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Keynote speaker

G. F. Parrot and Alexander I: personal and political aspects of their relationship (on the basis of two decades of their correspondence)

Andrei Andreev
Lomonosov Moscow State University, Russian Federation

The correspondence between Georg Friedrich Parrot, professor of the University of Dorpat, and Russian Emperor Alexander I demonstrates a unique example of confident relations between a ruler of a huge autocratic empire and one of his subjects, who not only was the most kindly disposed towards his monarch but also tried to use their relationship to initiate important reforms and to improve the situation of the whole country.

Until recently, this correspondence was known only partly, and was retold or selectively translated into German in a 1902 book published by F. Bienemann. This contribution is a result of new investigations constituting the personal archive fund of G. F. Parrot, which is now held in the Latvian State Historical Archives in Riga. Analyzing this fund gives a truthful idea about the full volume of the letters, their quantitative dynamics, chronological development, etc. As a whole, the fund contains approximately 190 letters of Parrot to Alexander I from the period 1802–1825 and 38 responses (in the form of letters or short notes) by the Tsar. It should be emphasized that all the texts written by Parrot are rough copies (given the fact that almost all the original letters have remained undiscovered) and that the texts of the Tsar are also presented only as their nineteenth-century copies, as the originals were removed from Parrot's archive and their subsequent destiny remained unknown. Nevertheless, an investigation of the texts as such allows to draw some important conclusions.

Professor Parrot came from a long line of Alexander I's "young friends and supporters" in the early days of the liberal reforms in Russia in 1800–1810. The Tsar needed those friends to discuss some important concepts of reforming the political and social system of the Russian Empire; among them were the Tsar's educator Swiss citizen La Harpe, members of the so-called Secret Committee—Adam Czartoryski, Pavel Stroganov, Nikolay Novosiltsev, Victor Kochubey, Vasily Karazin, and others. Reading Parrot's and Alexander's letters allows reconstructing in detail the "dynamics" of their close friendship: marking some crucial points of their personal relations, and evaluating the level of their mutual confidence. The latter could be weighted on the example of certain instances of Parrot daring to advise Alexander: on his behavior with the Tsarina, other courtiers, his time table, and so on.

The letters do not only reveal valuable personal aspects—the correspondence touches a very wide circle of questions about the different aspects of internal and foreign policy of the Russian Empire. Many of the letters were, in fact, memoirs, forwarded by the Tsar to his ministers. These propositions concerned the most topical problems of the Russian state, including the expected constitution, the liberation of peasants and elimination of serfdom, the development of public education (together with important questions on the administration of the universities of the Russian Empire), the finances, the role of Russia in Europe during the period of Napoleonic wars. Not all,

but many opinions of the professor from Dorpat were closely examined by Alexander I, often in direct discussions during the visits of Parrot in St. Petersburg. The value of his position as the "Tsar's advisor" persisted even after Alexander's death, because the next Russian Emperor, Nicholas I, also received and took into consideration the letters from Parrot through the whole extent of his rule.

Keynote speaker

Changing concepts of science in the Enlightenment

Ursula Klein
Max Planck Institute for the History of Science, Berlin, Germany

In addition to the concepts of 'natural philosophy' and 'natural and experimental history', which cover a large area of learned activities in the Enlightenment era that we would designate 'science' today, a third concept emerged by the end of the eighteenth century which had a strong impact on the subsequent evolution of science: the concept of 'practical science' or 'useful science'. The discourse on this new concept, which was promoted by cameralist practitioners, was accompanied by efforts to create novel institutions of teaching and research, such as mining academies, academies for civil architecture and engineering schools. In the long run, it led to the establishment of the engineering sciences and what has been called *Technikwissenschaften* in modern Germany. But what did 'science' mean for the cameralist practitioners? What kinds of scientific methods and norms did they establish? As we will see, their scientific life was neither informed by 'truth to nature' nor 'objectivity', but by relativistic norms such as 'reliability'.

Keynote speaker

Euler and d'Alembert – brothers only in mind: their relation to the Prussian King Frederick II and to the Russian Empress Catherine II

Eberhard Knobloch
Berlin University of Technology, Germany
Berlin-Brandenburg Academy of Sciences, Germany

Leonhard Euler and Jean le Rond d'Alembert did not only essentially influence the intellectual life of the 18th century but also especially the fortune of the Royal Academy of Sciences and Humanities in Berlin and of the Imperial Academy of Sciences. If one compares the origins and the childhoods of these two outstanding representatives of the European Enlightenment, a greater difference can hardly be imagined. Euler was religiously educated in a Protestant family of a parish priest, who published writings against the hated freethinkers as the leading mathematician of his

time. D'Alembert was a foundling, who grew up in the household of a master craftsman and became the leading freethinker of the French Enlightenment and an equal rival of Euler as far as analytical mechanics was concerned.
Their dealings with the Prussian King Frederick II and Russian Empress Catherine II were also completely different. While Euler gained the respect but never the favour of the king, d'Alembert enjoyed the friendship of Frederick II without ever giving up his independence. While d'Alembert politely refused all offers of the empress, Euler returned to Petersburg after Catherine had fulfilled all of his demanding claims.

Keynote speaker

Georges Frédéric Parrot and his idea of a university

Epi Tohvri
Associate professor,
Tallinn University of Technology

Georges Frédéric Parrot was one of the developers and spokesmen of the liberal educational concept of the Enlightenment era in the Russian Empire in the first part of the 19th century. In 1802, he presented Emperor Alexander I the idea of a university, which dealt with serfdom and its connection to the university as well as the human culture and social welfare. Besides that he analyzed the university's benefits in the Baltic provinces and formulated the principles of its organization. Parrot was the person to draft the University of Tartu's foundation document, the author of the university's autonomy idea and he was responsible for making the institution accessible to representatives of all social groups. The university became the enlightened center of the school district. When the Russian public and liberal educational system became the target of conservatives' attacks since 1810, Parrot bravely stepped up to protect his liberal views. The year 1827 represented the second time when the existence of Russian universities was called into doubt. Now, Emperor Nicholas I turned to Parrot to ask his opinion. According to his proposal, a Professors' Institute was established at the University of Tartu in order to prepare the future academic personnel for work at other Russian universities.

"All artworks should be purchased which are useful in the classroom…" (J. K. S. Morgenstern)

Jaanika Anderson
University of Tartu Art Museum, Estonia

In my presentation I will focus on the ideas of the University of Tartu Art Museum, established in 1803 with the re-opening of the University of Tartu in the spirit of the Enlightenment. I will explore the relationship between values of the Enlightenment and the art museum and the characteristics of a universal museum by following the example of the University of Tartu Art Museum.
When the first director of the museum, Johann Karl Simon Morgenstern (1770–1852), arrived from Germany and laid the foundation for the museum collections in 1803, he had broadly educated people in mind according to the ideal of the Age of Enlightenment. He acquired the multifaceted collection—several types of artworks, coins and antiquities—during the first half of the 19th century to educate students and develop their taste in art.
The aim of the broad collections was to offer an overview of the art of different nations from a wide temporal perspective to facilitate and fulfil the purpose of education—the teaching of classical philology and art history. In the museum's programme and the practical activities of developing the museum, Morgenstern combined his knowledge as a classical philologist, the ideas of the Enlightenment as well as his views on art and art collections, and his pedagogical vocation and experience obtained before and during the time he worked for the art museum in Tartu.
The concept of universality is embodied in the origin of public museums. The latter were formed from highly eclectic private collections but adopted a new meaning as the spirit of the Enlightenment emerged—instead of collections of curiosities, these became well-ordered, classified assemblages from many parts of the world.

Does science prove God? Science and religion in the worldview of the Finnish geologist Pentti Eskola

Ahto Apajalahti
University of Helsinki, Finland

The period of Enlightenment created the modern debate on the relationship between science and religion. In the field of Science and Technology Studies, the term 'boundary-work' is used to indicate ways in which scientists draw boundaries between science and pseudoscience, science and religion, etc.
As a case study of this kind of boundary-work, I present the worldview of the Finnish geologist Pentti Eskola (1883–1964). He was one of the most successful Finnish scientists, developed the geological concept of metamorphic facies, wrote over 130

scientific papers and received the most acclaimed prizes in the field of geology, the Wollaston Medal (1958) and the Vetlesen Prize (1964).
In his popular writings and published letters of the 1950s and 1960s, Eskola maintained that the existence of God can be deduced through science. Eskola interpreted the theory of evolution and the emerging Big Bang theory, i.e. biological and cosmic evolution, as being directed by God. Still, Eskola claimed a clear line of separation between science and religious speculation. All natural phenomena could be explained by science, but the study of nature implicated a Creator, directing the universe behind the scenes. Eskola's views are similar to eighteenth-century deism, in that he did believe in God but did not believe in miracles or most of Christian theology.
Eskola was influenced by what is now called Western esotericism of the late 19th and early 20th century, mainly theosophy, as well as pantheistic Hindu philosophy, as presented to the West by figures such as Jiddu Krishnamurti (1895–1986) and Mohandas Gandhi (1869–1948). He was also influenced by so-called telefinalism of the French biophysicist Pierre Lecomte du Noüy (1883–1947).
Eskola wanted to create a worldview in which science and religion could coexist and both could be developed through a common base of knowledge. He presented this worldview in a popular form, intended for a wide audience.
Eskola's thought exemplifies the long tradition of scientists trying to mediate between science and religion, in a context of the relatively peripheral conditions of early Cold War era Finland. I analyse the ideological background and the more practical goals behind Eskola's views.

The Imperial Saint Petersburg Academy of Sciences in the 1820s*

Ekaterina Basargina
St. Petersburg Branch of the Archive of the Russian Academy of Sciences, Russian Federation

Georg Friedrich Parrot occupied the Chair of Applied Mathematics at the Imperial St. Petersburg Academy of Sciences in late April, 1826, when the Academy was preparing for its 100th anniversary. President of the Academy at that time Sergei Uvarov belonged to that class of enlightened public officials who understood their tasks in the broadest sense and were ready to carry them out.
Uvarov had the ambitious aspiration to use the anniversary to draw the attention of the new Emperor Nicholas I to the Academy of Sciences. Therefore, Uvarov was happy to obtain to the Academy such a prominent figure as Parrot, the first rector of the University of Dorpat and a "personal friend" of Alexander I.
Passed in December 1826, the centenary anniversary became a milestone in the history of the Academy of Sciences. Uvarov skillfully disposed the opportunity to appeal to the Emperor as a patron of science and used the official festivities to increase the interest of the government in the affairs of the Academy. Academic scientists were hoping to get additional state funds to revive the work of their institution. Indeed, the

anniversary gave impetus to the increase of the budget of the Academy of Sciences. Nicholas I endorsed the draft budget and ordered to submit it to the Committee of Ministers and the State Council.

At the end of 1827, Uvarov informed the scientific community that the Academy had the means "to accept men who have distinguished themselves in the field of science". However, Russia's war with Turkey distanced the actual payment of money. The new budget was approved on January 30, 1830, and the academicians' salary increased to the salary levels of professors at the University of Dorpat. However, only one "word of the Emperor" was enough to attract to the Academy excellent representatives of the Dorpat research school. By reasonable administrative means, with vigorous support by Parrot, Uvarov managed to attract to St. Petersburg a dozen of excellent scientists from Dorpat, even before the new budget entered into force. Among them were zoologist K. E. von Baer, mineralogist A. Th. Kupffer and chemist J. Hamel, physicist H. F. E. Lenz, chemist H. H. Hess, botanist C. H. Mertens. Later, zoologist J. F. Brandt and astronomer F. G. W. Struve joined the Academy. These reputable fellows transformed the Academy of Sciences into a major research center and raised it to the level of the leading academies in the world.

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Ethnic bullying: nineteenth-century Magyar education policies

John Braidwood
University of Oulu, Finland

The cultural, political, educational and historical relationships of the Magyars with their national minorities are barely known outside the Central/East European region. They still today present a deeply troubled and contested discourse, with disputed national identities and incompatible narratives of nation at the core of these relationships. The Magyars of Hungary were once the dominant power in the Carpathian Basin, ruling a disparate group of national minorities. Following the Ottoman occupation (1541–1699) the Magyars came under German-speaking Habsburg rule, causing the Germanization of Magyar culture, and culminating in the 1848–1849 Hungarian Revolution and War of Independence; this, in turn, resulted in the *Ausgleich* (*kiegyezés* or Compromise) of 1868, which gave the Magyars de facto autonomy over the lands of the Carpathian Basin. The nineteenth century saw a decisive resurgence of Magyar identity and one of the key pillars of this was the Magyarization of the national minorities, to be achieved in large part through 'enlightened' education policies pursued by the ruling Magyar minority. A current OECD document is wholly uncritical of these frankly tyrannical policies, which also came to be known as '*grünwaldizmus*' after the rabidly nationalistic Magyar MP Béla Grünwald. This paper seeks to challenge the supposedly enlightened education policies of the Magyars by looking at them from a different angle, particularly the

Slovak one. The cultural belligerence of the Magyars brought the Kingdom of Hungary into international disrepute and set it on the road to Trianon and dismemberment. Their militant stance is extremely provocative and has led to an endless rhetoric of confrontation in the region. The paper will draw on a wide range of sources, including both Hungarian and Slovak ones, as well as the great Anglo-Scottish graphomaniac pioneer and champion of minority rights within the Hungarian Kingdom, Robert William Seton-Watson, also known by the pseudonym Scotus Viator. Seton-Watson played a prominent role in establishing a School of Slavonic Studies at Kings College, London in 1915 (later becoming the School of Slavonic and East European Studies). The research carried out in this paper will, it is hoped, provide a unique insight into (un)enlightened education policies carried out by the Magyars and will contribute to novel ideas in education taking place on the fringes of the Russian Empire in the nineteenth and into the early twentieth centuries.

Reasoning on the perception of time in Königsberg and St. Petersburg, 1818–1860

Sabine Brauckmann
Independent scholar

In October 1860, Baer delivered the inauguration lecture at the *Russische Entomologische Gesellschaft* in St. Petersburg. In the talk he presented a thought model on the moment (*punctus temporis*) on which the clocking of human life is mapped. The theme he put forward was the argument that a 'physiological clock' conditions our perception and, therefore, also the scale we use to measure our sensations. To illustrate the argument, Baer imagined a life that spans from birth to death not more than 29 days and compared it to a life that extends to 80,000 years. In the publication he added an informative finding from astronomy (the personal equation) exposing that different observers will measure the transits of the same star by distinct values. Here I will trace some (possible) sources, or influences on Baer's reasoning on the awareness of our sensations, namely, Friedrich Wilhelm Bessel (1784–1846), Georg Friedrich Parrot (1767–1852), Felix Eberty (1812–1884), and Hermann von Helmholtz (1821–1894). When working on the tables of the pole star in 1818, Bessel realized the strange dissimilarity of different astronomers with regard to the observation of stellar transits. He took the view that the differences depended on the observer and the personal response time. In the following years he collaborated with Friedrich Wilhelm Struve (1793–1864) about it. In 1839, Parrot reported a visual perception he experienced when travelling by train from Pavlovsk to St. Petersburg. Depending on the driving speed, he perceived a decrease or increase of the people and houses the train drove past. Eberty, an amateur astronomer, published in a best-selling book (1846) a time travel through the universe. By drawing up a world in which all movements are a thousandfold faster or slower, he described how our lifetime will be equally shorter or longer. In a lecture in Königsberg in December 1850, Helmholtz introduced to the

audience his studies of the measurement of the smallest time sequences. The lecture centered on the perception of time differences, which he exemplified with Bessel's findings, and the measurement of fast passing processes happening inside the body (sequences of nerve signals). Helmholtz demonstrated that the sequences escape our perception because they elapse too rapidly.
My objective is to trace how different disciplinary fields dealt with the perception of time and how they transformed sensations to facts by measurement and scientific observation.

Dorpat (Yuriev, Tartu) University in the history of domestic medicine: international treasury of knowledge

Leonid P. Churilov(*), Aleksandr E. Korovin(**)

(*)St. Petersburg State University, Russian Federation

(**)St. Petersburg Military Medical Academy, Russian Federation

The paper discusses the role of the Dorpat (Yuriev, Tartu) University in the progress of the discipline of biomedicine and presents the historical and biographical information about the life and work of outstanding medical graduates and teachers of this school. The school was the only German-medium Imperial University in the Russian Empire. Owing to this fact, and having the broadest network of scientific relations both in the West and the East of Europe, the university played an outstanding role of "two-way street" in the evolution of Russian and foreign science. The paper considers in detail the contribution of scientists of this school to the development of medicine, to the progress of medical education in our homeland. It presents the follow-up of the achievements made by the medical graduates of the first Professors' Institute in Russia, established in Dorpat and their contribution to science and the Enlightenment. In the context of the epoch, it concerns the life, works and legacy of N. I. Pirogov, G. I. Sokol'sky, S. S. Kutorga, P. Ya. Kornukh-Trotsky, F. I. Inozemtsev, A. M. Filomafitsky, N. A. Skandovsky, K. E. von Baer, A. A. von Kieter, V. M. Kernig, O. Schmiedeberg, J. F. Mazonn, H. A. A. Schmidt, E. V. Brettschneider, G. A. Bunge, V. V. Veresaev, I. I. Grekov, N. N. Burdenko, N. I. Lunin, Z. G. Frenkel, and other outstanding physicians and medical scientists, alumni of this school. The role of cross-cultural talk and polymath's universalism is emphasized in their scientific and personal biographies. The authors criticize the concept of the so-called "national science", highlighting the internationalism of scientific work and globalism of academic knowledge.

Analysis of the correspondence between Prof. Carl Schmidt, Tartu University and Georg Dragendorff, Imperial Pharmaceutical Society, St. Petersburg, 1862–1863

Mary Schaeffer Conroy
Professor Emeritus, University of Colorado

Analysis of the correspondence, 1862–1863, between Professor Carl Schmidt, Tartu University, and Georg Dragendorff, then affiliated with the St. Petersburg Pharmaceutical Society, opens windows onto four historical and contemporary issues: (1) It expands information about Schmidt and Dragendorff in the mid-19th century provided by Tullio Ilomets in *Chemistry and Chemistry-Related Sciences at Tartu (Dorpat) University in 1802–1919*, particularly documenting that these two pharmaceutical scientists also were practical entrepreneurs with ambitions to establish a robust pharmaceutical industry in the Russian Empire. (2) As Estonia was then part of the Russian Empire, the correspondence emphasizes the importance of Tartu University in the pharmaceutical sector of Imperial Russia, illustrating linkage between the Tartu University Pharmacy Department and the St. Petersburg Pharmaceutical Society and the role of Tartu University in the development of the pharmaceutical industry of Imperial Russia, topics addressed by Mary Schaeffer Conroy in *In Health and In Sickness: Pharmacy, Pharmacists and the Pharmaceutical Industry in Late Imperial, Early Soviet Russia* (Boulder: East European Monographs, 1994), pp. 219–221, 141. (3) Professor Schmidt's proposals regarding control of raw pharmaceutical materials from the Far East and Central Asia adduce medical reasons for Russia's advancement into these areas in the 1860s, expanding Seymour Becker's theories (*Russia's Protectorates in Central Asia*, 1968) that Russian domination of Central Asia was precipitated by the need for an alternate source for cotton during the American Civil War, the need to squelch slave raids on Russian settlers in the steppes, and to block British advancement from India. (4) The correspondence gives perspective to current proposals for improving the post-Soviet Russian pharmaceutical industry. Olga Zvonareva's recently published dissertation from Maastricht University focuses on rebuilding the post-Soviet Russian pharmaceutical industry and, additionally, making it a self-sufficient "national" industry with a view to fulfilling the 2020 program issued by the Russian Ministry of Trade and Communications in 2009. (*Pharmapolitics in Russia: Making drugs and (re)building the nation*, 2016). The correspondence shows Professor Schmidt and Georg Dragendorff thinking along these same lines 150 years earlier.

Experience of the natural museums of Germany in national and environmental education

Kateryna I. Derevska (*), Kseniia V. Rudenko(**)

(*) National Museum of Natural History, National Academy of Sciences of Ukraine, the National University of Kyiv-Mohyla Academy, Ukraine
(**)National Museum of Natural History, National Academy of Sciences of Ukraine, Ukraine

The main purpose of natural museums is to show natural phenomena and the environment, the work of scientists in environmental science and related professions and to discover the importance of science. In Germany, the most important natural science museums are the museums of Berlin, Bonn, Karlsruhe, Munich, Frankfurt and Stuttgart. Regardless of the museum location, the number of visitors reaches *ca.* 350,000, and the number of excursions around 1,000 per year.

The Senckenberg Research Institute and Natural History Museum of Frankfurt is one of the largest natural history museums in Germany. It shows the variety of life and the development of living creatures, and the transformation of the Earth during millions of years. The museum has one of the largest exhibition of large dinosaurs in Europe. A special treasure is the fossilized dinosaur with a unique extant skin. The museum contains the biggest and the most diverse collection of stuffed birds in the world.

The National Museum of Natural History in Stuttgart is one of the most popular museums in the country. The museum's collection (exceeding 11 million objects) is the main basis for scientific research. It has special programs of excursions and workshops for visitors of all ages. Educational programs are developed by the museum's scientists and change every two months.

The thematic areas of the Museum of Man and Nature in Munich are the history of the Earth and the life; diversity of organisms; human as a part of nature. The museum uses a broad educational program with a combination of traditional and modern exhibition elements for visitors of all ages. The exhibition is complemented with permanent or temporary exhibitions. Impressive original exhibits, realistic replicas and rich interactive stations let visitors immerse themselves in the history of the Earth. Visitors can monitor the structure and dynamics of the Earth, enter into a bright and exciting world of minerals, or trace evolution from early life origins to the appearance of human. The combination of science and education in the exposition provides an opportunity to reveal the natural educational aspect of the environment and affect the ecological consciousness of human.

Thus, natural museums play an important role in environmental education. They can be regarded as a scientific guide for adults with exclusive sections for children, which shape the national identity and moral personality, developing a culture of behaviour and promoting consideration for nature.

Facing 'the third wave of science studies' from a philosophy of science point of view

Jaana Eigi
University of Tartu, Estonia

Harry Collins and Robert Evans's (2002) paper introducing "studies of expertise and experience" was meant to start a new wave in science studies. The presentation draws on philosophy of science arguments in order to criticise Collins and Evans's approach to managing expert advice and democratic deliberation and to argue for an approach that recognises interconnections of expertise and democratic representativeness.

Collins and Evans identify two problems of technical decision-making: the Problem of Extension (who should have a say?) and the Problem of Legitimacy (how to ensure political legitimacy of decisions?) Their solution to the former problem is to restrict participation to those having relevant expert knowledge. Simultaneously, they argue that expertise is not limited to "certified" experts—laypersons may sometimes possess "experience-based" expertise. However, both varieties of expert face the problem of legitimacy because they represent their expert communities and not the general population. In order to address this problem, Evans and Alexandra Plows (2007) recommend to involve representatives of the public—"disinterested citizens"—to discuss relevant non-technical issues.

In the paper, I use Heather Douglas's and Alison Wylie's arguments about expertise and public participation in order to challenge this separation between two types of participation in technical decision-making. Douglas (2008) argues that values are inevitably involved in experts' advice—in the situation of choice under uncertainty, decisions reflect the evaluation of the cost of potential errors, which, in turn, is based on values. I suggest that this recognition of the role of values allows challenging the claim that experts only represent expert communities. Rather, when offering advice informed by specific values they also represent others prioritising these values in this context. Wylie (2015) proposes that researchers committed to critical discussion should cooperate with lay communities that due to their social experience may offer criticism of researchers' claims and frameworks. On this account, experience-based expertise may be inescapably connected with one's being a representative of a specific social community.

I suggest that Douglas's and Wylie's arguments are a corrective for Collins and Evans's account. While the importance of identifying relevant certified and experience-based experts remains, it is equally important to recognise the values and interests experts represent. This, in turn, raises questions about managing these values and giving a voice to values and interests not represented.

European bison from Białowieża as a museum exhibit in the long 19th century

Anastasia Fedotova
Institute for the History of Science and Technology,
Russian Academy of Science, Russian Federation

Already in the early modern times, the European bison disappeared from almost all its former habitats. Until the 16th century, bison have survived only in Central and Eastern Europe, especially in the vast forests of the Polish-Lithuanian Commonwealth. In that period, the species was considered an exclusively royal game and had the status of a natural curiosity and a royal gift. In the second half of the 18th century, bison survived only in the Białowieża Forest, which fell under the rule of the Russian Empire in the 19th century. The Imperial government was well aware of its value and was interested in preserving both the bison and the forest where they lived.

Białowieża's last free-ranging bison population became the subject of interest of naturalists already in the 18th century. In the 19th century, interest in studying bison increased with discussions on the identity of bison and aurochs. A bison's skeleton became an object of detailed study by Georges Cuvier (1823), however discussions on the taxonomic position of the species continued until the 20th century.

Until 1860, Russian emperors did not hunt personally in Białowieża. Still, if one wished to hunt bison in the forest, a special permission of the emperor was required. Such permissions were usually granted if the hunt was justified for "scientific" purposes. This way, the bison turned from a gift exchanged between early modern kings and princes into a gift of the Russian Emperor to the international scientific community. To receive such a gift, the scientific community had to use its diplomatic and bureaucratic channels to recruit a naturalist willing to travel to Białowieża, to organize a hunt, to process the skin and bones, and finally, to deliver this massive package to a museum. Białowieża bison were attractive for museums not only because of their ambiguous taxonomic status. This animal possessed the attributes both of a "native" and an "exotic" beast at the same time, and captured the interest of wide audiences, as well as scientists. The presentation will address the broad range of scientific, organizational, diplomatic and logistic difficulties that museums confronted when they wished to obtain a bison. It will also discuss the reasons why museums were so very interested in possessing it and how it influenced the restoration of the bison population in the 20th century. Special attention will be paid to the bison killed by Baltic naturalists (e.g., Alexander Middendorff) or for museums in the Baltic region (e.g., Dorpat).

Pehr Kalm–a reformer of scholarly life in Finland

Cecilia af Forselles
Finnish Literature Society's Library, Finland

The founder of Finnish botany, Professor Pehr Kalm (1716–1779) made a significant impact on the history of science in Finland. Moreover, as the first professor of economy in Finland he reformed university studies in several ways. The academic work and activities of Pehr Kalm in the Finnish history of learning and science were very interesting because the academic world was significantly changing during his time as a prominent figure in academic life. In my paper I present and analyse in which ways and by which means this change was put forward.
At the Academy of Turku in Finland, the modern period started with the Enlightenment and the utilitarian ideas. Economics and chemistry were introduced as new scholarly fields and knowledge in geography, botany and other natural sciences was promoted in several ways in Finland as in other parts of Europe. In this way, a new era in the accumulation of knowledge of domestic circumstances began.
Kalm was a pupil of Carl von Linné and this was reflected in many ways in the development of the academic ideas and intellectual environment in Finland, and also how the utilitarian ideas were carried out in the country. The academy in Turku became one of the strongholds for utilitarianism and natural philosophy.

Experimentation and the idea of usefulness in early modern university disputations of the Baltic Sea region

Meelis Friedenthal
SCAS, University of Tartu, Estonia

Experimentation and striving for usefulness in sciences are usually associated with the Enlightenment period. These notions, of course, did not develop suddenly at the dawn of the 18th century but had already had a long history in medieval and early modern natural philosophy. The paper will examine some developments in early modern "Swedish universities" of the Baltic Sea region with regard to these questions.
On the one hand, we see already in the constitutions of the Swedish universities (Uppsala, Tartu, Turku, Lund) that practicality was valued above "scholastic perplexities" and the authors of the university statutes exhorted students to become "men of action". These attitudes stemmed foremost from the Ramist philosophical tradition that had been popular in the German cultural area in the 16th century, but was afterwards mostly abandoned. In the Swedish Empire, however, Ramism was still favoured (mainly due to the philosophical preferences of Johan Skytte and Laurentius Paulinus Gothus) and thus exceptionally became nearly the official educational policy of the Swedish state during the first half of the 17th century. The presentation aims to show that the ideals of Ramism were in good alignment with some aspects of

mechanical philosophy (mainly Cartesianism), which became a contested topic during the second half of the 17th century.
On the other hand, besides these philosophical developments the paper also touches upon the question of natural magic in the university disputations. There are several texts that deal with this question, relying on different authorities, but always underlying the practical side of this science. Natural magic relied on hidden or occult qualities and during the early modern period search for these occult powers was conducted by men of no less statue than Isaac Newton and Robert Boyle. The works of Boyle are also cited in the disputations regarding the search for these powers.

Parrot and the prohibition of theater in the university town of Tartu

Tiina-Erika Friedenthal
University of Tartu, Estonia

At the end of 18th century in Estonia and Livonia, in the period of Baltic governorates in the Russian Empire, the first efforts were being made amongst Baltic Germans to establish permanent theaters in Riga and Tallinn. In both cities these efforts gave rise to a relatively modest debate about the issue, but by all means the theater had come to stay. Interest towards establishing a permanent theater was definitely existing also in Tartu, where German itinerant troupes had performed for decades. However, after the city became a university town in 1802, any kind of theatrical activity was severely prohibited. At that time, not only in Tartu but also in the university towns of Germany, discussions about the compatibility of theater performances and educational establishments took place. There were, of course, local differences. In Tartu, the political ferment after French revolution, local power struggles (between the university and the local nobility) and, last but not least, a *ukase* from Paul I which prohibited founding theaters in the university towns of the Russian Empire played an important role. But no matter the outward causes, Georg Friedrich Parrot was one of these men who for many years vehemently and apparently also sincerely supported the prohibition. Together with Friedrich Maximilian Klinger they did what they could to interpret and keep the prohibition in Tartu enforced in a strictest way. This connects the attitudes of these men to the ongoing debate amongst *Aufklärers* about the educational value of theater. What were the accusations and suspicions expressed at the University Council and in the University Court where Daniel Balk, a professor of medicine, was interrogated for taking part in an amateur theater in 1809?

The origins of art history

Kateryna Gamaliia
National Academy of Art and Architecture of Ukraine, Ukraine

The first departments of the theory and history of art in the universities of the Russian Empire were opened after the adoption of the University Charter in 1863, back when the study of art was not yet established on its territory as an independent science. History of art gradually emerged in the works of historians, archaeologists, and philologists. At the Kyiv University, elements of early science in which the history and philosophy were separated emerged at the Department of Greek Literature and the Antiquities, established in 1834. In 1837, Johann Heinrich Neukirch (1803–1870), a graduate student at the University of Dorpat who was born in Courland provinces, became the first professor of the department. Completing his education at the university (in 1826–1830), where he began his scientific activities under the supervision of professors Karl Morgenstern and Johann Francke, Neukirch was sent abroad to an assignment for preparation for the professorial rank. In 1835, he became the *Privatdozent* of classical philology and literature at the University of Dorpat, and in 1837 he was appointed professor of the Kyiv University, where he lectured on the Greek Antiquities and ancient philology. Professor Neukirch, named Ivan Yakovlevich after Slavic tradition, knew German, French, English, Italian, Spanish and Russian besides ancient languages. When teaching the history of Greek literature, he turned to mythological characters and the description of works of ancient sculptors. The most interesting ones among his published works on this topic was his speech from 15 July 1840 'About the importance of study of ancient Greek literature' and '*Historiae litterarum summaricum*', which was published in the *University News* in 1863. Next to his lecturing activity, Neukirch was one of the leading organizers of the educational process: he was elected the dean of the Faculty of History six times, and prorector three times. He also repeatedly carried out the duties of chancellor. He retired in 1868 and in 1870 died in Kyiv.

Lev Pisarzhevskiy: the unity of theory and practice

Vira Gamaliya
Kyiv State Economy and Technology University of Transport, Ukraine

In 1903, Gustav Tammann, professor of the Department of Chemistry at the Tartu (Dorpat) University, was appointed to the University of Göttingen. Instead of him, assistant professor of Novorossiysk University Lev Pisarzhevskiy was invited. He had been working until 1908 in Tartu, after which he moved to the Department of Anorganic Chemistry of the Kyiv Polytechnic Institute. Later, in 1913, he got a position at the Department of General Chemistry of the Mining Institute in Ekaterinoslav (now

Dnipro). There he organized the Department of Electronic Chemistry which was transformed into the Ukrainian Institute of Physical Chemistry in 1927.
Throughout his career, Pisarzhevskiy made a number of major theoretical discoveries. His researches have played an important role in the establishment and development of electronic conceptions in chemistry. His idea of the dependence of solid body properties on electronic structure formed the basis for modern theory of heterogeneous catalysis. He had a huge influence on the establishment and development of the physical chemistry in Ukraine.
The events on the First World War demanded the availability of a large number of medicinal products, many of which the Russian Empire received from abroad. There was a critical need to ensure the domestic production of drugs, in particular iodine, which was urgently required for treating the wounded. It was known that the iodine content in seaweed ash must have been sufficient for industrial extraction, but the technology had been kept secret by foreign producers. At the Ekaterinoslav Mining Institute, Professor Lev Pisarzhevskiy and senior laboratory assistant N. Averkiev developed a catalytic method of producing iodine from seaweed, and published their results in specialized journals.
Since 1915, the station on the production of iodine from the brown algae *Phyllophora*, extracted in the Black Sea, was established in Ekaterinoslav. After 1918, the station was closed but in 1936, relying largely on its experience, the Odessa iodine plant with the capacity of 6 tons iodine production per year was founded. Today, iodine is used not only in medicine but also in making of X-rays, photos, glass for lights and lamps with special effects as well as in the production of high-purity metals.

Rector G. F. Parrot and Curator F. M. Klinger: the personal relationship and a conflict of authority

Irina Gavrilina
Lomonosov Moscow State University, Russian Federation

This study explores the relationship between Georg Friedrich Parrot and Friedrich Maximilian Klinger during the period of founding the Dorpat University (1802–1803). Parrot fought for the University's autonomy from Alexander I, and Klinger was the person to hold the post of the curator through whom the central government tried to control the university affairs. This, in particular, makes their relationship an interesting issue to explore.
The ideas of the two were aligned and Klinger, adherent of the German Enlightenment, Goethe's friend and the founder of the *Sturm und Drang* literary movement, was appointed the curator of the Dorpat University not without an active assistance on Parrot's part and his personal recommendations. Parrot hoped to find an ally in Klinger, but were his expectations met? The purpose of this study is to investigate the nature of Parrot and Klinger's relationship: what conflicts did they face and how those conflicts were resolved. The study examines the degree of Klinger's

intervention in the University's self-governance and the possible underlying reasons for such intervention. The main goal is to identify whether Parrot and Klinger's assertions about the concept of the University's autonomy and its workings were in essence similar and to disentangle who was the true leader in their association. The study is based on materials of private correspondence, memoirs of Klinger, Parrot and their contemporaries as well as some official documents. Rigorous analysis of the materials led to the following major conclusions.

Firstly, Klinger was torn between two establishments, the University Council and the Ministry of Education, which constrained his ability to bring about the reforms Parrot wanted him to implement at the University and which invariably led to a conflict. However, at the time, Parrot found in Klinger a major beneficiary and friend of the University, although his patronage was limited by legal matters. One of the main research findings is that Klinger served as a buffer that mitigated the conflicts between Parrot and the Ministry of Education.

Secondly, there was a difference in Klinger's and Parrot's understanding of the University's autonomy and their perceptions of what a Russian Imperial university should be like. Klinger tried to carry out the bureaucratic unification in accordance with utilitarian ideas stemming from the Enlightenment. Acting in the service of the Empire, he attempted to create an authentic Russian university while Parrot was more focused on aligning it with German university standards.

Notably, Klinger and Parrot were able to overcome serious difficulties and differences in pursuit of a common cause, showing respect for one another. Parrot named Klinger the person "under whom the University flourished". They both tried to bring about improvement and positive change in the matters of the Dorpat University, each trying to do so "from his own unique perspective".

Inscribing the Baltic Provinces into the Russian Empire: imagined geographies of 19th-century ethnographic cartography

Catherine Gibson
European University Institute, Florence, Italy

This paper examines the role played by ethnographic maps in the development of various imagined geographies in the Russian Empire. It focuses on the geo-spatial reconfiguration which occurred in relation to the Baltic provinces in the second half of the nineteenth century, which transformed the *Ostzee Provinzen* (on the 'East Sea' from the perspective of the German-speaking lands) into the *Pribaltiiskii krai* (on the edge of the Baltic sea, from the perspective of St. Petersburg and Moscow) in the works produced by geographers, ethnographers and cartographers. The shifting perceptions of the Baltic provinces and their place within the Russian Empire are traced through a discussion of the ethnographic maps produced by two members of the Imperial Russian Geographical Society, Petr Keppen and Aleksandr Rittikh, between the 1850s and 1870s. In doing so, this paper reflects on the broader role of scientific discourses

in inscribing the imperial space with meanings and the impact of external events on the relations between the state and its borderlands.

The project of establishing the Institute of Professors at Dorpat University, as organized by G. F. Parrot

Mikhail Goncharov(*), **Juris Salaks**(**)
(*)Moscow Pedagogical State University, Russian Federation
(**)Riga Stradiņš University, Latvia

During the 19th century, there were enormous problems in the Russian Empire's higher education system in terms of training lectors and professors for local universities. Dorpat University had a special status at that time because its educational process was comparable to the university model of Germany. The first rector of the reopened Dorpat University, G. F. Parrot, was well acquainted with Tsar Alexander I. Their private correspondence in 1803 contains Parrot's thoughts about how to improve higher education in the Empire.

The real work began on February 27, 1827, when Tsar Nicholas I asked Parrot to propose his views on how to train lectors for Russian universities. Parrot duly prepared a report on the matter, and the Tsar entrusted the evaluation of the report to the Educational Institution Organisation Committee, which was the highest ranking institution of its type in the Russian Empire.

The committee and professors at Russian universities had fairly ambiguous views about Parrot's recommendations. Several committee members, including the Minister of Education A. S. Shishkov, said openly that "there was no need for Parrot's recommendations". Others, however, said that the situation with Russian universities was such that there was an "urgent need to train people who would be worthy of the title of a professor". They admitted to certain shortcomings in the report, but also said that the project should be taken into account. One member of the committee, Rear Admiral Y. F. Krusenstern, argued that the recommendations were rather different from the existing practice of sending the best students to foreign countries. Academician A. K. Storch supported Krusenstern's idea, adding that Dorpat University would be a good place to pursue the Tsar's goals.

At the end of the day, the Committee amended Parrot's report substantially, but accepted it. The quick system to train professors was dubbed the Institute of Professors, and it existed from 1828 until 1839. Parrot had recommended that there be 156 study slots, but the committee only approved 20. The period of training was cut from seven years to four.

Particular attention was focused on selecting trainees from the Institute of Professors. Criteria included "adequate knowledge" in the chosen area of specialisation, foreign language skills, the ability to express one's thoughts appropriately and freely, a sufficiently strong and comprehensible voice, good health and moral behaviour.

Medications prescribed by Vilnius' doctors at the beginning of the 19th century: connection between pharmacological therapy and the Brunonian doctrine

Vilma Gudienė
Lithuanian University of Health Sciences, Lithuania

This report aims to analyse a pharmacological therapy applied by doctors active in Vilnius in 1801–1802 and to find out if they followed the Brunonian medical doctrine in their treatment. The source to answer the question what medications were prescribed by Vilnius' doctors was the prescription book (1801–1802) of Vilnius University Pharmacy.

In Europe, the Brunonian system of medicine became popular at the end of the 18th century and the beginning of the 19th century. Followers of the Brunonian doctrine mostly prescribed stimulants, such as opium, ether, Peruvian bark, camphor, strong wine, alcohol, musk, also exercise, meat diet and heat. For the patients who had sthenic diseases (sthenia), bloodletting was applied and also cold and vegetable diet, water, beer, emetics, cathartics and diaphoretics. Brunonians criticized the humoral theory but had not refused bleeding, emetics, laxatives. The composition of medications prescribed by physicians in Vilnius in 1801–1802 reveals more similarities than the differences in the therapy, although these doctors probably followed different medical doctrines. Most of the drugs they prescribed consisted of plant-based components. The commonly prescribed Galenic preparations were made from marshmallow, elderberry, rhubarb, poppy herbs. All doctors prescribed medications with opium.

Doctors of Vilnius also often prescribed medication with beaver glands (*Castoreum*), a substance in its effect similar to musk. Followers of the Brunonian theory applied musk in the treatment of asthenic diseases. Only in rare cases, doctors prescribed musk for their patients, but they often used beaver glands in medications. About 15 percent of prescriptions registered in the book included beaver glands. Other popular medicines among Brunonians, camphor and ether, were prescribed less frequently by doctors in Vilnius.

This analysis showed that the doctors of Vilnius often prescribed medications propagated by the followers of the Brunonian medical doctrine. However, we should also assess other sources that define their approach to medical philosophy to confirm that doctors in Vilnius applied the Brunonian doctrine in 1801–1802.

The map *Specialcharte von Livland*: scientific transfer, cartography and territorialisation in 19th-century Russia

Martin Jeske
University of Basel, Switzerland

The map published in 1839 documents an initiative to rationalise agriculture by using innovative scientific methods. The organiser of the new map was the Livonian Charitable and Economic Society whose first secretary was Georg Friedrich Parrot (1767–1852). It moved from Riga to Dorpat in 1813 to get closer to the reopened university—an important intellectual hub for scientific transfers into the Russian Empire in the 19th century.
The Chair of Mathematics demonstrated its practical relevance in the light of geodetic surveying of Livonia between 1816 and 1819 by Friedrich Georg Wilhelm Struve (1793–1864), who once was supported by Parrot to study mathematics at his alma mater in Dorpat. It was worth it: as professor of mathematics and astronomy, Struve's work on the geometrical map marked the beginning of the longest grade measurement of the 19th century, which was used as the backbone for the national survey of European Russia after the Patriotic War.
My contribution will show how the Livonian Charitable and Economic Society perceived the Livonian territory cartographically and the role of the University of Dorpat. Finally, I will discuss in how far this map was able to serve as a model for the whole Russian Empire.

Teaching of forensic medicine by the first professors of the Imperial University of Dorpat to students of the Faculty of Medicine and the Faculty of Law

Jaan Kasmel
University of Tartu, Estonia

In 1864, the 50th anniversary of the defending the doctoral thesis by Karl Ernst von Baer (1792–1876), resident of Estonia, who can be considered one of the most versatile natural scientists of the 19th century, was celebrated. On this occasion, his autobiography was published, which also includes a chapter on its university years in Dorpat (Tartu) from 1810–1814.
In this chapter, Baer expressed various opinions about the Dorpat University and the professors of the Faculty of Medicine. We present one of them below: "The university was mockingly called a home for the disabled, and when Styx and Balk were elected as professors of medicine, I as a schoolboy heard the joke that now the faculty placed a log [Germ. *der Balken* 'log'] across the Styx so that the journey to the netherworld would be safe."

In addition to what Baer said about professors of medicine Styx and Balk as a schoolboy, both professors had great merits in developing the university and the Faculty of Medicine, including being the first to teach one subject or another, e.g., forensic medicine, to the students of the University of Dorpat (Tartu) and in the whole of Tsarist Russia.
When the university was reopened on 21–22 April 1802, three of the four positions of professors of the Faculty of Medicine were filled, and there were six students. Among these three professors, Martin Ernst von Styx (1759–1829) took office on 14 December 1800 as ordinary professor of anatomy and forensic medicine. Daniel Georg Balk (1764–1826) started on 27 February 1802 as professor of pathology, semiotics, therapy and the clinic.
As the first dean of the Faculty of Medicine at the reopened University, Prof. Styx started lecturing in the spring semester, which began on 1 May. During the following two months, he delivered lectures to the students of the Faculty of Medicine also in the area of forensic medicine (on mortality from injuries) for two hours per week. As source material for the course he used the textbook published in 1798 by Johann Daniel Metzger (1739–1805), professor of Königsberg University.
The lecture programmes of the University of Dorpat show that in the autumn semester of 1803 Prof. Balk, who was rector in 1803–1804, lectured on philosophical-medical jurisprudence (forensic medicine) six hours per week. These lectures were intended for future public servants, thus, students of the Faculty of Law. The lectures were based on a 230-page German-language textbook for this course compiled by him and published in 1803.
The conference report will view the beginnings of teaching forensic medicine in the older universities of Imperial Russia to students of the Faculty of Medicine and, separately, to students of the Faculty of Law.

From St. Petersburg to Dorpat and back: on academic migration and communication between universities in the first half of the 19th century

Ksenia Kazakova(*), Tatyana Zhukovskaya(**)

(*) The Barents Centre of the Humanities of the KSC RAS, Russian Federation
(**) St. Petersburg State University, Russian Federation

Scientific contacts between the universities of the Russian Empire at the initial stage of their existence are still insufficiently studied. The scale, motivation, official registration and results of academic migrations have been considered only locally or concerned some persons or universities. The purpose of our research is to get a full presentation of academic migrations between the University at Dorpat and the University of St. Petersburg, including the time of existence of the Pedagogical Institute in St. Petersburg (1804–1819) because the latter has been built into the system of educational districts and university relations. Our observations are based on the documents of

funds of the Central State Historical Archives of St. Petersburg and the Russian State Historical Archive. The materials of the university's record-keeping are enriched by the memoirs and correspondence of the university students.
The history of university interaction in the Russian Empire is no less interesting than the study of the European university culture transfer to Russia. In this sense, the University of Dorpat was a cultural mediator between the universities of Europe and Russia. At the same time, it was included, till 1837, into the educational districts system of the Russian Empire, making it possible for the graduates to move from "interior" universities to Dorpat. The graduates occupied the vacancies of teachers of Russian language and Russian law at the university, as well as in grammar schools attached to the Dorpat educational district. A number of Dorpat graduates made a scientific career at the St. Petersburg University (P. Preis, E. Lentz).
The migrations of the students, the natives of Great-Russian provinces, to Dorpat was usually determined by the change of specialization in favour of medicine. Based on the archival documents, it is possible to restore some individual academic trajectories. As a rule, these were paying students, belonging to the gentry, keen on natural sciences or expected to enter the civil service. Traditionally attractive was the department of Russian literature at the Dorpat University. In the 1820s, the number of Russian students at the Dorpat University accounted for 5 to 7 per cent, and the number increased in the following decade.
Some incidents in the academic life at Dorpat University induced updating the all-university legislation. The examples are the toughening of the rules for students after certain students' "cases" in Dorpat in the 1810s, or the case of 1816 concerning the cancelling of the conferment of scientific degree for a fee, which existed at the Dorpat University, resulted in Proposition on Scientific Degrees in 1819.
The student corporate culture at the St. Petersburg University in the 1830s was modeled on the basis of traditions peculiar to student corporations at the Dorpat University, which have been transferred by academic migrants. The corporate organization was successfully transferred to result, in spite of the police surveillance, in establishing three national student communities at St. Petersburg University, including the *Ostzee* Germans' corporation "Baltika" and the Russian student corporation. There were no student communities or corporations in other "interior" universities of the Russian Empire at that time.

President Kazys Grinius as public health organizer and health educator

Ramūnas Kondratas
Vilnius University, Lithuania

In 2016, the 150th anniversary of the third President of the First Republic of Lithuania was celebrated. Dr. Kazys Grinius was president for only a short time but throughout his career he was a physician, educator, and a pioneer in public health organizing. He

studied medicine and in 1893 received his medical degree from the Moscow University. After a short stint as a ship doctor on the Caspian Sea, he returned to Tsarist-ruled Lithuania in 1894 and started a very successful medical practice in his home town of Marijampolė. He also practised in Virbalis, Naumiestis and Pilviškiai before returning to Marijampolė in 1902. He spent the war years (1914–1919) practising medicine in Russia, being a war hospital physician and administrator. He returned to independent Lithuania in 1919 and became heavily involved in the political process: elected in 1920 to the Constituent Assembly and to the next three parliaments (1922–1926). He was Prime Minister during 1920–1922, and President in 1926. During this period, he discontinued his private medical practice and became active in public health organizing: as director of health services in the Kaunas municipal administration and as one of the founders and head of the *Pieno Lašas* ('drop of milk') society and the Fight Against Tuberculosis Society.

Grinius was not only "the father of sanitary medicine" or public health in Lithuania, but also the founder of the Lithuanian medical press. He was the editor and publisher of the first Lithuanian medical publication *Sveikata* ('Health'; 1909–1915, 1918, 1920–1928), which appeared as a supplement to the newspaper *Lietuvos ūkininkas* ('Lithuanian farmer'). He contributed to the publication of the first Lithuanian scientific journal *Medicina ir gamta* ('Medicine and nature', 1913). Later, he edited the journals *Kova su džiova* ('Fight against tuberculosis', 1934–1940), *Pieno lašas* ('Drop of milk', 1938), *Sveika šeima* ('Healthy family', 1939–1940), and was on the editorial board of *Medicina* (1920–1940). He gave rise to the field of Lithuanian medical bibliography with the 1922 publication of a bibliographic index of about 120 popular medical publications/books in Lithuanian from 1782 onward. He also made major contributions to Lithuanian medical and botanical terminology. This particular aspect of Grinius's work as a science communicator will be emphasized in the presentation.

The concept of staff rotation in Russian universities in 1827–1837: Sergei Uvarov's reform and its short- and long-term consequences

Tatiana V. Kostina

St. Petersburg Branch of the Archive of the Russian Academy of Sciences, Russian Federation

Georg Friedrich Parrot announced the idea to found the Professors' Institute in Dorpat in his project "Thoughts of Universities in Inner Russia" (1827). One of the key points of the project was to completely replace all professors in Kazan, Moscow and Kharkov universities with new ones, trained purposely at Dorpat. The practical result of this ambitious idea turned out to be more modest. Following Parrot's idea in a persistent pursuit of rejuvenating the corporations of Russian universities, the Ministers of National Education Carl von Lieven (1832–1834) and Sergei Uvarov (1834–1849) managed to complete the reform, replacing more than a third of professors and adjuncts at four 'domestic' Russian universities.

The General Statute of the Imperial Russian Universities of 1835 significantly increased the number of professors and lecturers in Kazan, Moscow, St. Petersburg and Kharkov universities. Most of these positions were taken by the participants of the fellowship program of the Ministry, *viz*., graduates of the Professors' Institute in Dorpat, lawyers trained under Michael Speransky's supervision, young teachers sent abroad to complete their studies, and finally a small number of young 'homegrown' scientists. By the 1840s they formed a large part of the teaching staff of Russian universities.
Contemporary researchers cannot not overlook this brilliant period in the history of Russian universities. However, it is good to bear in mind that the reform had other long-term consequences. A recent project carried out by me in collaboration with Alexei V. Kouprianov was devoted to the research into the dynamics of the age distribution among the professors of Russian universities; one of my observations on the subject are based on this study.
Namely, professors who had been recruited through Uvarov's personnel reform appeared to be representatives of the same generation. As a result, they came of age almost simultaneously. The problem made the situation harder to deal with. Both the officials and professors themselves were seriously concerned about the aging of the faculty (which started in the 1850s). In a broad public discussion on the preparation of a new University Statute (approved in 1863), the question of rotation of personnel was one of the most crucial.
In my presentation I am going to analyze and graphically illustrate the age dynamics of Russian universities, evaluating the impact of Uvarov's generation. And finally, I am going to reveal why, on the one hand, the practical implementation of Parrot's concept made the universities flourish in the 1840s and, on the other hand, go through a personnel crisis in the late 1850s and early 1860s.

Degrees of freedom, degrees of isolation: comparative analysis of the faculty dynamics at Dorpat and Helsingfors Universities (1802–1917)

Alexei Kouprianov
Helsinki Collegium of Advanced Studies, Finland
Higher School of Economics, St. Petersburg, Russian Federation

The aim of the present paper is twofold. First, to advance further the methodology of formalised representation of the historical dynamics of the university faculty and its use in historical and comparative research. Second, to apply the new methods of formalised comparison to two universities of the Russian Empire located in the Baltic region, Dorpat and Helsingfors. While the Dorpat University, re-established in Livland in 1802, has always been considered one of the pillars of the Imperial University system, the Åbo Academy (to become Helsingfors University after the move that followed the great fire of Åbo in 1827) captured in 1809 as an integral part of the highly autonomous Grand Duchy of Finland, was much more isolated. I would like to discuss the contribution of diverse factors such as the degrees of autonomy,

language policies, and organisational structure of the two universities on the changing patterns of career mobility of their faculty members and their integration in the Imperial and European university networks. At the heart of this research project lies a database of the career records of the faculty members of the universities of the Russian Empire, compiled by the author (partly in collaboration with Tatiana Kostina, Archive of the Russian Academy of Sciences, St. Petersburg), and a family of scripts written in the Russian language which allow to perform a rather sophisticated retrieval of information from the system and its further analysis.

Enlightenment in the Baltic States and its short temporary recurrences in the history of the 20th century

Juozas Algimantas Krikštopaitis
Professor Emeritus, VDU,
President of Lithuanian Association of HPS

Upon the closing of the Jesuit Order, an Educational Commission was established in the Lithuanian-Polish Commonwealth Republic (*Rzeczspopolita*), which took over the governing of the educational system (1773). From the manner of its operation and objectives, the Educational Commission of the Kingdom of Poland and Grand Duchy of Lithuania (1773–1794) can be considered historically the first Ministry of Education not only in the territory of former commonwealth of the two states, but in Europe as well. The Educational Commission and the reformed teaching and development program characterize a phenomenon of the Enlightenment epoch in the Baltic countries. The reform program of the Education Commission had influence upon the changes of the educational system of Russia as well. The renowned Educational Commission, while considering the needs of the times, recommended to the Vilnius University (*Universitas Vilnensis*) the expansion of exact sciences supported by experimentation to disseminate this knowledge into society.
The understanding, expressed by the phrase "knowledge is useful", transformed in Europe into "knowledge must be useful". This direction, in accordance with the Enlightenment attitude, was also adopted by Russia, thus reorganizing its internal policy. In 1973, the Vilnius University, after the Second Partition of the Republic, which thus became part of the Russian Empire, experienced the effects of the new order. The result was obvious: the academic activities came under the supervisory authority and political control of the Tsarist government, and the university itself (at that time *Schola Princeps Magni Ducatus Lituaniae*), in the years 1781–1803, was given a new, much more revealing name—The Imperial University of Vilnius (1803–1832). However, the Vilnius University was able, by various ways and means, to maintain a parallel path with famous European schools, thus continuing to independently send its teachers to intern abroad; thus introducing new disciplines useful to engineering and household activities.

My conference report will focus on two comprehensive aspects for discussion—the rebirth phenomenon of the Enlightenment in the Baltic region in the 20th century.

Science denial—a new wave

Piret Kuusk
University of Tartu, Estonia

Physics World, the membership magazine of the Institute of Physics (UK), one of the largest physics societies of the world, recently published two commentaries by Robert P. Crease, Professor of Philosophy of Stony Brook University, New York: "Fighting science denial" (September 2016) and "This time it's different" (January 2017). He argues that although there have always been people who prefer not to acknowledge well-confirmed scientific results, now there have emerged specific areas of scientific research where political, economic and religious interests seem to have the upper hand: climate change, energy, food technology, and health. In the history of physics, the phenomenon resembles the denial of heliocentric worldview by papal astronomers during the trial of Galileo Galilei in 1633: although they fully acknowledged the astronomical observations obtained using Galileo's telescope, they still did not acknowledge Copernican worldview which was strongly confirmed by these observations.

Beginnings of seismology at the Tartu Observatory

Janet Laidla
Tartu Old Observatory, University of Tartu Museum

The beginnings of seismology at the Tartu Observatory can be traced back to Grigori Levitski (1852–1917), who came to Tartu in 1894. The once famous observatory of Tartu suffered from what could be considered a typical condition of the late nineteenth-century observatories. At the beginning of the 19th century, the observatories concentrated on stellar catalogues and meridian work, but by the end of the century astrophysics emerged as a new field of research. Research in astrophysics required new instruments and also new skills from astronomers. Another field of interest to many astronomers at the time was seismology.
Levitski showed visible signs of interest in seismology when he was still working at Kharkov Observatory, where he also founded a seismological station. In 1896, Levitski ordered four different horizontal pendulums to be used at the new seismological station in Tartu. The Tartu station was also responsible for testing new seismological instruments that were sent to Russia. For a period of time the Tartu station served as

one of the central points where data from other stations in Russia was gathered and prepared for publication.
The aim of the proposed presentation is to present the early history of seismography in Tartu and to analyse how this might have influenced the later developments in seismology and the production of Hugo Masing's Golitsyn-Vilip seismographs in Tartu during the interwar period.

The pharmacist assistant courses as a solution to restore human resources in the pharmacy sector in Latvia (1940–1945)

Sabīne Lauze
Riga Stradiņš University, Latvia

The shortage in pharmaceutical personnel in Latvia left a significant impact on the operation of the industry during World War II. In 1939, the number of persons employed in the pharmaceutical sector was 2,068. Because of various political reasons, around 960 employees were lost from year 1939 to 1941. Increasing the number of employees was an important issue. The training for pharmacist assistants was one of the solutions.
In 1940, after a number of amendments to Article 121 of the Pharmaceutical Law, both pharmacy students with at least 1.5 year practice and pharmacy practitioners with at least 3 years of practice in pharmacies were allowed to take pharmacist assistant exams.
Pharmacist assistant courses and exams were organized at the Department of Pharmacology of the University of Latvia. In 1940, these examinations were held three times in total, and the pharmacist assistant degree was given to approximately 109 people. In 1941, pharmacist assistant courses were held only once, which was most likely the result of military operations in Latvia during the summer of 1941. In 1941, only 13 pharmacist assistants successfully passed the exam. Already in July 1944, the USSR and Nazi Germany troops resumed hostilities in the territory of Latvia. The chief of Pharmaceutical Administration Aleksandrs Dzirne (1907–2001) and some of the Department of Pharmacology teaching staff went into exile to Germany. Naturally, in such circumstances, the preparatory courses were not even started.
The Pharmaceutical Administration tried to supplement the pharmaceutical personnel by organizing pharmacist assistant courses, as well as inviting high school graduates to become pharmacy trainees. These courses and exams was popular among the trainees. The Pharmaceutical Administration often received requests for permission to take exams earlier from trainees who were still in practice and had not reached the statutory deadline. However, no one was allowed to take the exams before the given practice duration. It is concluded that despite the catastrophic shortage of staff in the industry, the quality of education and practice was kept at a high level. During the period from 1940 to 1944, approximately 300 persons were given a pharmacist

assistant's degree. This number in relation to the loss was not sufficient, but it helped maintain many of the existing pharmacies.

Enlightened theories and obscure medical practices: Ernst Martin Styx's public critique of bloodletting

Ieva Lībiete, Yannick Schreckenberg
Riga Stradiņš University, Latvia

The Baltic-German doctor Martin Ernst Styx (1759–1829) grew up in Riga, where he graduated from Riga's Imperial Lycée. Later on, he studied medicine in Goettingen, Strasbourg and Jena and received the doctoral degree in 1782. Later he went to Tartu (Dorpat) University, where he became one of the first professors in medicine, the first dean of the Faculty of Medicine, and eventually Rector of the University (1813–1814). During his long career at the Tartu University (1802–1826) he lectured on many topics but mainly on dietetics and materia medica. He also promoted public hygiene theories and he was one of the founders of sanitary education in the Baltic region.

This report will explore one particular episode from Styx's early career. After earning the doctoral degree, he worked in different cities of the Russian Empire (Gdov, St. Petersburg, Orenburg, Reval) for several years, but in 1791 he returned to Riga to work in the Military Hospital. In 1793, he summarised his ten years of medical experience and published a book on the misuse of bloodletting in the Northern provinces of the Russian Empire, written for readers "of all levels".

Styx's work clearly shows the medical misfortune of the era of Enlightenment, where hardly any scientific advance directly helped to heal the sick, thus creating a gap between medical knowledge and medical practice. Styx pointed out that bloodletting is often mistaken for a harmless medical procedure and warned the readers of its harmful effects, giving several case reports from his own experience. Although Styx saw certain benefits from using bloodletting for the right cause, at the right time and in the right place, he argued that before a medical practitioner looks for the lancet, he should at first consider the value of diet, temperance, good air, sleep, equanimity, etc., thus demonstrating his affiliation to neo-Hippocratism.

Ueber den Missbrauch des Aderlassens in den nördlichen Provinzen Russlands is a telling source by a medical doctor that sheds light on the theory and practice of bloodletting in the Baltic region at the end of the 18th century. Moreover, it is one of the few critical reviews on bloodletting in the era when bleeding the patient was still the cornerstone of conventional medical practice and lancet was perhaps the most common medical instrument.

Johan Julin, a naturalist in eighteenth-century Oulu

Anto Leikola
Professor Emeritus
University of Helsinki, Finland

Johan Julin (1752–1820), who worked as a pharmacist in Oulu from 1783 to 1814, was the only naturalist of his time in that provincial town of northern Finland. He was of Swedish origin, from Västerås, and got his education in the pharmacies of Enköping, Strängnäs, and Stockholm. For a while he worked with the chemist C. W. Scheele at Köping, and later he became acquainted with C. P. Thunberg, Linnaeus's successor at Uppsala. In 1782, Julin moved to Nykarleby on Finland's western coast, which by then was an integral part of the Swedish Kingdom, and in the following year to Oulu, where he bought the late pharmacist Karberg's enterprise and married his daughter Albertina.

Julin developed a passion for collecting naturalia early in life, and although he had lost everything he had in a shipwreck when he moved to Oulu, he soon again had a cabinet which was to become the largest in the whole of Finland. In addition to many Scandinavian and Lappish mammals, birds, insects, plants and minerals, it contained exotic animals, such as a big turtle, a chamaeleon, a crocodile, and beautiful shells and corals of the southern seas, all of which were great wonders in Oulu. Kind and generous in character, Julin had the habit of opening his museum to schoolchildren on Sunday afternoons. Later, he had to sell his 200 species of birds, and still later he donated most of the rest of his collections to the University at Turku (now the University of Helsinki); unfortunately, everything perished in the great fire of Turku in 1827.

In addition to natural history, Julin loved physical experimentation. He was the first in the Swedish Kingdom to launch a hot air balloon in the manner of the Montgolfier brothers in August 1784; a similar one was launched in Stockholm three weeks later in order to celebrate King Gustavus III's return from France. Unlike Mongolfier's and Charles's balloons the previous year these were, however, unmanned.

In 1791, Johan Julin became a member of the Royal Swedish Academy of Sciences, an honour which he shared in Finland with only some university professors. He published several accounts about the natural conditions of Oulu and its surrounding province. Especially valuable are his meteorological observations and his description of the mineral health spring of Oulu, nowadays completely vanished. In 1802, he was the first in Oulu to join the vaccination programme of the Finnish Economic Society, one of the founders of which he had been five years earlier.

After more than thirty socially successful and financially varying years in Oulu, Julin moved to Turku, where he continued his business until his death, having obtained the honorary title of Assessor from Emperor Alexander I, the new Grand Duke of Finland. Two of his sons, both trained as pharmacists, became successful businessmen, industrialists and men of public spirit; the older son John was ennobled as von Julin, and he became the maternal grandfather of Gustaf Mannerheim, the Marshal of Finland.

Julin's memory was for a long time neglected in Oulu, until in 1984 a facsimile edition of his short biography by the philosopher and statesman J. V. Snellman was published by the local newspaper *Kaleva*, and the experimental field of the new botanical garden of the University of Oulu was named "Julinia" in his honour.

Logic diagrams: what Euler really did?

Jens Lemanski(*), **Amirouche Moktefi**(**)
(*) Fern Universität in Hagen, Germany
(**) Tallinn University of Technology, Estonia

Leonhard Euler's (1707–1783) *Letters to a German Princess* were published by the St. Peterburg Academy of Sciences in three volumes between 1768 and 1772. They contained 234 letters that Euler addressed between 1760 and 1762 to his student Princess Charlotte Ludovica Luisa. The second volume famously contained the so-called Euler circles used to solve syllogisms. They appeared in a set of letters devoted to logic (dated from 14 February 1761 to 7 March 1761). The diagrams appeared for the first time in Letter CII, dated to 14 February 1761, where Euler represents the four classical propositions with the use of his scheme "so as to exhibit their nature to the eye. This must be a great assistance towards comprehending more distinctly wherein the accuracy of a chain of reasoning consists. As a general notion contains an infinite number of individual objects, we may consider it as a space in which they are all contained. Thus, for the notion of man we form a space […] in which we conceive all men to be comprehended" (Euler, 1833, p. 339).

Euler's circles became widespread in nineteenth-century books on logic. John Venn (1834–1923) noted that it was common practice in his time to appeal to these "old fashioned Eulerian diagrams" and added that "it was practically Euler who introduced these devices into Logic, there can be no doubt: in the sense that before his time they are never to be found in the ordinary manuals, and that since that time they have been more and more frequently introduced into such treatises" (Venn, 1894, p. 510). Martin Gardner (1914–2010), in his influential *Logic Machines and Diagrams* (1958) made a similar claim and stated that: "It is difficult to say who was the first to use a circle for representing actual class propositions and syllogisms […] There is no doubt, however, that it was Leonhard Euler, the brilliant Swiss mathematician, who was responsible for introducing them into the history of logical analysis" (Gardner, 1958, p. 31).

However, it is well known that such circles were used in logic before Euler. For instance, they are found in the writings of Nicolaus Reimars Ursus (1551–1600), Johann Christian Lange (1669–1756), and Gottfried Wilhelm Leibniz (1646–1716). Also, other forms of diagrams were used by logicians such as Gottfried Ploucquet (1716–1790) and Johann Heinrich Lambert (1728–1777). Yet it is Euler's circles that dominated the scene among subsequent logicians and it is Euler who is often credited with their popularization, if not their invention. The aim of our paper is to assess what Euler

really did. For the purpose, we inspect Euler's relations with his predecessors and contemporaries and consider how Euler's successors referred to him. The objective is to identify the routes through which the circles circulated while they gained success and recognition among nineteenth-century logicians. In particular, we inquire to what Euler benefitted from the success of his *Letters*…, which were written in French and were published in Russia and, hence, might have made the diagrams better known outside the German-speaking world.

Parrot's laboratory in the borderland

Lea Leppik
University of Tartu Museum, Estonia

As professor of physics at the University of Tartu, Parrot created a physics laboratory which was the best in the Russian Empire. It contained 450 experimental devices, more than 60 of which had been invented by Parrot himself. Until now there are about 50 remaining. "As natural phenomena are very complex and the humans are too small and powerless for nature, a physicist needs a laboratory. However, a physicist is capable of imitating natural phenomena more easily with a small apparatus; he can analyse, repeat and modify them, measure the results, and, in this way, reach an understanding of the laws of nature," Parrot wrote. But he also constructed ventilation systems for clinics, a revolving tower for the observatory, and lightning conductors for different buildings. Theory had to be implemented into practice.
Which role did completing the laboratory play in Parrot's worldview and the location of Tartu on the cultural border of the East and the West, German and Russian culture? How is the time of major changes in the science of physics reflected in the laboratory? In which way was the emerging new university model connected to the presence of physical laboratory? How did the program of teaching and methods of learning influence the next generation, who made Tartu one of the leading centrums of research in natural sciences? My presentation will give some answers to these questions.

The role of Tartu University graduates in the development of medical studies at the University of Lithuania (Vytautas Magnus University)

Asta Lignugarienė
Lithuanian University of Health Sciences, Lithuania

In 1922, the University of Lithuania was opened in Kaunas and remained the only Lithuanian school of higher education during the interwar period. Since its first years, it was a vitally important institution for scientific and modern ideas. The University of Lithuania was renamed in honour of Grand Duke Vytautas Magnus in 1930, to commemorate the 500th anniversary of Vytautas Magnus's death.
Petras Avižonis, Vladas Lašas, Jurgis Žilinskas and Leonas Gogelis, graduates of the Tartu University, participated from the very beginning in the founding of the Faculty of Medicine at the University of Lithuania. Dr. Petras Avižonis became the first dean of the Faculty of Medicine and a professor in 1922. He expanded the initial programs, organized the faculty and student body. Professor Avižonis was elected Rector of the University in 1925–1926. Later he continued his activities in ophthalmology, organized the new clinic and maintained constant interest in trachoma and its prevention. Professor Vladas Lašas, head of the Physiology Department, acted as Dean of the Faculty of Medicine from 1924 to 1940. He displayed great organizational talent, and on his initiative the basic clinical buildings were built for the Faculty of Medicine. His research interests focused on the field of experimental anaphylaxis, desensibilization and internal sensibilization. Jurgis Žilinskas became professor in 1923; he established the Institute of Anatomy and founded the Museum of Anatomy. In the scientific field he developed the works on Lithuanian ethnic anthropology. Professor Leonas Gogelis organized the Veterinary Department at the Faculty of Medicine. In 1929, the department was closed due to lack of funds and students. Vladas Kuzma, a prominent Lithuanian surgeon, studied at the Dorpat University in 1914–1918. He finished his medical studies in Lithuania. Kuzma's dissertation assessed possibilities of regeneration of kidneys and urinary tubules. He published 37 academic articles concentrating on the issues of traumatology, orthopedics, oncology, urology, blood transfusion. He was elected associate professor in 1933 and professor in 1940.
All the mentioned scientists actively participated in international scientific collaboration, especially between the three Baltic States and German-speaking countries.

The traffic of officinal plants and the transfer of pharmaceutical knowledge in the Russian Empire in the late 18th and early 19th century

Marina Loskutova
Higher School of Economics, St. Petersburg, Russian Federation

Recently, historians of science have been paying considerable attention to the ways in which Europeans' search for new officinal plants around the globe stimulated the advancement of natural history in the early modern period and paved the way to the institutionalisation of botany as a distinctive discipline. In the case of the Russian Empire, however, few studies have been done so far on the ways in which bioprospecting and trade in officinal plants affected the social and intellectual foundations of bio-medical research.
The paper will focus on the traffic of officinal plants between the Russian Empire and its European and Asiatic neighbours in the last decades when plants still played the key role in the pharmaceutical arsenal, while long-established trade routes were disrupted by the Napoleonic wars. The paper will examine the state of trade in officinal plants in the Russian Empire on the eve of the wars in Europe and the changes that took place in the first two decades of the 19th century in the established practices of supplying the Russian army and navy with medicines and the Empire's export and import policies. In particular, the paper will consider the role of scientific expertise in advising the imperial government on these matters. The paper will explore the institutional and intellectual background of these experts and highlight their role in the decision-making process. Finally, the paper will analyse the role of bio-prospecting and trade in officinal plants in the making of institutional infrastructure for bio-medical research in the Russian Empire in the 19th century.

Interdisciplinarity and normative epistemology

Endla Lõhkivi
University of Tartu, Estonia

Enlightenment ideology has often been characterized as involving a critical evaluation of knowledge claims, that is, normative epistemology and pursuit of truth. Normative evaluation is relatively easy to carry out in disciplinary research where shared standards and criteria have been developed during the history of a discipline, but as contemporary research is increasingly interdisciplinary, also the evaluation procedures need to be adjusted to the changed circumstances. Science policy rhetoric endorses critical discussion as a means for evaluating and promoting the growth of knowledge. On the other hand, in interdisciplinary work, often common ground for discussion and criticism needs to be established first. Researchers in such newly gathered groups may among many others have the following concerns: (1) disciplinary

identity and (2) limited understanding in communication with the partners from another discipline. These have proved to influence significantly the entire epistemic process.
In my presentation, I shall analyze the interview material collected in 2015–2016 among researchers of language technology in Estonia. Some of the interviewees have a background in linguistics, others in computer science. They have been working in units where their results, to a large extent, depend on each other's contribution. How does one evaluate each other's contribution without a necessary background in the other's discipline? Some researchers have become experts in both cooperating areas, others simply trust their partners and act rather as service providers. The paper compares different cooperation strategies for their advantages and disadvantages and aims to show how normative approach can be pursued in interdisciplinary research.

The Esperanto book of Ludwik Lejzer Zamenhof celebrates 130 years

Vitalija Miežutavičiūtė
Vilnius University
Curator at the Museum of the History of Medicine, Lithuania

In 2017, we celebrate the 130th anniversary of Warsaw's medical doctor Ludwik Lejzer Zamenhof's publication of his Esperanto language textbook *Lingvo Internacia* ('International language'). This year also marks another important event—the passing of 100 years of Ludwik Lejzer Zamenhof's death in 1917.
Esperanto, the most widely spoken artificial language in the world, is not and has never been the national language of any country. The name of this language came from the pseudonym "Doktoro Esperanto" or "Doctor Hopeful", or "the one who expects", which was Zamenhof's nickname when he was writing his book on Esperanto language.
Learning the Esperanto language was quite easy because of its simple grammar, also the words are read as they are written, and the accent of the word is always on the syllable before the last syllable of the word. The words are derived from Romanic, Germanic and Slavic roots. Very soon after the Esperanto-language textbook was published for the first time, the next editions were published in German, Polish, French and English languages.
The idea to create an international language was quite old, and had been entertained by many sixteenth- to eighteenth-century scholars in Western Europe: the Spanish humanist Juan Luis Vives, the Czech pedagogue John Amos Comenius, French philosophers Charles-Louis Montesquieu and René Descartes, German philosopher and scientist Gottfried Wilhelm Leibniz, and others.

On the Enlightenment and pedagogical university

Arto Mutanen
Finnish National Defence University, Finland

Ronald Barnett (2011) asks the question "Could a rational society be imagined without a university?" which highlights the significant role of university. But what is the role of university and what is the university that could take the intended role? The Humboldtian university, which unifies research and education, is based on the ideas of the Enlightenment.

The Enlightenment was a dominating intellectual movement in Europe in the 18th century. However, it is not a one-dimensional movement or discipline but a whole-scale approach which includes philosophers, natural scientists, pedagogics, and encyclopedias. In his well-known paper 'Answering the question: What Is Enlightenment?' in 1784, Kant expressed the idea of Enlightenment clearly. In a nutshell, it was expressed by the phrase 'Dare to know!' (*Sapere aude!*). So, the idea is that a human should use his or her own understanding. But because of the intellectual laziness and cowardice "it is so comfortable to be a minor". The idea of Humboldtian university is to educate citizens in the spirit of Enlightenment which, as Kant said, "requires nothing but freedom". However, there are many restrictions on freedom which all are harmful for the Enlightenment.

The university education was based on pure science (*Bildung durch Wissenschaft*). The roots of education are anchored in the Greek culture in the (pedagogical) philosophy of Socrates, Plato, and Aristotle, whose central idea was that an individual's humanity can and should be developed by education (von Wright, 1989). There is tension between fields of sciences, especially in the role of natural sciences in education. For example, Rorty (1980) excludes them from civilized education. "This point can also be put as an extrapolation from the commonplace that one cannot counted as educated—*gebilded*—if one knows only the results of the normal *Naturwissenschaften* of the day."

The Frankfurt school of philosophers emphasized the (cultural) one-dimensionality of the twentieth-century Western culture which makes it impossible to put the ideas of Enlightenment into practice (Horkheimer & Adorno, 1944). The postmodernists have criticized more holistically the collapse of the whole Enlightenment approach. We have to take a look at the very foundation of the idea of Enlightenment and evaluate its pedagogical foundation: How to reformulate the pedagogical ideas of the Humboldtian university into the present-day university? What are the restrictions on freedom that have to be overcome?

From catastrophism to catastrophe theory

Peeter Müürsepp
Tallinn University of Technology, Estonia

The relatively small town of Montbéliard in the eastern part of France has produced at least three great minds who have made their mark in the history of science on the international scale. The two other ones, in addition to Georges Frédéric Parrot who is in focus at this conference, are naturalist and zoologist Georges Cuvier, a friend and colleague of Parrot, and the twentieth-century mathematician and philosopher René Thom. This paper addresses the connection between Cuvier and Thom. Interestingly enough, Cuvier is known for his catastrophism concerning the geological development of the Earth and Thom is the founder of catastrophe theory in mathematics. What we have here is, rather, an accidental terminological similarity. However, Thom is not free from Cuvier's influence as far as the content of his work is concerned. Thom was not just a mathematician but also a philosopher who took up a big task of rethinking the legacy of Aristotle from the point of view of a topologist. As we know, topology is about forms. For Aristotle, the unity of form and matter was crucially important. Therefore, Thom had solid ground for claiming that Aristotle was the first to think like a topologist about material objects, living beings included. In addition to the general metaphysical approach, Aristotle also studied composition and movement of the animals. This is where Aristotle's and Cuvier's interests meet. Analysing the shape and functions as well as correlations of the parts of animals was one of the central research topics for Cuvier. René Thom found the thoughts of his two great predecessors useful for developing his theory of salience and pregnance in his book *Semio Physics: A Sketch*, which can be called his major contribution to philosophy, an attempt to revive natural philosophy. The current analysis focuses on Thom's approach to what he calls a general plan of animal organization. The controversy between Cuvier and Geoffroy Saint-Hilaire necessarily comes to the fore here. René Thom's position about this interesting episode in the history of science will be assessed. It appears as Thom undertook to give credit to both of these great naturalists of the 19th century.

Animals as machines

Eveli Neemre
University of Tartu, Estonia

René Descartes is famous for his dualism and "cogito ergo sum". Descartes is also known or even infamous for his ideas concerning animals. Descartes's animal is without intelligence, all of its perceptions can be explained mechanistically. It is a soulless machine. B. F. Skinner is well known for his radical behaviorism. This behaviorism states that thinking, perception and emotions cannot cause an organism's

behavior, but instead it is a consequence of environmental histories of reinforcement. In a sense, Skinner's ideas about animals can be seen as an expansion of Descartes machinistic animals. It is interesting to compare Descartes's ideas to those of Skinner's, since they are both quite similar, but still with their own individualities. I will bring out the similarities and differences between those ideas and also try to give a wider background to them.

Jędrzej Śniadecki (1768–1838) and phrenology in Vilnius

Gytė Pakulaitė, Arleta Bublevič, Eglė Sakalauskaitė-Juodeikienė
Vilnius University, Lithuania

In the first half of the 18th and the beginning of the 19th century, it was argued that the soul resides throughout the brain, and the cerebral cortex has little or no impact on brain functions. The doctrine of organology (in the 19th century called phrenology), which was introduced by Franz Joseph Gall (1758–1828) since 1796 in Vienna, suggested that the cortex is composed of different faculties of mind (organs) and that the size of these organs could affect the cranial surface. Gall discovered the method of cranioscopy which allowed to describe person's character and individual features according to the bumps and depressions of the skull.
Andrew Sniadecki (Jędrzej Śniadecki, 1768–1838), professor of natural sciences at the Vilnius University, previously practised in Vienna hospitals in 1795 and was acquainted with Gall's ideas. As a result, Sniadecki wrote an article in Polish entitled "*Krótki Wykład Systematu Galla z przyłączniem niektórych uwag nad iego Nauką*" ('A short lecture on the system of Gall with some comments on his science') in the first volume of *Dziennik Wilenski* ('Vilnius Daily') in 1805 and was the first scientist in Vilnius who introduced Gall's theory for the general audience. Sniadecki was positive in assessing Gall's theory, even though he thought that the cortex is anatomically and structurally solid and integral substance, and criticized Gall's suggestion that the brain consists of certain organs. Sniadecki admitted that Gall's work is worthy of respect, as long as it leads closer to the truth on the path of exploration.
In sum, phrenology in Vilnius was accepted not only by medical professionals but was also well known to the general public.

From the Montpellier Faculty of Medicine to the Grodno Royal School of Medicine: How Dr. Jean-Emmanuel Gilibert applied medical vitalism to heal his patients in Lithuania (1775–1781)

Arnaud Parent
Mykolas Romeris University, Lithuania

In 1775, a French physician-botanist from Lyon, Jean-Emmanuel Gilibert, came to Grodno in the Grand Duchy of Lithuania to found the first school of medicine in that country. He acted as head of the school until 1781, when the school had to close because of a lack of funds. During his stay in Grodno, he not only directed the medical school but he also founded a hospital, which gave him an opportunity to observe diseases prevalent in Lithuania at that time. Gilibert, a convinced proponent of vitalism, used the expectant medicine method he learned at the Montpellier Faculty of Medicine in France to treat his patients. In so doing, he left us an unequalled list of local diseases and a description of the ways he treated them.

"Parrot Papers" in the materials and documents of Russian State Historical Archive

Eugene Petrov(*), **Tatiana Bogdanova**(**)
(*) Professor, St. Petersburg State University
(**) Russian State Historical Archive

The Fund of the Department of Education in the Russian State Historical Archive (RGIA, f. 733, op. 56) holds separate documents of the Dorpat University from the first half of the 19th century, which illustrated the professional activity of Georg Friedrich Parrot from November 1802 till April 30, 1829. In several cases there are various kinds of manuscripts of government departments (nos. 51, 155, 230, 248, 387, 309, 387, 389), representing a particular interest in the study of administrative career of Parrot as a physicist. Among the cases there is a note written by Parrot to Alexander I "About the dissatisfaction of the local nobility with University Charter" (dated to 3 April 1803), formulary and the qualifications papers and rare photographic images. Some bureaucratic papers of 1813 deal with the announcement of a strict reprimand to professors K. F. Burdach and G. F. Parrot, for mutual insult allowed in their scientific works. In these cases it is necessary to make available the bibliographical list of Parrot's works from 1791 to 1825, the list of the academic and professional communities, in which he took part during service. Rather interesting are the documents connected with Parrot's petition for granting to a rank of honorary professor and the subsequent decisions of the Academy of Sciences on May 17, 1826 about his election as ordinary academician. The records of the cases contain documents on Parrot's remuneration and fees, his project developments. Among them are construction plans, drawings and estimates of rolling installation refractor at the Observatory, materials of expeditions

from 1832 and 1835. It is separately possible to select documents relating to Parrot's family. Some of them concerned the transfer of the pension rights to his widow Julie Dorothea Caroline Fahl in 1852 and the track record of his son Johann Jacob Friedrich Parrot as professor too. An overview of the documents stored in the funds of the Russian State Historical Archive enable us to add some characteristics to the biography of the physicist who always remained faithful to the academic tradition. Leaving the service, Parrot stated: "I have lived for 58 years… But I am absolutely confident that a public teacher has to stop the lectures before he is overtaken by old age and weakness. The remaining strength I'll dedicate for the sake of science, which I have dealt with all my life." (RGIA, f. 733, op. 56, c. 387, l. 8)

Monuments to medicine in Riga in the work of ethnographer J. K. Brotze in the Enlightenment period

Maija Pozemkovska
Riga Stradiņš University, Latvia

Johann Christoph Brotze (1742–1823) was born 275 years ago and became a representative of the Age of Enlightenment, serving as a teacher at the Riga Lyceum, a historian and a regional researcher. Brotze left behind an enormous amount of materials. Ten volumes, each about 250 pages long, were released between 1770 and 1818. They include thousands of illustrations and descriptions about all kinds of household and economic areas of life, often serving as the only source of evidence about historical objects, persons and events.

Brotze's work is of importance for historians in Latvia who focus on medicine. He offered a detailed description of the St. George Hospital, its history, location, the several times that it had to relocate in the city and outside of it, and its sources of revenue. The hospital served as a shelter for indigent people and a hospital, was established in Riga in 1220, and at one point occupied a building that survives to this day. Brotze offered three drawings and one description (1798).

Brotze also produced one image of the Convent of the Holy Spirit (1798). The illustration shows the northern side of the building. Some buildings have been preserved. The next drawing in the collection is devoted to the Neustadt Convent, which was established in 1594. In 1797, the convent was home to 12 impoverished widows. The shelter was distinguished by the fact that it was home to the first anatomical theatre in Riga. It was established in 1753, and from 1773 to 1793 it was also home to the Himseln Museum.

In addition, Brotze wrote about a former disciplinary institution that became the Shelter of Nicholas in 1798. It was opened in 1679 by the city, and criminals, unemployed hoboes, beggars and naughty women were sent there for weeks or even years for disciplinary purposes. Brotze noted that the first secretary of the Livonian Charitable and Economic Society, Professor G. F. Parrot (1767–1852) installed ventilation in the building, which was in a closed area behind the Church of St. John.

He installed several pipelines in the building that were connected to the stoves and were raised high above the building's roof. Brotze's drawing shows this air purification system. From 1792 to 1803, Brotze produced several drawings of the buildings of the War Hospital and the surrounding area, and the nearby Orthodox Church in Riga.

Publishing the newspaper *Pavement News*: a respite of the old Vilnius University academia

Birutė Railienė(*), **Jadvyga Olechnovičienė**(**)

(*) The Wroblewski Library of the Lithuanian Academy of Sciences

(**) Lithuanian Academy of Sciences

Historical studies of the Vilnius University (founded in 1579), enlisting subjects, names and facts sometimes cover a broader range of academic activities, including a description of academic respite. In the 19th century, activities of leisure were considerably different from its forms in the 21st century. Here we would like to present a newspaper *Wiadomości Brukowe*, published secretly during 1816–1822 in Vilnius. From 1817, it was issued by an informal society Rascals. The society itself deserves a special study, but the paper presents only some facts: almost all members were respectable professors of the university or honourable community representatives. The idea of the society was "humour and good temper". A special fact about the society was its secrecy—the members used names from Lithuanian mythology to sign their articles in *Wiadomości Brukowe*. Professor Andrew Sniadecki (1768–1838) was one of the editors and author of many articles.

Wiadomości Brukowe was a weekly satiric newspaper, first of its kind issued in Lithuania. It was founded by Ignacy Emanuel Lachnicki (1793–1826) and Kazimir Kontrim (1777–1836), and since 1817 was issued by the society called "Rascals". The newspaper was disseminated in Lithuania, Poland, and Russia. Authors did their best to ridicule the faults of the society, greed, drinking, etc. Their special weapon, sometimes very sharp, was satire. The paper will present a content analysis of the newspaper as a platform used to comment the latest events of society life, including comments by university professors.

Bryological studies in Lithuania during the Enlightenment*

Aurika Ričkienė(*), **Ilona Jukonienė,**(**) **Mindaugas Rasimavičius**(***)
(*)(**) Nature Research Centre, Lithuania
(***) Vilnius University

The Enlightenment—a cultural and philosophical movement in Europe—started in the second half of the 18th century and lasted until the 1840s in Lithuania. The biggest achievement of the Enlightenment movement in the Grand Duchy of Lithuania (GDL) was the establishment of the Commission of Education, which focused on education and promoted ideas and means for state reformation.
In 1781–1783, the Commission of Education carried out the Vilnius University (Vilnius Principal School) reform by which the College of Physics was established. An important event for the development of natural sciences was the establishment of the Cabinet of Natural Sciences in 1781 at the College of Physics as, compared with other natural sciences, nature studies in GDL were at that time underdeveloped. Despite a complicated political situation resulting from the Russian annexation of Lithuania, during the Enlightenment period the Cabinet of Natural Sciences and the Vilnius University Botanical Garden were formed and developed and publications on the flora and fauna of the GDL were published.
Our research focuses on the establishment and development of bryological studies in the Lithuanian territory during the 19th century. Its aim is to show how changes during the Enlightenment promoted the development of this specific field.
At the end of the 18th century, the botanists of Vilnius University J.-E. Gilibert and S. Jundziłł in their books on Lithuanian flora mentioned about 80 species of bryophytes. However, the lists were not associated with particular characteristics of localities. Later, Jundziłł in his 1822 publications following his physiographical expedition around Lithuania, which was promoted by the Imperial University of Vilnius, mentioned approximately 100 species and indicated their localities and habitats. Such data has lasting value as it can be used for evaluation of the impact of landscape changes on bryoflora structure. We have also found a few unexplored nineteenth-century collections of bryophytes (more than 1,000 specimens) belonging to pharmacist Johann Wolfgang and medic Stanisław Gorski in the Herbarium of Vilnius University. After investigating the situation on bryophytes research after the closure of the Imperial University of Vilnius in 1832, we came to the conclusion that bryological studies were later continued on the basis formed during the Enlightenment period.
Finally, the research done in Lithuania at that period was compared with the research of bryology in Latvia and Estonia. We found that the amount of research projects on bryophytes in Courland, Estland and Livland (current territories in Latvia and Estonia) were approximately two times as numerous as that in Lithuania in the 19th century. Next to bryological investigations of the territories, also taxonomical work was carried out. We assume that it was so because of better conditions of science development in these territories, as the Tartu University continued its activity through the entire 19th century. Naturalists' societies in Latvia and Estonia had been very active from the middle of the 19th century as well.

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The portrait of Georges Frédéric Parrot: lost, found and reinterpreted

Ingrid Sahk
University of Tartu Art Museum

The paper introduces us the portrait of Georg Frédéric Parrot, painted by Franz Gerhard Kügelgen at the beginning of the 19th century. This portrait painting by Kügelgen has been the main visual evidence about the appearance of the famous rector and professor of physics. The painting itself became lost at the very beginning of the 20th century and was known mainly after its lithographed reproductions. The original portrait painting was found by a lucky chance in the US in 2016 and was acquired by the University of Tartu.
However, this has not been the last piece in the puzzle. Some questions and problems still remain unanswered and need research in relation to the image of Parrot. For example, according to written sources, there existed two versions of the portrait painting in the 19th century. One that Kügelgen painted on the commission of students in 1803 and its replica, painted by Kügelgen some years later for the famous art collector von Liphart. We will follow and reconstruct the provenance of the paintings in order to be able to suggest which one of the two versions is now in the University in Tartu.
During the 2017, the portrait painting of Georges Frédédric Parrot is also object of comprehensive conservation and research, which include infrared and x-ray imaging, pigment and binding medium sampling, and analyses that should also give us additional information about the authorship and dating of the portrait painting. Will the painting of Parrot reveal any resemblances with the other portraits painted by Kügelgen like portraits of Goethe, Herder and Wieland?
In addition to these art detective questions and intriguing provenance story of the portrait painting, some other contextual problems shall be taken into consideration. The different types and possibilities of interpretation of a portrait of academic persons in the 19th century and before will be under short examination. Opening up the historical and art historical context of the portrait and comparing its different versions should also reveal something about the position of university professor in the society in general.

"The Philosophy of the Human Mind" by Jan Śniadecki (1756–1830): the first investigations on human cognition at the Imperial University of Vilnius

Eglė Sakalauskaitė-Juodeikienė, Gintaras Kaubrys, Dalius Jatužis
Vilnius University, Lithuania

One of the most important philosophers at the Imperial University of Vilnius during the Enlightenment was Jan Śniadecki (1756–1830), a graduate of the University of Cracow, mathematician, astronomer, philosopher and Rector of the Imperial University of Vilnius. Jan Śniadecki was an author of various treatises on algebra, trigonometry, geography, and philosophy. The Professor was probably the first who broadly analyzed the functions of the human mind and clearly associated it with the activity of the nervous system at the beginning of the 19th century in Vilnius. Śniadecki defined the fundamental principles of human cognition: sensation, reasoning, and volition. The philosopher described attention as the most important power during the process of human cognition, discussed weakening of intellectual capacities (and decrease of memory) during aging, defined memory as the ability to maintain, keep, and, if necessary, to present the acquired concepts and mind articles, and suggested two types of memory depending on the duration of attention—reminiscence and recognition. In this presentation, *The Philosophy of the Human Mind* (*Filozofia umysłu ludzkiego czyli rozwazny wywód sit, i dziatań umysłowych*) by Jan Śniadecki, which was published in 1822 in Vilnius, will be discussed in the context of human cognition research until the first half of the 19th century in Europe.

Boris Raikov and the significance of his work on natural scientists of the 18th and 19th century

Anna Samokish
St. Petersburg Branch of the Institute for the History of Science and Technology, RAS
Russian Federation

The works by Boris Raikov continue to be quoted to this day despite the fact that they were published more than half a century ago. However, the question remains whether they are really relevant at the moment and in what context are they referred to by the authors of modern publications. It cannot be denied that Raikov raised the biological direction in the history of science in the USSR to a new level, especially in Leningrad. His most cited publication is the fundamental monograph *Russian Biologists-Evolutionists before Darwin*, which contains about 20 essays on the life and scientific activities of Russian scientists, many of which were almost forgotten. According to many modern historians, Raikov became one of the first domestic researchers who took up the creative work of K. E. von Baer. Raikov began to study the German

evolutionists, having shown the connection between Russian and German science. His great merit was active contacts with German historians of science. He was often accused of cosmopolitanism for the attention paid to Russian-German relations in biology and the assertion that those relations laid the foundation for the development of the natural sciences in both countries afterwards. Raikov came to the history of science at a difficult time of ideological pressure on science and began to deal with a dangerous topic that provoked numerous heated debates. In the 1950s, during the period of the domination of Lysenkoism, the theme of Darwinism, inextricably linked with socialist ideology, was extremely slippery and often boiled down to searching for ideas similar to those that Lysenko did, and not to studying the objective picture of the development of evolutionary views. Another bend of the historical works of that era was the desire to prove the primacy of Russian scientists in evolutionary views, their superiority over Western scholars. Raikov did not escape those ideas, suggesting rather controversial conclusions based on at times inaccurate or incomplete translations of the works of scientists, as happened with the work of P. S. Pallas. Nevertheless, the volume of documents introduced into scientific circulation is difficult to assess and his work is actively used now, although with certain reservations and adjustments. In addition, the study of Raikov, simultaneously with the consideration of his memoirs and epistolary heritage, allows us to reveal the activity of the historian of science in the middle of the 20th century.

Hexadecimal system in the unpublished manuscripts by G. W. Leibniz*

Elena Shukhman
Orenburg State Pedagogical University, Russian Federation

Computer science and engineering widely use the hexadecimal system, providing compact representation of binary numbers. The founder of the binary system was Gottfried Wilhelm Leibniz (1646–1716). However, a significant part of Leibniz's manuscripts is still unpublished. We have studied several notes on the hexadecimal system from the Leibniz Archive in Hannover.
Leibniz was working on the hexadecimal system for the first time alongside his work on the binary system in 1679 (*Sedecimal Progression*, XXXV, 13, 3, p. 23). For the greater part, the note deals with the rules for converting decimal numbers to the hexadecimal system. Leibniz presents the algorithm of conversion using the example of 1679 (the year of writing the note). The algorithm is based on sequential division by the powers of 16: 4096, 256, 16, 1. Thus Leibniz obtained three digits: 6, 8, 15.
The digits between 10 and 15 can be represented in different ways. At the top of this page Leibniz uses sequential Latin letters *m*, *n*, *p*, *q*, *r*, *s*. He skipped the letter *o*, probably not to be mistaken for zero. Next Leibniz represents the digits between 10 and 15 through the initial letters used for musical notes at the time (Ut, Re, Mi, Fa, Sol, La).

Leibniz also introduced the names for hexadecimal numerals from 1 to 30 combining German words and affixations with Latin names for musical notes. For example, the decimal number 42 in hexadecimal system is presented as '2u' and pronounced '*utzwanzig*'.
In the other notes (3b, 17, p. 4r; 3b, 5, p. 77) Leibniz introduces special signs for hexadecimal digits with values from 0 to 15 based on their binary representation. So the digit with value 11 has a binary presentation 1011 and is shown as the 4-component sign written in a column: dash, dot, dash and one more dash. Next Leibniz points out that the binary numeration is theoretical but the hexadecimal numeration is more practical. The same idea is found in his letter to Joachim Bouvet dated to 15 February 1701. To write digits in a line, he represents a digit as the union of several arcs. An arc is convex upward if it corresponds to binary 1, an arc is convex downward if it corresponds to 0.
So, analyzing Leibniz's manuscripts we can see his understanding of the connection between hexadecimal and binary systems. He also knew the algorithm for converting integers to the hexadecimal system and introduced several methods to present hexadecimal digits.
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Scientific research in Stanisław Leszczyński Academy at Nancy in the field of agriculture and the use of this research in practice (1750–1766)

Małgorzata Durbas
Academy of the Jan Dlugosz in Czestochowa, Poland

Scientific societies and academies, which were the way to knowledge and the way of constructing theoretical sciences, constituted the distinctive feature of the intellectual life in the mid-18th century in Europe. They worked towards knowledge—in its broad sense—in the country and towards the cooperation of scholars, exchanging scientific achievements and introducing technical innovations into practice.
The last Duke of Lorraine and Bar, King Stanisław Leszczyński founded the royal *Académie des Inscriptions et Belles-Lettres* (Sciences, Humanities and Fine Literature Society) with founding edict in 1750, which changed its name into Stanisław Leszczyński Academy 100 years later. As a true representative of the Enlightenment, he managed to match his actions in Lorraine with the scientific movement of Western Europe. One of the main aims of such institutions, especially the Scientific Society at Nancy, was utilitarianism in research and technical solutions.
The aim of this article is to describe the projects about progressive arable farming presented on academic sessions and put in practice. Agricultural researches were carried out in Stanisław Leszczyński Academy between 1750 and 1766. These researches were connected to the new ways of preparing the soil and using improved farm machines in Lorraine. Some of the presented devices could be still found in Poland in the 20th century. Leszczyński believed that the soil was the basic good and

agriculture was the driving force in the development of the society, which was similar to physiocrats' ideas several years later. King Stanisław Leszczyński was the initiator of agricultural innovations, he was able to get inspired by scientific achievements and adapt them for his own scientific experiments. All new solutions were presented during academic scientific meetings in order to make them widely available.
It was definitely connected to the desire to enable the poorest class live in comfort. Many private initiatives of the King shared this aim. King Stanisław's interest in the development of the local agriculture contributed to the experimental arable farming, increase in agricultural production, and mechanization in agriculture.

Zoological Museum in St. Petersburg in the 19th century: scientific studies and popularization

Nadezhda V. Slepkova
Zoological Museum RAS, St. Petersburg, Russian Federation

The problems of contradiction between the scientific tasks of museum and the tasks of popularization of science will be discussed on the example of the Zoological Museum in St. Petersburg in the 19th century. This was a period when the Zoological Museum separated from Kunstkamera and started its evolution as a specialized museum on zoology. It evolved from a place mostly dedicated to scientific research to a place where scientific research was accompanied by special attempts to explain the results of scientific research for public. It was not so easy to combine both goals. The time of universality, typical to the 18th century, was coming to its end and it became more and more obvious that professional science and its popularization are the two different goals of museums. The problem was formulated during the attempts of the Ministry of Public Education of the Russian Empire, to which the museums of the Academy of Sciences belonged in the 19th century, to provide everyday access to the collections of museums for the general public. This attempt was made in the 1860s, when serious social changes took place in Russia due to the abolition of serfdom in 1861. It is known that Emperor Alexander II initiated a number of social and political reforms, including municipal, judicial, military, educational, and others. The changes affected almost all aspects of Russian life and led to deep transformations in the economy of the country towards capitalism; they also had serious influence on the social practices of the Russian society, its liberalization and democratization. Among those reforms was an attempt to reorganize the activity of the Academy of Sciences, and, in particular, of its museums.
The academicians' society, which was very small at that time, opposed the Minister of Education Alexander Golovnin (1821–1886) and the arguments of the scientists were published in the journal of the Ministry of Education *Zhurnal Ministerstva Prosvesheniia* and in the journal of the Academy of Sciences *Zapiski Imperatorskoi Akademii nauk*. Nevertheless, some measures to improve access to the Zoological Museum were taken in 1860s, but in full scale the exhibition for public was completed at the very end of the

19th century. It was opened for the general public in 1901. The activity of museum at that time was managed by three directors, Germans by nationality—Fedor F. Brandt, Alexander A. Strauch and Fedor D. Pleske.

Marks of Georg Friedrich Parrot and his descendants in Latvia

Alīda Zigmunde, Ilze Gudro
Riga Technical University, Latvia

In 1795, Georg Friedrich Parrot came to Livonia. He became the educator of the two sons of Count Karl Eberhard von Sievers in Wenden. Soon after he was appointed the first secretary of the Livonian Charitable and Economic Society in Riga. In Riga, he started his research on osmosis. Some years later, he left Riga for Dorpat but stayed in contact with Riga. When Napoleon's troops reached the Daugava during his war with Russia in 1812, the commander of the town of Riga, von Essen, ordered to set the suburbs outside the city walls of Riga on fire. In consequence, all the now homeless inhabitants took refuge within the city walls which led to an outbreak of different diseases. At the same time, those wounded in battle with Napoleon's troops were brought into the town. Confronted with these difficulties, Commander von Essen asked the University of Dorpat for help and Parrot decided to send some medical students and doctors to go to Riga and help out. Among the students who went was the son of Parrot, Friedrich Parrot (1791–1841), and the student Karl Ernst von Baer. Not all students returned safely to Dorpat, there were some fatalities. Parrot was not only a scientist and Rector of the Dorpat University but he was one of the people engaged in the liberation of Latvian and Estonian farmers who lived in serfdom. He had contacts with persons influenced by the Enlightenment movement such as F. von Sievers, G. Merkel and the Pastor K. G. Sonntag. He had an intense relationship with Tsar Alexander I and F. von Sievers about this question and the impact of his influence on the decisions of the Tsar is still not completely clear. Parrot and his family had a very strong connection with to Riga. In 1796, he married his second wife in Riga. His son Wilhelm Friedrich Parrot (1790–1882) became a pastor in Burtnieki and got married in St. Jacob's Church in 1818. One of the grandsons of G. F. Parrot was the actor Piers Friedrich Parrot (1838–1925). He was the artistic director of the theatre of the town of Riga. His other grandson, Piers's brother Moritz Friedrich Parrot (1831–1882) had been a pupil of the Gymnasium at Birkenruh, and later became a physicist.

Karl Ernst von Baer on Lake Peipsi-Pskov in 1851–1852: the birth of systematic fishery studies in the Russian Empire

Erki Tammiksaar
University of Tartu, Estonia
Estonian University of Life Sciences, Estonia

Peipsi (together with Lakes Pskov and Lämmijärv) is a large natural lake situated in the basin of the Gulf of Finland (Baltic Sea). Peipsi has been since historical times famous for its rich fish production and thus has played a very important role in the local economic and social life. Official fish catch statistics (e.g., for Peipsi since 1931, for Vänern and Vättern in Sweden since 1914, etc.) is nowadays still one of the most widely used data sources describing long-term fish stocks dynamics. Although the quantitative knowledge of fisheries of Lake Peipsi prior to the 19th century is relatively fragmentary, there are still catching datasets available enabling to compare the main problems of fishery in the lake in the 19th century and today. These statistical data were collected by Karl Ernst von Baer, full member of the St. Petersburg Academy of Sciences, in 1851–1852, during a special fishery expedition to Lake Peipsi and the eastern coast of the Baltic Sea, organized by the Ministry of State Properties. The archival data in Baer's archive prove that the maintenance of the sustainability of fish stocks was continuously the main task of fishery in the last centuries. Although the Livland Province of the Russian Empire established since 1825 stricter control over fishery in Lake Peipsi, other governorates—Estland, Pskov and St. Petersburg (surrounding the lake system)—did not follow the example. Especially problematic was catching of fish younger than one year (age 0+). Baer pointed out in his expedition report that approximately 1,000 tons of young fish were fried and salted every year.

The results of the expedition to Lakes Peipsi and Pskov can be regarded as an important prerequisite to the Caspian expedition (1853–1856) by von Baer. Making preparations for the Caspian expedition, von Baer followed several methodological principles he had used at the Peipsi-Pskov expedition: the collection of statistical, economic and natural historical data from archives as well as from Caspian fishermen, also from officials and those involved in fishing industries, etc. Similarly to his earlier expedition, he considered instructions for members of the Caspian expedition very important in order to coordinate the collection of data according to the same principles.

The science historians have considered the expedition to the Caspian Sea by von Baer and the study methods applied there the beginning of a systematic study of fisheries in the Russian Empire. However, this is not true. Actually, it was the expedition of von Baer to Lakes Peipsi and Pskov that marked the birth of systematic fishery studies in Russia. The methods elaborated during that expedition were improved during the Caspian expedition. The methods derived by von Baer became an inevitable part of further expeditions carried out to inland fresh-water reservoirs of the Russian Empire.

Gerhard Friedrich Miller: the first rector of St. Petersburg University

Igor L. Tikhonov
St. Petersburg State University History Museum, Russian Federation

Gerhard Friedrich Müller (Fyodor Ivanovich Miller, as he was named in Russia) (1705–1783) was born in Herford in North Rhine-Westphalia and graduated from the University of Leipzig. In November 1725, he came to Russia where he stayed for the rest of his life. At first, he was a junior scientific assistant, then he became a professor and even a conference secretary of the St. Petersburg Academy of Sciences. Since 1732, he published *Sammlung Russischer Geschichte*, the first periodic publication of history. During his decennial expedition to southern Siberia, Miller wrote instructions on archaeological study and kurgan classification. Miller was one of the first to acknowledge the historical importance of archaeological objects and claimed that "the ultimate goal in the study of antiquities is to make them assist in clarifying the ancient history of the region's inhabitants". His activity was associated with formulation of the authentic scientific approach to the antiquity. Miller wrote the first scientific works in Russian dedicated to the antiquities, which allow us to consider him the first Russian scientist to study archaeology.

In autumn 1747, the President of the Academy of Sciences appointed Miller as Rector of the University, which was a part of the Academy at that time. As rector, he composed a lecture catalogue, commissioned additional geography and arithmetic lessons; he was concerned about teaching foreign languages (French and German, inviting his own brother to teach the latter). He also made historical chronological tables for students. Miller prepared draft University Regulations "after the model of the European universities". This project provided for autonomy, the right to confer science degrees and increase in professors' social status. However, this project was not approved.

Miller took his commitments seriously and took care of his students by providing the necessary books and educational media, and encouraging the best students. He gave much attention to the students' discipline and developed a system of punishment for misconduct. Students had to wear grey loden frocks if they had missed lectures or had low success level. For more serious misconduct, they were incarcerated for up to two weeks. Smoking, alcoholic drinks, gambling were banned; it was also forbidden to host women. Most of the students who had studied at the university at that time later continued to work at the Academy of Sciences.

On June 5, 1750, Miller was dismissed from the Chancellor's Office. One of the reasons was his conflict with M. V. Lomonosov and, more especially, with the actual head of the Academy G. N. Teplov.

The first astrophysical observations at Tartu Observatory

Kadri Tinn
Tartu Old Observatory, University of Tartu Museum, Estonia

Grigori Levitski (1852–1917) started the first astrophysical observation program at the Tartu Observatory upon his arrival in Tartu. Levitski had previously been the director of Kharkov Observatory where he had successfully started an observing program of the Sun. On his arrival in Tartu, he continued with the same topic. In 1895, visual observations and counting of sunspots began in Tartu, and in 1897 regular photographic observations of the Sun started. The observations were carried out until at least 1908 by the observers Scharbe and Pokrovski. The observations left a collection of glass photographic plates as a record of solar activity from 1897 to 1908. Of these 176 plates are held at the University of Tartu Museum.
Although Levitski started out in Tartu by actively searching for funds for new instruments and repairing old telescopes, his enthusiasm and interest in seismology changed astronomical observations at the Tartu Observatory in their focus, with only minor changes in instrumentation.
The proposed presentation focuses on the observation of sunspots from 1897 to 1908 at the Tartu Observatory and analyses how Levitski's changes in the observation program and instrumentation affected the direction of research at the beginning of the 20th century.

What can philosophers of science learn from the Enlightenment?

Katrin Velbaum
University of Tartu, Estonia

One of the ideas of the Enlightenment was the conviction that scientific method should be used for solving issues of society and humanity. Unfortunately, history has shown that this view did not function very well in practice, to say the least. It has even been seen as one of the reasons that entail a threat of scientism to the humanities.
Philosophers of science like to use history as an empirical base for grounding either descriptive or normative argument they make. In my paper, I will take a closer look at two possible conclusions that could be made from the lesson of applying the scientific method to the human dimension.

1) Correcting the Enlightenment mistake by reformulating its actual goal as a distinctive question of sociological method not as a question of sociological science. This is the normative attitude that Nicholas Maxwell advocates.
2) Accepting that there is no one superior scientific method and therefore it is not only reasonable to hope to apply it to the societal issues but, moreover, it is fruitful to turn the relationship upside down and take politics as a role model for theories of

science, namely accepting pluralist stance in science—the idea that Hasok Chang argues for.

The scientific school history of the hygienist G. V. Khlopin at the University of Tartu: Alexander Fedorovich Nikitin (1873–1965)

Konstantyn Vasylyev(*), **Yuriy Vasylyev**(**)
(*) Odessa National Medical University
(**) Sumy State University, Ukraine

The scientific and hygienic school of Grigoriy Vitalyevich Khlopin (1863–1929) started at the Tartu (Yuriev) University (TU) where he was professor in 1896–1903. It was known that Alexander Rammul (1875–1949), who later headed the Department of Hygiene at the University of Tartu (in 1920–1940), was his student there. While enumerating Professor Khlopin's students in Tartu, they usually do not mention Alexander Fedorovich Nikitin. Perhaps this is because that the latter was still a student in those years. He was born in 1873 in Belgorod. Nikitin began to obtain higher medical education in St. Petersburg, and continued at the TU. He graduated from the university in 1898.

However, being a student, Nikitin was engaged in scientific work at Professor Khlopin's hygiene laboratory of TU. The cooperation resulted in joint scientific publications of the student Nikitin and Professor Khlopin about the impact of oil pollution of rivers on both fish and water quality. After becoming professor, Nikitin wrote about the Tartu period in one of his four articles devoted to the memory of his teacher Khlopin: the professor's skillful hand quickly guided him towards scientific interest. Further, he wrote that Professor Khlopin did not leave his Tartu laboratory all day long and others followed his lead, and so did Nikitin, still a student of TU at that time. Since 1905, Professor Khlopin was active in St. Petersburg. It was no coincidence that Professor invited namely Nikitin to work in St. Petersburg. Alexander Nikitin, at the time a former sanitary doctor in Nizhny Novgorod, accepted the invitation and moved to the capital.

The First World War, which began in 1914, interrupted Nikitin's work led by Professor Khlopin. He was called in the army. After the war, as the Bolsheviks seized power, Dr. Nikitin did not return to St. Petersburg (Petrograd, Leningrad). He worked in his native Belgorod, then in Poltava and Kharkov. Only since 1923, he resumed his activities in Leningrad again. Here, at the Military Medical Academy Professor Khlopin headed the Department of General Hygiene. His student Nikitin became head of the Department of Social Hygiene at the same Military Medical Academy. Since 1938, Nikitin was professor of the Department of General Hygiene at Leningrad Medical Institute.

In the obituary of Professor Nikitin it was noted that he was among Khlopin's closest students and staff. This cooperation began within the walls of the TU.

Georg Friedrich Parrot and Latvian students

Arnis Vīksna
Pauls Stradiņš Museum for History of Medicine, Riga, Latvia

The work of Georg Friedrich Parrot in Latvia and his contacts with local scholars were studied to the greatest extent by Professor Jānis Stradiņš, who particularly emphasised Parrot's partnership with David Hieronymus Grindel (1776–1836), the first natural scientist of Latvian origin.

This paper is a look at information about Latvian students at the University of Dorpat between 1802 and 1826, when Parrot worked there. The author suspects that there might have been contacts between the students and the professor, although none of those students focused very much on physics. During the aforementioned period of time, according to data collected by Gustavs Šaurums and published in 1932, fifteen Latvians were students at the university. Edgars Ķiploks published a series of articles between 1930 and 1932, also listing 15 students, offering more precise information about them, particularly in terms of difficulties in determining their national origins. In 1937, Jānis Straubergs supplemented the list with Grindel, arguing that he was certainly of Latvian origin. In 1982, Arnis Vīksna suggested that Dr. Friedrich Hassar (1788–1855) and his two younger brothers might have been of Latvian origin. This means that the research has focused on 19 people in all. In addition to published literature, the author has made use of personal case files from the Estonian Historical Archives.

The first Latvian to be registered at the University of Dorpat was Carl Williams (1779–1843), who became a student in 1803 with matriculation no. 111. Williams studied mathematics at the Faculty of Philosophy. On September 15, 1805, when the foundations for the main building of the university were first put in place, the first three bricks were laid by Parrot as Rector of the University, while the next three were laid by Williams, who was delegated for that purpose by fellow students, even though he was from the lower orders (a liberated indentured servant). Williams was known as a friendly and bright man who won the respect and recognition of his fellow students. That was touching and deeply symbolic, and the University of Dorpat eventually became an important centre for Latvian education, science and culture. Williams went on to become the administrator of a baronial estate in Ukraine and the director of a mirror factory in Rocola, Finland.

Of the 19 students, three hailed from Riga, fifteen came from the territory known as Livland (particularly from the Valka District that adjoined Dorpat), and only one came from Courland. The latter was Carl Constantin Kraukling (1792–1873), who was born in Bauska, spent a year at the University of Tartu to study medicine, then pursued a degree in philosophy in Berlin, and went on to become the secretary of the Dresden Royal Library and the director of the library's historical museum.

Nine of the students studied theology, six studied medicine, two studied pharmaceutics, one studied philosophy (mathematics), and one pursued military studies. Six of the students worked in Latvia after completing their studies, twelve worked elsewhere in the Russian Empire, and one found a job in Germany. Most of those who did not complete their studies worked as schoolteachers. Only one of the

students, Hassar, defended a doctoral dissertation, *De morbis nisus formativi in genere* (1812, not listed in the index assembled by Grünfeld).
Grindel was a professor and rector at Dorpat and later became a student of medicine. Also involved with the university was Richard Johann Laiming, who lived a short life (1799–1829) and served as the acting prosector of the university for a brief period of time. Arnold Gottlieb Wellig (1778–1862) published religious articles in Latvian. Kaspar Ernst Besbardis (1806–1886) published materials about Latvian nationalism, for which he suffered repressions from the Russian Empire.
The conclusion is that, apart from Grindel, the author could find no data about any other Latvians who worked closely with Parrot, although there is information about Latvians who studied at Dorpat during Parrot's era.

The Empire's conchologists: the Baltic naturalists and their contribution to knowledge of Russian molluscs

Maxim Vinarski
St. Petersburg State University, Russian Federation

Since the dawn of the 19th century, the Baltic naturalists had been contributing greatly to the knowledge of the fauna of the Russian Empire. They acted both as travelling collectors and as indoor, or museum, naturalists involved mostly in taxonomic studies. In my presentation, a story of participation of several prominent Baltic zoologists (K. E. von Baer, A. Th. von Middendorff, A. G. von Schrenck, L. von Schrenck) in the study of the Russian fauna of molluscs (terrestrial, freshwater and marine) is briefly outlined and analyzed. My research is focused mainly on Middendorff's (1848) project of full systematic description of Russian molluscs. I reveal some parallels between this project and contemporary national faunistic surveys carried out in some European countries (England, France, Germany). Middendorff's contribution to the field and systematic malacology is discussed. The malacological results of Leopold von Schrenck's Amur travel (1853–1857) and G. Gerstfeldt's exploration of the Baikal fauna (1859) are viewed in the context of Middendorff's research program. As a result, by the 1870s, the marine and (partially) freshwater malacofauna of Russia were more or less satisfactorily studied, whereas the knowledge of land snails remained rather poor and scanty. The quality of morphological and taxonomical works of Middendorff and L. von Schrenck was excellent even in comparison with the most thorough works of their Western European contemporaries. Unfortunately, in the last third of the 19th century the leading positions in the study of Russian molluscs became occupied by Swedish and German zoologists, and the tradition of malacological research done by scientists of Russian citizenship was virtually interrupted. Therefore the research project started by Middendorff in 1848 was completed only 110 years after his death, when the first comprehensive catalogue of all molluscs of the former USSR area was published (Kantor & Sysoev, 2005).

Enlightenment 4.0, or Enlightenment today

Gereon Wolters
University of Konstanz, Germany

In my paper, I would like to give an overview of the development of Enlightenment ideas, which I would like to characterize provisionally with Kant's imperative: "Have the courage to use your own understanding!"
"Enlightenment 1.0" begins in my view with the pre-Socratics: Thales of Miletus, for example, was the first to require proofs for mathematical theorems, and Xenophanes was the first to deconstruct the popular conception of gods. The age of Enlightenment ("Enlightenment 2.0") is the first period in history that explicitly reflects the concept of Enlightenment and fights for its political and societal realization. The central conceptual ingredient of Enlightenment is freedom (here I would like to touch also on G. F. Parrot's ideas). "Enlightenment 3.0" I call the attempt of communism that understood itself as an Enlightenment movement to deal with a blind spot of Enlightenment 2.0: "Using one's own understanding" requires a certain minimum of material living conditions that was far from being realized in the age of Enlightenment. I give an analysis why Communism failed also in this respect, while central ideas of "Enlightenment 3.0" could be realized in democratic states. "Enlightenment 4.0" deals with the fundamental threats against the idea and the practice Enlightenment in our digital age and proposes possible remedies.