle Pärli, Katre Pärn, Silver Rattasepp, Tiit Remm, Peeter Torop, Harri Veivo, Andreas Ventsel and Katre Väli. The literature on semiotics in print in Estonia and the possibilities to study semiotics at the University of Tartu were presented at the congress.

## IN MEMORIAM

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Member of Academy *Uno Mereste*  
27.05.1928–6.12.2009

Uno Mereste was born on 27 May 1928 in Tallinn. In 1946 he graduated from Tallinn Boys' School of Trade and Commerce and in 1950 from Tallinn University of Technology in the specialty of finance. After graduation he worked as a teacher at Tallinn Vocational School of Finance and at the same time attended a distance study programme in physical geography at the University of Tartu. In the years 1954–1964 Uno Mereste was Senior Lecturer and Associate Professor at the Department of Trade Economy at the University of Tartu. Thereafter he worked for 28 years at Tallinn University of Technology as Associate Professor, Professor and Head of the Department of Statistics and Accounting. When working at the Parliament in 1992–1997 Uno Mereste was also Professor of Social Statistics at the Institute of Theoretical Economy and Methodology, since 1997 as Professor-Emeritus of Tallinn University of Technology.

In 1960 Uno Mereste defended his Candidate's Thesis on the topic "Problem of distribution of absolute increment of the phenomenon between factors and its solution in economic statistics". In the years 1965–1975 he focused mainly on the methodology of economic analysis, seeking to integrate it with mathematical methods by mediation of semiotics and applications of model and systems theory. In that domain one of his most important results was creation of the theory of efficiency field and matrix treatment of economical efficiency, which has been implemented beside economy in the area of mathematics, engineering and agronomy. In 1970 Uno Mereste defended his Doctoral Thesis on the topic "Application of index method in economical analysis: theoretical and methodological research".

In 1972 he was awarded the Doctor of science degree in economics and in 1973 Professorship. Uno Mereste substantiated the treatment of statistics as an integration science between social and natural sciences. He elaborated and implemented several original economical-theoretical concepts, for instance the double-concentric multi-level science model and systemic model of population. He created the dual interpretation of factor indexes, theories of super-indexes, efficiency field, scientific indicators, self-financing and generalised them. Uno Mereste also published research treatments from the area of demography, theoretical and mathematical geography and theory of terminology. He was author of over 300 scientific and popular science works, among them about 60 books and textbooks, incl. the two-volume "Majandusleksikon" (Lexicon of economy) in 2003.

In 1994 Uno Mereste was elected Member of the Estonian Academy of Sciences in the humanities and social sciences.

At the time of preparation and launching of economic reforms Uno Mereste fulfilled the tasks of Counsellor to the Planning Committee and the Ministry of Economic Affairs. He contributed to the revival of the Estonian monetary system and formation of its monetary policy, preparing the draft Act of the Bank of Estonia. He was Chairman of the Council in the Bank of Estonia in the years 1992–1997 and belonged to the Riigikogu in 1992–2003.

Uno Mereste was founder of a school in research, belonged to many learned societies and scientific unions. He was awarded several prizes and tokens of recognition, incl. the National Science Prize (as head of a research team), the Order of the White Star, 3rd Class, the Medal of the Academy and the Wiedemann Language Award.

A man of letters and a witty word, Uno Mereste expressed the thoughts and memories of his many-sided path of life and companions. The yachting hobby of his undergraduate years remained close to his heart throughout his life. Based on his knowledge and experience he composed a major part of the first yachting manual in Estonian (appeared in 1954, the second edition in 1979).





Foreign Member of Academy *Indrek Martinson*  
26.12.1937–14.11.2009

Indrek Martinson was born on 26 December 1937 in Tartu. In the turmoil of war he together with his family landed in Germany, where his school path started. After their settling in Sweden it continued at Stockholm Estonian primary grade school, Brännkyrka science school and gymnasium. In 1957, Indrek Martinson started his studies at Stockholm University, majoring in English. Thereafter he studied mathematics for a year and physics for another. Having worked for some time as a teacher of physics at the Estonian Evening Gymnasium, he proceeded to work as lecturer at Stockholm Royal Institute of Technology and simultaneously continued his studies at Stockholm University, where he was awarded a Licentiate in nuclear physics in 1967.

After further professional training as a visiting scientist in the USA at the University of Arizona, he was in 1970 employed as a researcher-physicist at Stockholm Institute of Physics. A year later he was awarded the Doctor of Science Degree in atomic physics. In 1975 Indrek Martinson was elected Pro-

fessor of Lund University and his further path as a scientist was over 30 years involved with this University. In 1986 he was elected Member of the Swedish Royal Academy of Sciences, entitled to participate in nomination for the Nobel Prize.

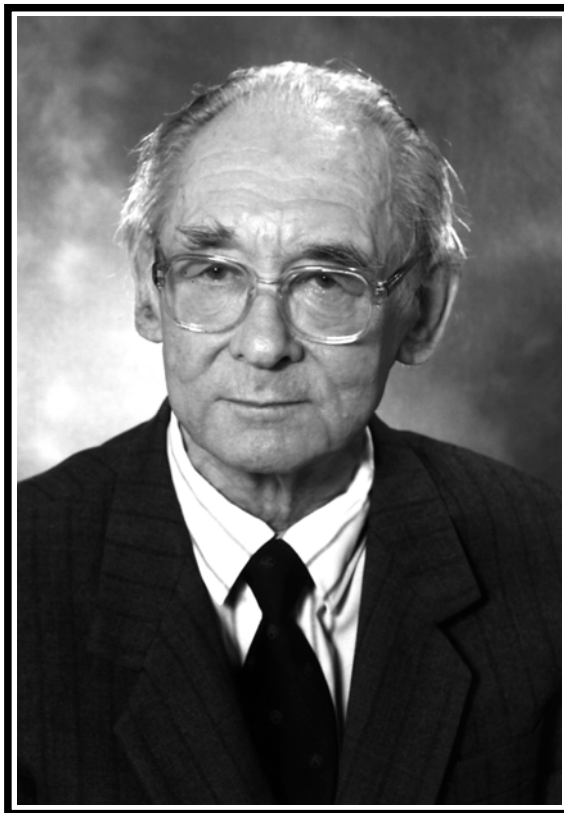
Indrek Martinson was a scientist of world stature in the area of atomic spectroscopy, whose main concern was related to experimental study of highly ionised atoms. He was also an acknowledged specialist in synchrotron spectroscopy of atoms and crystals, supervisor of many future Doctors of Science and author of over 160 scientific articles in peer-reviewed physical journals.

In 1998 Indrek Martinson was elected Foreign Member of the Estonian Academy of Sciences in physics. He was Doctor Honoris Causa of the University of Tartu, Foreign Member of the Lithuanian Academy of Sciences, member of the American Physical Society Optical Society of America and a number of scientific boards and councils.

Thanks to Indrek Martinson Estonian physicists gained from 1989 onwards the opportunity to have access to the world science, primarily in the form of research conducted within cooperation agreements on the emitter of synchrotron radiation at Lund University MAX-laboratory and Doctoral programme studies. He was Chairman of the South-Sweden Division of the Estonian Learned Society in Sweden and a long-term member of many expatriate Estonian organisations.

Indrek Martinson's keen interest in literature, history and classical music dated back to his undergraduate years; in sports he preferred athletics, orienteering and chess.

In 2001 Indrek Martinson was awarded the Order of the White Star, 4th Class.



Member of Academy *Viktor Palm*  
17.09.1926–23.01.2010

Viktor Palm was born on 17 September 1926 in Tartu and studied at the Gymnasium of Nõmme in Tallinn. He was evacuated to the rear of the USSR, served in the reserve regiment of the Estonian Corps and was demobilised in 1947, as he had enrolled in Tallinn University of Technology. In 1948 Viktor Palm continued his studies at Leningrad State University, graduating in 1952 from the Department of Chemistry.

Starting from that time Viktor Palm's professional life was involved with the University of Tartu. He held successively the positions of Assistant Professor, Associate Professor and Professor-Head of the Department of Organic Chemistry. In 1994 Viktor Palm became Professor Emeritus of the University of Tartu.

Viktor Palm defended his Candidate's thesis in 1956. He defended his Doctoral thesis "Quantitative research in the area of reactive capacity of orga-

nic compounds” in 1966 in Moscow, at the Institute of Elementary Compounds of the USSR Academy of Sciences. In 1968 he was awarded Professorship in organic chemistry.

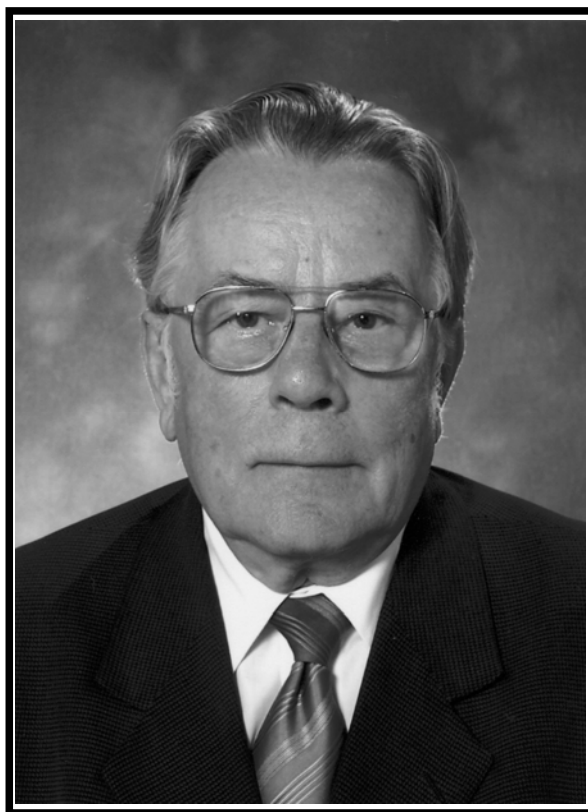
In 1978 Viktor Palm was elected Member of the Estonian Academy of Sciences.

The problem range of Viktor Palm’s research, having won high repute at the international level embraced acid catalysis and superacid environments, quantitative experimental and theoretical study of dependencies arising from the structure of reactive capacity of chemical compounds and other characteristics and solvents, and also chemical informatics, computer chemistry and statistic data processing. He also considered the issues related to the methodology of science.

Viktor Palm released approx. 200 scientific publications, among them three monographs and one textbook. Under his supervision, 15 Candidate’s theses were defended. In 1964 Viktor Palm established a new scientific periodical “Reactive capacity of organic compounds”. An English version of a journal titled “Organic Reactivity” has been published since 1978.

In 1997 Viktor Palm was awarded the National Prize for Long-standing Achievements in Research. In 2002, the activities of Member of Academy Palm were recognised by the Order of the White Star, 4th Class. His contribution to the restoration of Estonian independence is truly appreciated .

He was one of the initiators of the Popular Front and a delegate of the USSR Congress of People’s Deputies in 1989–1991.



Member of Academy *Loit Reintam*  
12.11.1929–17.01.2010

Loit Reintam was born on 12 November 1929 in Tallinn as the first child to the family of a teacher, writer and farmer. In 1949 he graduated from the Nõmme Gymnasium and in 1954 from the Estonian Agricultural University, majoring in agronomy. In 1960 Loit Reintam maintained his Candidate's degree in Agricultural Sciences for research of soils in South-Eastern Estonia, in 1974 the Doctor's degree in Biology for the study of automorphic pedogenesis. Loit Reintam was awarded Professorship in 1977. In 1990 he was elected Member of the Estonian Academy of Sciences.

The research career of Loit Reintam at the Agricultural University started in 1953 and evolved from the bottom rank of faculty staff to the top. In the course of time he worked as Laboratory and Research Assistant, Technician, Lecturer, Senior Lecturer, Associate Professor and Professor. In 1963–1966 he was Dean of the Department of Agronomy, in 1965–1994 Head of the Department of Soil Science and Agrochemistry, from 1999 Professor Emeritus.

Main directions of scientific work of Loit Reintam were the genesis of soils, its geography, chemistry, mineralogy and classification; processes in plant-soil systems; factors and conditions of generation of soils; ecology and environmental issues; history of soil science. Loit Reintam authored over 500 publications, including numerous popular science and publicist articles, which broadened the readers' outlook at appreciation of values of nature. Loit Reintam's lectures from various branches of soil science, ecology and environmental protection were heard by thousands of students at the Estonian University of Life Sciences and the University of Tartu as well as the Higher School of Management. He was the supervisor of numerous Diploma papers, Candidate and Doctoral theses.

Loit Reintam was member of the International Union of Soil Sciences (IUSS), the European Society for Soil Conservation (ESSC), the European Soil Bureau Network (ESBN), the Nature Protection Commission of the Estonian Academy of Sciences and many other scientific unions and societies. He also belonged to editorial boards of several journals. Besides letters of appreciation and letters of honour, memorial medals and diplomas, in 1998 Loit Reintam was awarded the Order of the White Star, 3rd Class and in 2004 the Medal of the Academy. In 2007 he was awarded the Eerik Kumari Prize for tireless propagation of soil as a natural resource of primary importance and for his activities in the role of a leading ecologist and nature conservationist of Estonia.

Besides research and pedagogical work Loit Reintam entertained a deep interest towards regional studies and history of culture, archaeology and pre-history, botany, farmer's work, theatre and literature.

## REMEMBRANCE

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Member of Academy *Ottomar Maddison* – 130th anniversary

Ottomar Julius Martin Maddison was born on 31 March 1879 in Tallinn to the family of a shoemaker. In 1895 he finished the Catherine II Tallinn Town School and in 1899 Tallinn Secondary Science School. By that time he already had acquired a certificate of the shoemaker's apprentice.

Although at that time only very few Estonians managed to pursue their quest for education outside Estonia, the young man coming from scanty circumstances managed to make it to the renowned St. Petersburg Road Engineering Institute of celebrated traditions thanks to his tenacity and self-assuredness. In 1906 he graduated from the Institute with a gold medal *maxime cum laude* and worked thereafter three years as a designer at the Bridges Department of the St. Petersburg Tram Lines Building Committee. The most strenuous period of O. Maddison's engineer's activity started in 1909, when his career proceeded at the Engineers Council of the Ministry of Roads, bringing together the bridge builders' elite of that time. During those seven-eight years O. Maddison designed a dozen of railroad bridges and viaducts, e.g. bridges over the Volga, the Dnieper, the Irtysh and bridges of St. Petersburg tram lines. Russia conferred distinction on him for his creative activity with state

awards: the Order of St. Stanislav, 3rd Class (1913) and the Order of St. Anna, 3rd Class (1915). In the period of WWI, when the designing spree of new bridges declined, Ottomar Maddison focused on pedagogical work.

O. Maddison's academic career started in 1908 at St. Petersburg Road Engineering Institute. In 1910–1916 he taught building statics at St. Petersburg Polytechnic Institute as well. In 1918 his monograph on stability in homogeneous soil of foundations of the bridge piers appeared. It considered the elasticity theory-based technique for calculation of the bearing strength of the soil and for establishing the referencing depth and width of the pad of the foundation. In a short time O. Maddison completed his doctoral thesis and became a Doctor in Engineering on 27 October 1918. In the same year he was elected Professor of Bridge Building at St. Petersburg Road Engineering Institute, in 1919 Vice Rector for Academic Affairs and in 1920 Head of the Strength of Materials Laboratory as well.

In spring 1921 Ottomar Maddison returned to his native city as an engineer and pedagogue of vast experience. Although the situation of perplexity and distress in Estonia did not enable designing and building of larger bridges, the railway bridge on the Narva River (destroyed in WWII) was quite comparable to the bridges he had designed previously. In 1930 O. Maddison designed the Tartu-Petseri railway reinforced-concrete arch bridges over the Ahja and Võhandu rivers. Those were the first arch bridges on Estonian railway.

O. Maddison's services at establishing the Estonian engineering education and formation of the first generation and school of scientists in engineering are outstanding. In autumn 1921 he proceeded to work on faculty at Tallinn Polytechnic School, which according to his words was at that time neither a technical higher school nor a university of engineering. He embarked on unrelenting and dedicated work for the purpose of creating an Estonian higher educational institution in engineering. Head of the Civil Engineering Department at the Polytechnic School, O. Maddison established the strength of materials laboratory with equipment and appliances exemplary for that time. He enabled the foundation of the National Testing Centre of Tallinn Polytechnic School in 1923 – the first centre in engineering research in Estonia. Consolidation of survey of materials at a higher educational institution was expedient in several meanings. It enabled procurement of new apparatus instead of parallel equipment, and using members of faculty – experts in the work of the Testing Centre enabled to broaden the subject matter of laboratory works in the studies. Director of the Testing Centre, he established contacts with respective institutions in foreign countries and his laboratories won international renown.

O. Maddison stood up, repeatedly and vehemently against the opinions, under which organising engineering tuition at a high level was allegedly impossible in Estonia and for obtaining higher education in engineering young people



had to be sent to universities abroad. He submitted evidence in an article published in the daily "Päevaleht" to support his case that the equipment and level of instruction provided at laboratories of Tallinn Polytechnic fully met the university level and it was an opportune moment to set up a higher educational institution in engineering. O. Maddison's purposeful activities were brought to a successful conclusion when in 1936, after the Department of Engineering for a couple of years had operated under the umbrella of the University of Tartu, Tallinn Institute of Technology was established, in 1938 renamed Tallinn University of Technology. Meantime O. Maddison was also on faculty at the University of Tartu – since 1930 holding the office of Private Associate Professor in Technical Mechanics, since 1935 the office of Professor in Technical Mechanics and Reinforced Concrete Structures. In 1936–1950 O. Maddison was Professor of Technical Mechanics and Reinforced Concrete Structures at Tallinn University of Technology, he also continued as Director of the National Testing Centre until it was liquidated. In 1940 Professor Maddison was approved Head of the Department of Structural Mechanics and Construction at Tallinn University of Technology, holding that office until reorganisation of departments in 1949. In 1944–1947 he was also Dean of the Department of Civil Engineering and Mechanics.

Owing to his extensive knowledge, vast practical experience, exceptional capacity for work and exactingness Ottomar Maddison was a professor commanding highest respect and authority at the University of Technology not only in training of civil engineers but also mechanical engineers. As a lecturer, he was extremely punctual and demanding. Besides several specialized subjects he delivered lectures in strength of materials, which was to a young student the first discipline to form engineering thinking. Professor Maddison exposed his subject succinctly and thoroughly, his trained eye detected errors in bridge designs in no time. In his lectures he deliberated on new trends in building structures, particularly the development of welding structures as well as reinforced concrete and new calculation methods in building mechanics. Nearing his seventies, he tackled an innovative and mathematically complicated course in elasticity theory. His former colleagues and students have become founders of new trends in Estonian building research and related fields (Member of Academy Nikolai Alumäe's theory of elastic shells, Member of Academy Heinrich Laul's designing of reinforced concrete shells, Professor Johannes Aare's calculation of thin-wall metal structures, Member of Academy Valdek Kulbach's suspended structures, Professor Verner Kikas' blast furnace cements, Member of Academy Hillar Aben's photoelasticity, Doctor in Engineering Uno Nigul's wave propagation, etc.).

Topics of O. Maddison's research work evolved from practical needs of the building sector of the 1920–1930s, with reference mainly to local building materials (the quality of gravel and crushed stone used for building roads, Estonian artificial stone, prognostication of concrete strength, properties of

kukersite asphalt, reinforced brick beams), but also more general issues (strength assessment of materials, links of stress and deformation tensors in isotropic environment). In 1940 Professor Maddison started to investigate the options for using oil-shale ash as a cementing agent in building. The research work suspended during the WWII continued promptly after the end of war and they gained a significantly large scope after formation of the Institute of Building and Architecture at the ESSR Academy of Sciences. O. Maddison was its first Director, laying down its directions of work (1947–1950). In the fifties he once again tackled the issues of soil mechanics, which had been among his research topics forty years ago in St. Petersburg and formed the subject of his doctoral thesis. He brought the several-years long work to completion a couple of weeks before his death.

Professor Maddison was a member of the International Association for Bridge and Structural Engineering and the International Materials Testing Union, Chairman of the Scientific Panel of the Estonian Society of Engineers, Chairman of the Editorial Board of an Estonian engineering journal “Tehnika Aja-kiri” and an appreciated consultant and expert at solving numerous building problems.

In 1946 Doctor in Engineering O. Maddison was nominated Member of the Estonian Academy of Sciences and Head of the Division of Physics, Mathematics and Engineering. In 1930 he was conferred the Order of the Cross of the Eagle, 3rd Class and in 1940 the Order of the White Star, 3rd Class. In 1945 he was awarded the title of the Honoured Scientist and in 1947 the State Prize of the ESSR for his research “Oil-shale ash as a cementing agent”.

Member of Academy Maddison departed on 30 January 1959 and was buried at Metsakalmistu. The largest lecture hall of Tallinn University of Technology, at the Faculty of Civil Engineering, carries from January 1971 the name of Ottomar Maddison.

Tallinn, April, 29, 2009

To: Competent Authorities and Points of Contacts of the Espoo EIA in Denmark, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden and Estonia

Communication on the current status of the assessment  
of trans-boundary impacts in the environmental impact assessments  
of the Nord Stream gas pipeline:  
the Espoo EIA and the Finnish, Swedish, Danish, German and Russian  
national environmental impact assessments

As the state of environment of the Baltic Sea is most critical and so far the efforts of the countries surrounding the Baltic Sea in improving it have been insufficient<sup>1</sup>, it was a welcome initiative by the Helsinki Commission (HELCOM) to develop in 2007 the action plan<sup>2</sup> for reducing the pollution charges to the Baltic Sea and to improve the state of its environment by 2021. In particular, Sweden has set an example by integrating the relevant policies to a comprehensive report to the parliament<sup>3</sup> on the state-supported actions for protecting the marine environment.

Like Sweden, most of the countries around the Baltic Sea have encouraged their citizens to support safe and healthy environment by promoting environmental awareness. Long-term efforts by the Helsinki Commission (HELCOM) for more than thirty years have resulted in a decrease of the pollution loads and the release of hazardous substances. In this light, the planned large-scale human intervention to the Baltic Sea environment through construction of one of the world's longest and largest underwater pipelines by Nord Stream AG has raised the question of whether the potential adverse effects to the nature are tolerable.

The available documentation of environmental impact assessments (EIA) of Nord Stream AG for consultation under the Espoo Convention (further called "Espoo EIA") and national EIAs of Finland, Sweden, Denmark and Germany were discussed jointly by the Commission of Nature Conservation, Commission of Marine Sciences and Council of Energetics of the Estonian Academy of Sciences, with the main goal to identify the risks related to potential adverse trans-boundary impacts to Estonia and Estonian coastal waters.

In spite of the voluminous documentation presented by Nord Stream AG, this discussion revealed several major concerns, questions and uncertainties that

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<sup>1</sup> WWF, 2008 - <http://www.wwf.fi/wwf/www/uploads/pdf/balticseascocard2008.pdf>

<sup>2</sup> [http://www.helcom.fi/BSAP/MinisterialMeeting/en\\_GB/Ministerial\\_Meeting\\_2007/](http://www.helcom.fi/BSAP/MinisterialMeeting/en_GB/Ministerial_Meeting_2007/)

<sup>3</sup> [http://www.riksdagen.se/webbnav/?nid=3777&doktyp=rfr&rm=2008/09&bet=RFR3&dok\\_id=GW0WRFR3](http://www.riksdagen.se/webbnav/?nid=3777&doktyp=rfr&rm=2008/09&bet=RFR3&dok_id=GW0WRFR3)

need to be solved as a pre-requisite for planning any significant interference with the vulnerable ecosystem of the Baltic Sea. This brief communication focuses on selected relevant environmental aspects in the context of the EIAs.

## 1. GENERAL CONCERNS

- 1.1. The national EIAs do not contain relevant information of the environmental impact of the gas pipe construction, maintenance and de-commissioning to Estonia and other “only affected parties”, including Latvia, Lithuania and Poland. The statements in the national EIAs that the questions of trans-boundary impact are discussed in the Espoo EIA, are not valid. The Espoo EIA provides only a passing reference to the environmental impacts not longer than two pages for Estonia and for any other affected party, and contains extensive lists of statements that are not supported by relevant data, analysis or discussion.
- 1.2. The examination of the EIA process has suffered from the lack of information on the eastern part of the Gulf of Finland, because the Russian EIA has not been made available for inspection by the affected parties although planned seabed intervention, mine explosion, release of toxic substances through sediment resuspension, and release of large amounts of potentially harmful rinsing solution in the Russian Exclusive Economic Zone (EEZ) involve high risks, similar to those treated in other national EIAs, and are expected to have relevant trans-boundary impact.
- 1.3. According to the Espoo EIA<sup>4</sup> the explosion of mines in the Russian EEZ is scheduled to June-July 2009. That would not leave time for presenting the information to the affected parties about the extent and location of munitions and appears to ignore any potential feedback on transboundary environmental impact.
- 1.4. As all these actions in the Russian EEZ have trans-boundary impact to the European Union (EU) countries, the whole project fails to meet the EU standards and should be rejected on the grounds of the EU environmental legislation and the United Nations Convention on the Law of the Sea, unless information input from Russia will comply with the Espoo EIA and related EU EIA directive standards in the whole project area.
- 1.5. The Espoo EIA and the national EIAs describe environmental impacts based on parameters of an outdated version of the project from 2007–2008. After canceling building of the platform near Gotland, a new technical project was launched, with the use of considerably higher pressure and temperature in the pipeline. The related risks of technological failures and their environmental consequences are expected to be higher, especially in the Gulf of Finland and in the northern Baltic Proper.

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<sup>4</sup> [http://www.nordstream.com/fileadmin/Dokumente/eia\\_permitting/Binder\\_1\\_Key\\_Issue\\_Munitions/Nord\\_Stream\\_Espoo\\_Report\\_English\\_Key\\_Issue\\_Munitions.pdf](http://www.nordstream.com/fileadmin/Dokumente/eia_permitting/Binder_1_Key_Issue_Munitions/Nord_Stream_Espoo_Report_English_Key_Issue_Munitions.pdf), p. 70.

## 2. MAJOR SPECIFIC CONCERNS

In the context of trans-boundary impacts to Estonia, three aspects of extremely high concern, involving potentially intolerable risk levels and/or direct threat to Estonia or its coastal waters are as follows.

### 2.1. Incomplete information on dumped conventional and toxic munitions, war toxins, and mercury.

*The largest risk for the Baltic Sea in general (with substantial remote effect to Estonia and all other coastal states) form the potential adverse impact through explosion of dumped mines, leakage of chemical weapons and war toxins, and damaging of dumped mercury containers.*

A recent report<sup>5</sup> reveals the dumping of more than 23000 mercury containers into the Sundsvall Bay at the eastern coast of Sweden between 1950 and 1964 and their re-location from the dump site to unexpected directions. According to the report of HELCOM<sup>6</sup>, only a part of dumping sites and quantities of munitions are known.

A large part of the relevant information is still classified. There is no adequate information about how close the dumping sites of different dangerous materials are located to each other. As the presented data are missing or obscure, an adequate risk analysis can be neither performed by Nord Stream nor evaluated independently by affected parties.

Estonian experts are specifically concerned because of the lack or incompleteness of data about munitions and war toxins in the immediate vicinity of Estonian waters: along the pipeline route in the Russian Exclusive Economic Zone (EEZ), Finnish EEZ within the Gulf of Finland, and in the international corridor in the Gulf of Finland.

Data on the Russian EEZ are missing completely; yet mines and dumped toxins are known to occur in the Russian EEZ, including sensitive areas near Gogland (Suursaari). Data on the Finnish EEZ appear to be incomplete and controversial in different EIAs. The Finnish EIA refers to up to 600–900 mines to be exploded within the anchoring zone of the pipe-laying barge whereas the Espoo EIA only mentions 29–31 mines directly on the pipeline route.

A major concern is the potential damage to these munitions and containers (which otherwise would rest within bottom sediments, and would be gradually covered by new layers of sediments sheltering minor leakages from penetrating into the water column) through explosions of discovered mines.

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<sup>5</sup> <http://www.fireconference.se/download/18.ea33603118db4c9c0b80003060/Utreddning+r%C3%B6rande+kvicksilvertunnor+i+Sundsvallsbukten+2008-04.pdf>

<sup>6</sup> <http://www.helcom.fi/stc/files/Publications/OtherPublications/1994Report-ChemicalMunitionsDumpedInTheBalticSea.pdf>

## 2.2. Re-mobilization of hazardous substances from the deeper layers of the seabed.

*The pipeline is planned to cross an area in the Gulf of Finland, where certain layers of bottom sediments are highly polluted. The construction and even the later presence of the pipeline will inevitably lead to the release of large amounts of extremely toxic substances from these seabed layers into the water column.*

According to a recent review article<sup>7</sup>, the highest concentrations of several most hazardous substances, such as dioxins occur within the seabed sediments, at the depths of 8–30 cm where they have accumulated from the 1940s until the 1980s. Left untouched, these layers would not be mobilized even under extreme meteorological conditions. They will be, however, extensively disturbed during the majority of seabed interventions during the cleaning of the route, during laying the pipeline, and, last but not least, during stabilization and subsidence of the pipeline.

While the Finnish EIA presents a few relevant geochemical studies of the upper 6 cm of the sediment only, it is alarming that the studies of hazardous substances in the slightly deeper layers are missing. Scientists and experts from Finland and Estonia have repeatedly communicated the relevant potential risks connected with the long-term environmental impact of substances stemming from Kymijoki, the greatest local pollution source of dioxins in the Baltic Sea in the past and a relevant source of methyl-mercury carried to the Gulf of Finland, at the early stages of compilation of both the Espoo EIA and Finnish national EIA.

Moreover, studies of several hazardous substances (including those listed in the EC regulation No 1881/2006 of 19 December 2006<sup>8</sup>, World Health Organization<sup>9</sup>, HELCOM documents and Stockholm Convention) in the Finnish EEZ sediments are missing or incomplete, and entirely missing for the Russian EEZ.

## 2.3. Cumulative and transboundary impacts of contaminants.

*The EIAs presented for the public hearings do not contain an adequate analysis of potential cumulative and trans-boundary impacts of remobilization and*

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<sup>7</sup> Verta M., Salo S., Korhonen M., Assmuth T., Kiviranta H., Koistinen J., Ruokojärvi P., Isosaari P., Bergqvist P.-A., Tysklind M., Cato I., Vikelsøe J., and Larsen M.M. 2007. Dioxin concentrations in sediments of the Baltic Sea – A survey of existing data, *Chemosphere* 67, 1762–1775.

<sup>8</sup> The Commission of the Communities, Commission regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs, Official Journal of the European Union (2006), p. L 364.

[http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l\\_364/l\\_36420061220en00050024.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_364/l_36420061220en00050024.pdf)

<sup>9</sup> Berg M. van den. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. *Toxicological Sciences*, 93, 223–241.

<http://toxsci.oxfordjournals.org/cgi/content/abstract/93/2/223>

*hydrodynamic re-distribution of contaminants in the Gulf of Finland and their bio-accumulation in natural processes in Finnish, Russian and Estonian EEZ-s.*

Anisotropic transport patterns in the Baltic Sea, discovered several years ago in cooperation of Swedish, Finnish and Russian scientists<sup>10</sup>, may potentially resuspend toxic materials, chemical waste etc. in unexpected directions. A generic cumulative impact of sediment remobilization through seabed intervention and mine explosion is that sediment resuspended or disturbed by strong impulse loads is more susceptible to resuspension by natural hydrodynamic activity than undisturbed bottom sediments<sup>11</sup>.

There is, therefore, a very high probability that pollution, toxic materials, chemical waste, etc., that will be resuspended during the construction works will remain mobile for a relatively long time and will be transported close to the southern coast of the Gulf of Finland.

There is no information about how these materials interact with other substances and with the local ecosystem, or how they will be accumulated in organisms and in the entire food chain. The existing generic data suggest that even very small concentrations of the toxic substances such as dioxins are of great risk to the people's health.

The evaluation of cumulative impacts and trans-boundary impact to Estonia cannot be complete without detailed consideration of data and processes in the Russian EEZ. It is alarming that adequate information on these aspects that are of high concern for Estonia, is almost missing.

### 3. CONCLUDING REMARKS

As the above list reflects only a part of questions raised during the discussion of the documentation in question, Estonian scientists are concerned because of large uncertainties and partially superficial analysis of the risks of long-distance, trans-boundary impacts caused by the execution and operation of the planned pipeline by Nord Stream AG in the Danish, Swedish and German EEZs.

Another area of concern is related to similar, almost immediate impacts from the Finnish and Russian EEZs, all of which appear to be incompletely estimated in the current versions of the Espoo EIA and national EIAs.

While the most alarming aspect are the gaps in treatment of dumped weapons, war toxics and mercury which have the potential of completely destroying the entire Baltic Sea ecosystem for a long time, the analysis of the information

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<sup>10</sup> Andrejev O., Myrberg K., Alenius P., Lundberg P.A., 2004, Mean circulation and water exchange in the Gulf of Finland – a study based on three-dimensional modelling, *Boreal Environ Res.*, 9 (1), 1–16.

<sup>11</sup> Schoellhamer D.H., 1996. Anthropogenic sediment resuspension mechanisms in a shallow microtidal estuary. *Estuarine, Coastal and Shelf Science*, 43 (5), 533–548.

about other hazardous substances in the immediate vicinity of Estonian waters does not meet the requests of best practice of the EIA process. The presented material has gaps in data from certain sea areas, in particular, from the Russian EEZ, which does not allow making of independent analysis of potential threats.

Having in mind that

- (1) the trans-boundary impacts connected with such large interventions into the marine environment should be analyzed adequately;
- (2) plans of large-scale developments and related activities that may potentially affect other coastal states in vulnerable environments should be fully transparent and made available to all affected parties;
- (3) the evaluation of specifically the most critical issues such as the damaging potential of conventional and toxic munitions, and remobilization and hydrodynamic transport of hazardous substances should be based on sufficient data and adequate methodology, and be described in clear and transparent manner, so that they can be verified by independent experts and by potentially affected parties;
- (4) major changes of the technical parameters of the planned activity should be accounted for in the relevant risk analysis,

we conclude that the presented versions of the EIA reports of the Nord Stream gas pipeline provide key information with major gaps or weaknesses, which does not allow to complete the decision process, and requires major efforts to update the information to meet the best practice for the EIAs.

Prof. Urmas Tartes

Chairman, Commission of Nature Conservation, Estonian Academy of Sciences

Acad. Tarmo Soomere

Chairman, Commission of Marine Sciences, Estonian Academy of Sciences

Acad. Endel Lippmaa

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