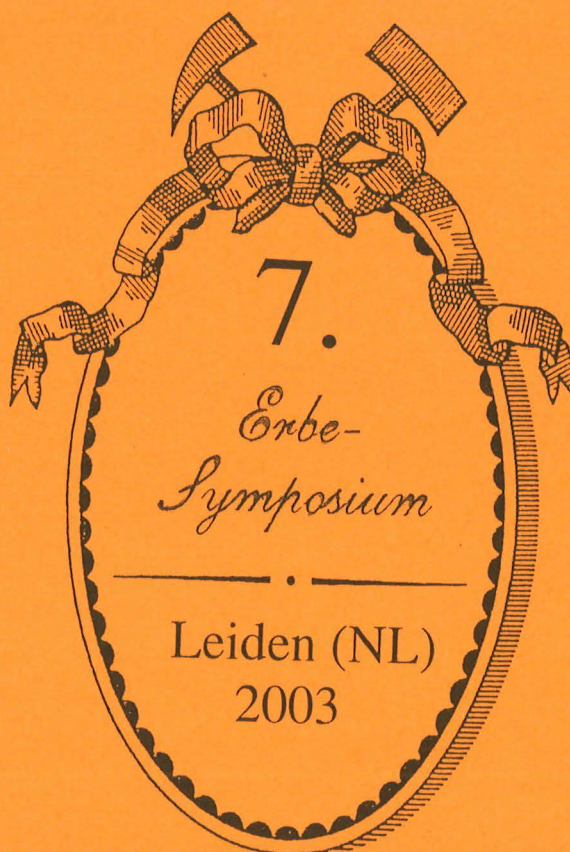


AM

VII International Symposium 'Cultural Heritage in Geosciences, Mining and
Metallurgy: Libraries – Archives – Museums'
"Museums and their collections"

Leiden (The Netherlands), 19-23 May 2003

Programme and abstracts



Nationaal Natuurhistorisch Museum Naturalis, Leiden

VII International Symposium

‘Cultural Heritage in Geosciences, Mining and Metallurgy: Libraries – Archives – Museums’

“Museums and their collections”

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PROVISIONAL PROGRAMME

Sunday, May 18

16.00-17.00 Registration

16.00-17.30 Icebreaker party

Monday, May 19

09.00 Registration, coffee.

10.00 *Opening session* (**Joanne V. Lerud**, chair)

10.00 **Wim G. van der Weiden**, Director of the National Museum of Natural History Naturalis, Leiden

Welcome to the National Museum of Natural History Naturalis.

10.10 **Cor F. Winkler Prins** (Leiden)

The collections of the ‘Nationaal Natuurhistorisch Museum’: cultural heritage of the geosciences and mining?

11.00 **Frithjof A.S. Sterrenburg** (Castricum) & **Hein de Wolf** (Utrecht)

The Kinker diatom collection: discovery – exploration – exploitation.

11.20 **John de Vos** (Leiden)

The Dubois collection in the National Museum of Natural History, Leiden, The Netherlands.

11.40 **Tillfried Cernajsek** (Wien)

The “Schlönbach-Foundation”: a precious contribution to the geoscientific research and acquisition of the collections of the Austrian Imperial Geological Survey in Vienna.

12.00 *Luncheon.*

13.00 City walk.

15.00-17.30 Visit to the **Boerhaave Museum**, the National Museum for the History of Science and Medicine

Tuesday, 20 May

08.30 Coffee.

09.00 Visit to the exhibition of Naturalis.

10.30 *Coffee break.*

11.00 *Morning session* (**Lieselotte Jontes**, chair)

11.00 **Marianne Klemun** (Wien)

The Royal Natural History Collection in Vienna (18th century): from private treasure towards territorial ambitions.

11.20 **Galina Anastasenko** & **Olga Golynskaya** (both St Petersburg)

XIX century private collections in the Mineralogical Museum of the St.-Petersburg State University.

11.40 **Elena L. Minina** (Moscow)

Alexander the First collection in the Lausanne Museum.

12.00 **Zoya Bessudnova** (Moscow)

The collection of Meteorites in the Vernadsky State Geological Museum of the Russian Academy of Science (19th-20th centuries – the history of its origin and study).

12.20 *Luncheon.*

13.30 *Afternoon session* (**Tatjana Dizdarevič**, chair)

13.30 **David A.T. Harper** (København)

Palaeontological Collections in the Geological Museum, University of Copenhagen: The fossil record of Denmark and Greenland.

13.50 **Fred Steinar Nordrum** & **Björn Ivar Berg** (both Kongsberg)

Historical mineral collections in the silver mining town Kongsberg.

14.10 Claudia **Schweizer** (Wien)

Bohemian Mineralogy in the early 19th Century: the *Vaterländisches Museum des Königreichs Böhmen* in Prague.

14.30 Manuel S. **Pinto** (Aveiro) & Teresa Maranhas (Lisboa)

The mineral collection of the Royal Ajuda Museum, Lisbon, Portugal.

14.50 Rotraud **Stumfohl** (Klagenfurt)

Landesmuseum Kärnten – The Collections of Natural Sciences.

15.10 Mária **Celková** (Banská Štiavnica)

Imperial visits of the Habsburgs in the collection fund of the Slovak Mining Museum in Banská Štiavnica.

15.30 *Tea break.*16.00 Isabel M. **van Waveren** (Leiden)

The Jongmans Collection: Scientific collection or Cultural Heritage.

16.20 Stephen K. **Donovan** (Leiden), Ian C. Brown, Trevor A. Jackson & Sharon J. Wood (all Kingston)

Small is beautiful? Progress at the Geology Museum, UWI, Mona, since 1986.

16.40 Mirjam **Gnezda**, Darko Viler & Anton Zelenc (all Idrija)

The Idrija Municipal Museum and its collections.

Wednesday, 21 May

08.30 Coffee.

09.00 *Morning session* (**Tillfried Cernajsek**, chair)09.00 Jozef **Labuda** (Banská Štiavnica)

Collection fund of the Slovak Mining Museum.

09.20 Elena **Kašiarová** (Banská Štiavnica)

The archival documents of the State Central Mining Archives in Banská Štiavnica to different kinds of museum collections at home and abroad.

09.40 Annette **Bouheiry** (Langwiesen)

Johann Jacob Scheuchzer and the research of the Swiss Alps – based on the Collection of the Iron Library. [The paper will be presented in German.]

10.00 Jože **Čar** & Bojan Režun (both Idrija)

Geological collection in the Mercury Mine in Idrija

10.20 *Coffee break.*10.50 Steven W.G. **de Clercq** (Utrecht)

The 'Dutch approach': how to achieve a second life for abandoned geological collections.

11.10 Leo M. **Kriegsman** (Leiden)

A second life for geological collections.

89% success!

11.30 Björn Ivar **Berg** & Fred Steinar Nordrum (both Kongsberg)

The distribution of silver specimens from the Kongsberg Silver Mines, 17th and 18th centuries.

11.50 Lars **van den Hoek Ostende** (Leiden)

New life to old museum collections: the case of the Tegelen clay-pits.

12.10 Peter **Hammer** (Zschopau)

Source material in the University Library of Freiberg (Saxony) on the blue cobalt colour and its trade.

12.30 *Luncheon.*13.30 Visit to Museum's library and rare-book room (Caroline **Pepermans**).15.30 *Tea break.*16.00 *Afternoon session* (**Christoph Hauser**, chair)16.00 Lieselotte **Jontes** (Leoben)

Collections in Libraries: A collection of travel-books in the University Library Leoben

16.20 Tillfried Cernajsek (Wien) & Karel **Posmourny** (Praha)

Modern use of historical maps for the landscape rehabilitation in the Czech Republic.

16.40 Jože Čar & Tatjana **Dizdarevič** (both Idrija)

Written reports on the effects of mining activities on the natural environment in Idrija in the 19th Century.

19.00 Dinner at Restaurant "**De Zwaan**" in Katwijk aan Zee.

Thursday, 22 May

09.30 Departure from Museum for excursion to Haarlem.
10.00 Visit to **Holland Tulip Park** at Vogelenzang.
11.30 City centre of Haarlem (short walk).
12.30 *Luncheon* in "**De Carillon**".
14.00 Visit to **Teylers Museum**.
17.00 Departure.
18.00 Return to Naturalis.

Friday, 23 May

09.00 Coffee.
09.30 *Closing session* (**Rotraud Stumfohl**, chair)
09.30 Stefan **Karner** (Graz)
The „Haus der Geschichte der Republik Österreich“ (House of the History of the Austrian Republic): a discussion document. [The paper will be presented in German.]
09.50 Evgeni **Zablotski** (Jerusalem)
The mining community of Russia in the 18th-20th centuries as an object of research.
10.10 Lieselotte **Jontes** (Leoben)
International Symposium on Cultural Heritage in Geosciences, Mining and Metallurgy: Ten years in retrospective.
10.30 *Coffee break*.
11.00 Christoph **Hauser** (Wien)
The 8th 'Erbe Symposium' at Schwaz, 3-7 October 2005.
11.20 Cor F. **Winkler Prins** (Leiden)
Official bussiness and farewell.
12.00 *Luncheon*.
13.30 Visit to the '**Rijksmuseum van Volkenkunde**' (National Ethnographical Museum).

XIX century private collections in the Mineralogical Museum of the St.-Petersburg State University

Galina Anastasenko & Olga Golynskaya

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The Mineralogical Museum of the St.-Petersburg State University is housed in the building of 'Twelve Collegian'. It houses some of the most ancient mineralogical collections of Russia. The university mineral collection took its origin from a Mineralogical Cabinet of a Teacher's Seminary, which was established in 1783. The history of enlarging and enriching the mineral collection is inextricably related with 19th century celebrities and their private collections. At the beginning of the 19th century, when the Seminary was transformed into a Pedagogical Institute, the collection of the Mineralogical Cabinet included in total no less than 912 specimens of rocks and minerals. The first decade of the 19 century was marked by significant acquisitions: in 1804 Academician Vasilii M. Severgin (1765-1826) donated his mineral collection; in 1805 the Alexander Crichton mineral cabinet was bought; and in 1807 Peter I. Meder (1769-1826) presented a large collection including 7500 mineral specimens.

In 1819, the Pedagogical Institute was reorganized into the Saint-Petersburg Imperial University under a decree of Emperor Alexander I. Professor Ernest Hofmann (1801-1871) managed the Mineralogical Department and the Mineralogical Cabinet from 1845 to 1863. During his directorate the mineralogical cabinet collection continually increased. In 1851, E.K. Hofmann donated 165 mineral specimens from his private collection, which included rare and fine minerals from Urals deposits. Later, the University acquired the Hofmann collection (914 specimens) from his family. This collection provided the Cabinet with 19 new mineral species. At present, 23 specimens from the Hofmann collection are on permanent display at the Museum. From 1871 to 1880 Mikhail Erofeev (1839-1889) managed the Mineralogical Department and developed the Mineralogical Cabinet. In 1874, the cabinet procured a superb collection of minerals from Siberia and the Urals (c. 1000 specimens), which was bequeathed to the St. Petersburg University by Archbishop Nil (1796-1874). Today, Nil's collection includes 440 specimens (50 mineral species) from Russian deposits of Transbaikalia, East Siberia and the Urals, and 28 specimens from foreign localities. The Erofeev collection (1200 specimens) came to the St.-Petersburg University in 1889. At present it includes over 320 specimens (66 mineral species) from the Urals, Saxony, Hungary, North America, and some other countries. In 1889 the "Gazberg-Spitsin" collection came to the Museum. It included 1476 specimens (55 mineral species) representing Urals deposits. In 1909, the Dmitry Mendeleev (1834-1907) mineral collection was purchased, consisting of 245 specimens representing 133 mineral species. Today several specimens of his collection are on display.

Thus, at the beginning of the 20th century the museum consisted of 12600 specimens from private collections. They constituted about 70 % of the museum fund. The role of private persons in the formation of museum collections was predominant in the 19th century. All mentioned collections are carefully kept at the Mineralogical Museum of the St.-Petersburg State University and it is planned to show some of them in new displays.

The distribution of silver specimens from the Kongsberg Silver Mines, 17th and 18th centuries

Björn Ivar Berg & Fred Steinar Nordrum

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From the opening of the Kongsberg Silver Mines in 1623, they became famous for their rare and beautiful specimens of native silver. The Kongsberg ore mainly consists of metallic or native silver occurring in calcite veins. In cavities in the veins the silver partly has been precipitated as wires and crystals. Such specimens have fascinated miners, visitors and collectors throughout the centuries, and have made Kongsberg a world-famous place among mineral collectors.

Already from the first years of mining in the 1620s, silver specimens brought down from the mines were taken aside at the smeltery and later sold to visitors. Specimens were also popular as gifts. The distribution of silver specimens is documented in the account books which are preserved from the very beginning of mining operations. The first person to receive a rich assortment of natural silver from the mines already in 1624 was the King of Denmark and Norway, Christian IV, eagerly visiting the new mines twice during their first year in operation. He and later kings became the largest receivers of silver specimens. Thousands of specimens were sent to the kings in Copenhagen, who probably used many of them as gifts to other royalties, aristocrats and merchants. In that way specimens were distributed to many countries, but many were also kept in the royal collections and some may today be found in the Geological Museum in Copenhagen.

The sales lists preserved as vouchers to the account books form interesting reading. They usually give the names of the customers, the number and total weight of the specimens, their estimated content of pure silver, and the prices which were calculated directly from the estimated silver content. Statistics have been calculated for most of the 17th and 18th centuries, showing the yearly amount of pure silver contained in silver specimens. A closer look at the names for some years show us the kind of people visiting Kongsberg and who were interested in such natural rarities.

The Collection of Meteorites in the Vernadsky State Geological Museum of the Russian Academy of Science (19th-20th centuries – the history of its origin and study)

Zoya Bessudnova

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The Vernadsky State Geological Museum is the successor of the Moscow University Natural History Museum, the first natural history museum of Moscow, founded in 1759. In the beginning of 19th century it was one of the best museums in Europe.

The Collection of Meteorites is one of the oldest in the Museum. The first meteorite, native iron from Siberia, was presented in 1803 to the Moscow University by P.G. Demidov as part of a large collection. Johann Gotthelf Fischer, a disciple of Abraham Werner, director of the Museum since 1804, described this specimen in the systematic catalogue of minerals of the Museum in 1806. In his textbook "Orictognosie" (1818-1820), Fischer cited results of five analyses of meteorite iron made by various European chemists. This shows a very large interest in extraterrestrial substances in the beginning of the 19th century.

In the first catalogue of the restored Museum, after the Moscow fire of 1812, Fischer described (1824) an iron meteorite from Krasnoyarsk. In 1858, the Museum had four meteorites in the mineralogical collection, according to the Catalogue drawn up by Shchurovsky.

After 1861, Michael Tolstopyatov regularly replenished the collection of meteorites. In 1863, he published a paper entitled "Aerolites", in which he has shown the evolution of scientific views on the nature of meteorites, described their appearance, properties, and composition. Tolstopyatov tried to calculate the number and mass of meteorites falling annually on the Earth.

Alexey Pavlov also showed a large interest in meteorites and published a popular book "On the Okhansky meteorite and meteorites in general" (1888). In 1890, E.D. Kislakovsky, the Keeper of the Museum, analysed in detail the "Bishtyube" meteorite for the first time in Moscow University.

By the beginning of the 19th century, the Museum had 68 meteorites. Vladimir Vernadsky and his disciples made especially big contributions to the replenishment of the collection in 1891-1911. In 1906, meteorites were made a separate collection. In 1912, this collection counted 117 meteorites not only from Russia and Europe, but also from Americas, Australia, Africa, and Asia (Japan). Meteorites were bought from known European and American mineralogical firms, and exchanged with other museums, or donated. The Museum keeps meteorites from private collections of Rudolf Hermann (1805-1879), Princess Gagarine, Count Alexander Keller (1886-1946), and from the collection of the Roumyantsev Museum.

The catalogue of meteorites (126 samples) made by E.S. Sinegub in 1952 became a part of the general information on meteorites stored in museums of our country. During the last half-century, the Collection of Meteorites has little increased. Now part of this collection is in the permanent exhibition.

Johann Jacob Scheuchzer and the Research in the Swiss Alps – based on the Collection of the Iron Library

Annette Bouheiry

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A short introduction provides some information about the Iron Library, Foundation of Georg Fischer Ltd, Schaffhausen, which was established in 1949, to enable scientists and students the study of its historic collection, which is mainly concentrated on mining and metals, but includes all other related fields. Some outstanding details about the collection will be presented.

The main topic of the contribution will be the research work of Johann Jacob Scheuchzer (1672-1733) in the Swiss Alps, who in some way walked in the steps of the well known universal scientist Conrad Gessner (1516-1565), whom a short estimation is given as the presumed forerunner of the research in the Alps. It is followed by biographical statements about Johann Jacob Scheuchzer and some comments about the recognition he has found in scientific circles. Furthermore, his theories about the history of earth and the diluvium will be mentioned as well as his scientific error in misclassification of the „Homo diluvii testis“, which has to be regarded under the aspect of the theological view about cosmology in the 17th and 18th century.

More detailed is the information about the research in the Alps and the geological studies during his different expeditions, which Scheuchzer has described in his main work, „Naturgeschichte des Schweizerlandes“, published in the end of the 17th and the beginning of the 18th centuries. Special attention will be given to Scheuchzer's observations about ore deposits and metal production of gold, silver, iron, copper, lead, tin and brass.

Written reports on the effects of mining activities on the natural environment in Idrija in the 19th Century

Jože Čar¹ & Tatjana Dizdarevič²

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In the first half of the 19th century, the environmental conditions in the Idrija mercury mine and its broader surroundings were strongly effected by two disastrous pit fires. In 1803 and 1846, the supports and timber in the backfills located in the central part of the Idrija pit caught fire. The fire spread rapidly and on both occasions could only be extinguished by flooding of the pit. The consequences were extensive poisonings with poisonous mercury vapours, not only among those miners who participated in the fire's extinction and later in the rehabilitation of the pit, but also among the inhabitants of Idrija. Entire families who lived in the vicinity of mine shafts suffered from the consequences of mercurialism. In those years the mortality rate in Idrija rose substantially, and the birth rate declined. During rehabilitation of the mine, highly polluted water was released directly into the Idrija River, killing large numbers of fish.

In the more than 30-year-long period following the fire of 1803, the number of workers and production in the mine was on the decline due to the falling prices of mercury on world markets. Ore was burnt only a few months a year. The natural consequence of this was the reduced effect of mining activities on the environment.

After 1835, mercury prices took an upward turn, allowing the mine to gradually increase its production. Due to the smaller average content in cinnabar ores, the mining area had to be enlarged, and burning activities were extended to nine months a year. The dumping of increasingly larger quantities of ore-burning residues directly into the Idrijca River led to strongly deteriorating environmental conditions in the river and along its banks.

The indemnities paid out by the Mine in 1788 to effected landowners in the vicinity of the smeltery were abolished in the years following the 1803 fire due to reduced production. With the growth of production in the late 1830s, landowners started to complain about the damage caused by smelting gases to meadows, crops and livestock, but in vain. In the middle of the 19th century, the owners of land plots in the broader surroundings of the smeltery repeatedly began to submit complaints against the damage caused by smelting gases. Supported by the competent ministry and the Higher Mine Office in Klagenfurt, the Mine Administration vigorously rejected all accusations and »proved«, obviously with false data, that the smelting gases did not contain Hg vapours and that smoke gases were not harmful.

This highly unprofessional opinion was resolutely rejected by Prof. Perger (1873), in a paper on the harmful effects of smelting gases, drawing also attention to the severe environmental problems in Idrija. In 1881, the Mine Administration began to pay effected landowners a regular yearly »support« instead of indemnity, finally abandoning its untenable opinion on the harmlessness of smelting gases. However, a new problem emerged – the sinking of ground above the pit, which, alongside the harmful effects of smoke gases, remained the focus of attention for the next hundred years.

Geological Collection of the Mercury Mine in Idrija

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The geological collection has a long tradition in the Idrija Mercury Mine. Written sources on the collections (classified according to the professional standards applicable at the time) date from the second half of the 18th century. Regretfully, however, these collections have not been preserved. In the second half of the 19th century, an extensive and expertly classified geological collection was prepared and arranged by the then Mine Director, M.V. Lipold. The collection was preserved in its original size until the First World War, but was later moved and changed several times, so that only some 400 samples have been preserved to this day. These are kept at the Municipal Museum in Idrija Together with a rich petrographic-palaeontological collection created in 1956. After 1990 the collection was expertly renewed, considerably enriched and set up in newly renovated rooms. The collection is of a general nature and is intended primarily for the general public.

Following a period of inactivity between the two world wars, more detailed and very successful investigations of the Idrija Mercury Mine were continued in the period from 1955 to 1985 by a team of mine geologists in collaboration with external experts. They explained the origin and characteristics of the ore deposit. Finally, the development and origin of the extremely complicated structure of the ore deposit was described. The investigations were accompanied by the collection of lithostratigraphical, sedimentological, structural and ore samples. The findings of the mine geologists are collected in three doctor's dissertations and many other papers. In the opinion of numerous internationally recognized experts who have visited Idrija in the past fifty years, the Idrija ore deposit is, from the aspect of structure, one of the most complicated endogenous metal ore deposits in the world .

Due to the exceptional genesis and development of the Idrija ore deposit, many of the petrological, structural and ore samples are, from a professional point of view, quite unique. It is therefore understandable that all of its geological particularities could not be displayed in a single uniform collection. The collected materials, which were mostly unclassified and deposited in the quarters of the former mine geological service, were formed into a Mine Geological Collection comprising 7 thematic collections: a lithostratigraphic one of rocks from the Idrija and Cerklje regions, a collection of rocks from the Idrija ore deposit (fault trough), a collection of samples related to tectonics, a collection of minerals, an ore collection (syngenetic and epigenetic ores), a collection of ores from various ore bodies, and a collection of special samples from the Idrija ore deposit. The collections present an overview of all aspects of the geological structure and genesis of the ore deposit, and testify to its exceptionality and complexity. During the arrangement, consideration was given to those classifications that have been tested and internationally recognized as the best.

The mine geological collection of the Idrija Mercury Mine and the accompanying documents are arranged in the form of a study collection, and the displayed samples have been collected, arranged and presented in a manner that will also prove interesting to the general public and tourists.

Imperial visits of the Habsburgs in the collection fund of the Slovak Mining Museum in Banská Štiavnica

Mária Celková

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Precious metal extraction and processing, particularly of gold and silver, in the central Slovakia region is considered an essential step in the industrial development of the Austrian–Hungarian Monarchy. They were a rich source of royal treasury income and, thus attracted attention of the monarchs. From 1424 till the middle of the 16th century they belonged to the dowry of Hungarian queens. Having been taken over by Ferdinand I of Habsburg from his sister Mary the process of centralization of the mining management began. After the publication of Maximilian's mining codex in 1578 the Central Chamber-earl Office in Banská Štiavnica was established, which was subordinate to the Court Chamber in Vienna. Development of central Slovakia mining towns depended on the level of mining, progress of mining science and technique, and, later, a mining education system. Banská Štiavnica played a significant role, like Kremnica and Banská Bystrica, in all above mentioned branches of science. From such a point of view the 18th century was definitely a golden age, the time of greatest progress.

In order to get acquainted with the mining region Emperor Franz Stephan of Lothringen, a husband of Maria Theresia, with his accompany visited Banská Štiavnica and Kremnica, also some other mining centers in the surroundings – Štiavnické Bane, Banská Hodruša, Anton, Zarnovica, from 3rd to 13th June 1751. The written documents on the imperial visit are preserved in the Central State Mining Archive as well as in the State Archive in Banská Bystrica, a branch in Banská Štiavnica, and of course a number of collection items belong to the Slovak Mining Museum in Banská Štiavnica (sketches for triumphal arch by Austrian painter A. Schmidt, portraits of the emperor, the empress and officials by J. Dollenstein, ceremonial mining overcoat, apron and hatchet, minerals from mining territories, so called Stanetti's altar from the German church, altar pictures, mining candelabras, etc.

Imperial visit of central Slovakia mining towns, extended by Banská Bystrica, was repeated by monarch's children from 20th to 31st July 1764 – succeeding Emperor Jozeph II, archduke Leopold and Saxon Cieszyn duke and son-in-law Albert. Lots of collection items are preserved also from this visit, especially Golden Mining Book, an original document on the visit, ceremonial mining overcoats, silver hammers, minerals, portraits of participants and main chamber earls, gold and silver collections etc.

The last significant imperial visit was that of the young Austrian Emperor Franz Joseph I. In 7th–8th July 1852, who visited Banská Štiavnica, Štiavnické Bane, Sv. Anton and Kremnica within his round trip, where he got acquainted with industry and mining in the monarchy. Several precious objects were also preserved from his visit – ceremonial mining uniform, three portraits of the emperor, silver hammers, silver gowns of accompanying ladies, portraits of officials, etc.

Permanent memorabilia from the imperial visits of Banská Štiavnica are memorial plaques in the hereditary shaft Glanzenberg. For the imperial visits it was rebuilt, complete with 'imperial stairs'. Other plaques are placed in the building of "Berggericht" (mining court). Collection objects from the time of imperial visits of the Habsburgs belong to the most remarkable and precious art-historical and technical collections of the Slovak Mining Museum and are permanently on display.

The “Schlönbach-Foundation”: a precious contribution to the geoscientific research and acquisition of collections of the Austrian Imperial Geological Survey in Vienna

Tillfried Cernajsek

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The „Geologischen Bundesanstalt“ (GBA: Austrian Geological Survey) still holds hidden treasures. A good example is a collection of bills and other papers labelled „Schlönbach-Reisestipendien-Stiftung“ (SF: Schloenbach Foundation for travel grants) accidentally found in the attic. Also in the register of the archives of the GBA, many references to the SF are found. In the „Verhandlungen der Geologischen Reichsanstalt“ from 1873 to 1921 the Director of the survey reported on the finances of the SF. The collapse of the Austrian-Hungarian Monarchy meant the end of the SF and the similar, but younger, „Robert-Jaeger-Preisstiftung“ and „Friedrich-Teller-Studienfonds“.

Georg Justin Carl Schloenbach was born in 1841 in Liebenhalle (Hannover, Germany). His father, Albert Schloenbach, was inspector of the saltworks. After his studies at the universities of Göttingen, Tübingen, München and Berlin, Georg took his Doctor's degree in 1863 at the University of Halle. Having travelled widely in Europe, he took a position as „Sektionsgeologe“ in the „Geologische Reichsanstalt“ (GRA) in Vienna, refusing a position as professor at the mining academy in Peru. By 1870 he was professor at the „Deutsche Polytechnikum“ (technical university) at Prague. In the same year he died due to the extreme conditions at the military front in the Banat, where he was mapping.

His broad interests included the Cretaceous and Jurassic of northern Germany, and later also the Cretaceous of Bohemia and its brachiopod faunas. He made important contributions to Bohemian stratigraphy. His manuscript maps of the Cretaceous of Bohemia can still be found in the Library of the GBA. He published many papers, 50 of which in the journals of the „Geologischen Reichsanstalt“, and many others remained unfinished.

In 1873, Albert Schloenbach provided a large amount of money to create a fund, the SF. The interest of the money should be used for travel grants to do fieldwork, collect fossils and study collections. At the board meeting of the GRA on the 20th November 1877, a report was presented on the unveiling of a plaque in memory of the deceased Schloenbach. Originally it was planned to install it in the Banat, near the place where he died, but it was considered more convenient to put it in the meeting room of the GRA, now housing a large part of the archives for the geology of raw materials, where it still can be found.

The SF was a welcome source of money for research travels in the Austrian double monarchy and abroad. In the list of its beneficiaries one finds famous geologists, such as Dionys Štur, Friedrich Teller, Guido Stache, Alexander Bittner, Georg Geyer, Franz Eduard Suess, Wilhelm Hammer, Otto Ampfer, Franz Kossmat, Bruno Sander and, after 1918, as the last one Erich Spengler.

Modern use of historical maps for the landscape rehabilitation in the Czech Republic

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The Austrian Geological Survey in Vienna and Czech organizations have at their disposal in their archives plenty of very precious source materials that can be used for the restoration of the landscape.

At many places of the Czech Republic, considerable changes of the environment took place due to building and other industrial activities, especially the mining of mineral raw materials. Changes of the relief of the landscape, of the river network and of hydrogeological conditions are most conspicuous. The largest changes and damages are due to open-cast mining in the North-Bohemian and Sokolov brown-coal basins. Other damaged areas are those of underground coal-mining (Ostrava, Karvina), uranium exploitation (Stráž pod Ralskem, Hamr na Jezeře, Příbram, Rozinka, and Jáchymov), exploitation of building materials such as limestone (Bohemia Karst, Moravia Karst), gravel sands (Třebon, Litoměřice, Melník, Olomouc, Kromeriz), agglomerates (České středohoří Mts), and others.

During huge floods that took place in the area of Northern and Central Moravia in July 1997, the morphology of the landscape underwent conspicuous changes, such as changes of river beds. In these cases historical maps and other historical materials are of priceless help for specialists to solve the problems of reclamation and rehabilitation of the landscape. They document the original character of the areas from the morphological, geographical and geological point of view. Not only topographical but also geological maps are very important because they enable to estimate the original situation and are of basic importance for discovering geodynamic and hydrogeological situation. These materials record geological and geomorphological situation of a „disappeared“ and extinct landscape. In them we can see allocation of old quarries, mines and pits, the condition of the area before large anthropogenous interferences into the landscape (building of towns, industrial enterprises, dams, changing the courses of rivers etc.).

The Austrian and Czech Geological Surveys proposed in 1989 a project for using the unique historical map material filed in the present Austrian Institute in Vienna and in other organisations, such as the Austrian State Archives (Österreichische Staatsarchiv) for rehabilitation and reclamation of the landscape. Of importance is the long-standing Czech-Austrian co-operation „The history of geology - common work on the condition of geological mapping of the Czech countries up till the years 1918.“

The historical sources will be further analysed for reconstruction mapping in the area of the Beca and Morava rivers in central Moravia. The change of river networks, the influence on hydrogeological condition, changes of geomorphology, the development of the relief and microclimate, the impacts connected with old mining activity etc. are followed over the longest possible period. On basis of the agreement about cooperation with Austrian Geological Survey Czech Geological survey has obtained colour copies of historical topographic map material from the so called Joseph (1763-1768) and Francis (1810-1866) mapping periods from the area of the river beds of Morava and Beca, between Litovel and Uherské Hradiště that have been most intensively damaged by huge floods. These materials will enable to compare the change of the landscape after more than 200 years.

**The Dutch approach:
how to achieve a second life for abandoned geological collections**

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The aim of the paper is to describe the 'life-cycle' of the geological collections from the Dutch universities. These collections originated in close relation to the development of education and research in these institutions and tell the history of geology as a science in the Netherlands and the former colonies. In its early days, geology was a descriptive science where the object played a pivotal role as primary source of information. Samples were collected because of the information they contain and their contribution to the solution of a pre-set question, like the geological history of a mountain range, the quality of an ore deposit or the evolution of a given fauna in a specific ecological environment. Examination of the objects and publication of the results changes the nature of the objects and of the collections. Only very few are identified as type-material, some get a special status and are included in reference collections, but the bulk of the material is just kept as part of the collection. In this way, the Geological Institutes of the Dutch universities amassed an impressive number of often well-described and therefore scientifically important collections. From the nineteen-sixties onward, the central role of the object diminished due to the shift in both research and education from the field to the laboratory, combined with the emergence of new disciplines (geochemistry and geophysics) and massive reorganisations leading to the closure of faculties. This process led to many orphaned collections, in total some 2 million objects.

In a collaborative effort, sponsored by the Ministry of Science, Culture and Education, the universities engaged in an action to tackle this problem with the aim to improve the over-all quality and accessibility of the collections as well as to intensify their present and future use. Based on an inventory on the level of sub-collections, universities, geological surveys, scientific institutions and museums, both in the Netherlands and abroad, were invited to express their interest in those collections, which had lost their function for their parent institution. This led to a process of selection, de-accessioning, handing over of collections to future users and even disposal. This process, as well as some experiences, pitfalls and recommendations will be discussed.

Small is beautiful? Progress at the Geology Museum, UWI, Mona, since 1986

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Geology has been taught at the University of the West Indies (UWI), Mona, since 1961. The associated Geology Museum (UWIGM) opened to the public in 1969/1970 (Wood, 1995), although the idea for such a museum was over 100 years old at that time. The collections of the UWIGM share many hazards with those in museums in other parts of the world, such as dust, insect pests and indifferent specimen records (Wood & Donovan, 1996), and some that are less common, such as earthquakes and hurricanes. The curatorship is not tenured. Since the mid 1980s the UWIGM has become a more dynamic visitor attraction in many ways, shaking off its 'old-fashioned' appearance and expanding the displays to include, for example, its first mounted skeleton. An aggressive collections policy involves establishing a type and figured collection, supplemented by rearranged historical collections, such as that of the 19th century geologist Lucas Barrett (Wood, 1997), and improving holdings of significant Antillean groups such as Cretaceous rudist bivalves.

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The Idrija Municipal Museum and its collections

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The Idrija Municipal Museum (Museum of the Idrija and Cerkno Regions) was established in 1953. Its main aim is to preserve, present and study the technical heritage of the Idrija mercury mine, as well as ethnological and cultural-historical monuments, preserved monuments from the Second World War, and natural attractions. Being an important regional cultural institution the Museum received the distinguished Luigi Micheletti Award from the European Museum forum and was at the same time proclaimed best European Museum of industrial and technical heritage in 1997.

From its beginnings, the Idrija mine has been the second largest mercury mine in the world for five hundred years. Its rich ore deposit ranked it among the leading European companies in all periods of its history. The latest inventions and technical solutions were used in the construction of its machines and devices. The Idrija Mine started to modernise after 1950, when many machines and devices from the Austrian and Italian periods were taken out of operation. From 1958 to 1960, these machines were moved to the castle courtyard, where they were displayed to visitors and (regretfully) exposed to unfavourable weather conditions. At the beginning of restoration works on the castle courtyard in 1990, they were in very poor condition. That is why the museologists decided to move them back to the authentic mine environment.

The collection of old mining machines and devices managed by the Idrija Municipal Museum is currently set up in the entrance building to Francisca's Shaft and in the abandoned loading station of the cable railway of Joseph's Shaft above the building housing the Kamšt (pumping device from 1790). All exhibited specimens, dating from the late 19th and the early 20th century, have been restored. Nowadays the technical heritage buildings and facilities are of exceptional importance for Slovenia, and the town of Idrija has been entered on UNESCO's Tentative List of World Cultural and Natural Heritage since 1994.

Besides the Francisca's Shaft the Museum takes care of many other collections (e.g., ethnological collection, lacemaking collection, geological collection), all of them of much importance for the town of Idrija and its surroundings.

Source material in the University Library of Freiberg (Saxony) on the blue cobalt colour and its trade

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The German word „Kobold“ was the term for gnomes and goblins. The first written account in connection with minerals appeared in Agricola's *Bermannus* (1530). The first practical use was in the form of zaffer or cobalt-blue. Zaffer will not melt alone, but accompanied by vitreous substances it melts into an azure colour and so used as „Smalte“ for glazed earthenware, for glass and china.

Since 1470 the Saxony ore mountains, especially the Schneeberg district, was the most important supplier of cobalt ores. Main products of the „Blaufarbenwerke“ were zaffers (Safflor) cobalt oxides of different colours and smalte (Smalte) a mixture of cobalt oxides with quartz. The Electoral-Saxon blue colour was greatly appreciated.

The Dutch managed in their country eight colour-mills and received the cobalt ores from Schneeberg; perhaps in the beginning of the 17th century no mills existed in Saxony. The first mill in Saxony was in 1635 in Pfannenstiel (Schneeberg district). The cobalt-resources were so profitable that the Elector of Saxony privileged the trade and imposed taxes. Private export was strongly prohibited. Cobalt-thieves were hanged from the gallows.

In 1654, 34 mines produced 264.6 t cobalt-ore with a value of 20513 Dutch-florins. Holland was the greatest trade partner. In the last years of the 18th century, the colour-industry in Saxony and Holland received out of the districts of Annaberg and Schneeberg 300-400 tons cobalt-colour per year. Since the middle of the 19th century Saxony imported cobalt-ores from Norway, Italy and Hungary.

Palaeontological Collections in the Geological Museum, University of Copenhagen: The fossil record of Denmark and Greenland

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The remarkable Nicolaus Steno's (also known as Niels Stensen) anatomical comparisons between fossil sharks' teeth and those of living forms together with his formulation of the Law of Superposition of Strata during the mid 1600s set an early agenda for Danish geology. Some hundred years later teaching programmes in geology were established in Copenhagen with the presentation of fossil, mineral and rock collections from Count A.G. Moltke, assembled by Ole Worm (1588-1654) in the Museum Wormianum. Worm's collections had a chequered career passing eventually into the care of King Frederik III; a significant part of the Royal Cabinet of Curiosities still exists in the museum, but details of provenance have long since disappeared. When the Faculty of Science was established in 1850, geology was centred on 'Grev Moltkes Universitetet tilhørende Mineralogiske Museum' in Frue Plads. During the latter part of the 19th Century the Commission for the Scientific Study of Greenland together with the Danish Geological Survey (DGU) were established and a new museum building on Øster Voldgade 5-7 was completed during 1893 to contain all the various strands of Danish geology. During the 1960s, however, escalating student numbers required the fragmentation of the museum with the expansion and movement of the teaching environment to Øster Voldgade 10 and the departure of the surveys. The museum was renamed 'The Geological Museum' in 1976, more accurately reflecting the collections, functions and scope of Øster Voldgade 5-7. The museum is currently a member of both the Copenhagen Geocenter and the National Natural History Museum of Denmark.

Today the palaeontological collections contain over 1 million specimens spread across the various subdepartments, including over 26,000 types. The focus of the collection remains on material from Denmark and Greenland. Highlights from Greenland include evidence of early life from the Archaean Isua Complex, the early Cambrian Sirius Passet fauna, Devonian amphibians, Triassic dinosaurs, mammals and pterosaurs, Jurassic and Cretaceous ammonites together with Jurassic and Cretaceous plants. The Danish collections are dominated by marine invertebrates from the Maastrichtian and Danian of Zealand; spectacular fishes and insects together with less common birds and whales occur in the Paleogene and Neogene rocks of Jutland. The diverse geology of the island of Bornholm has provided rich Early Palaeozoic invertebrate faunas, with abundant brachiopods and molluscs from the Jurassic and Cretaceous together with the first evidence of a dinosaur in the Danish region. Nevertheless, the museum faces many challenges associated with the more efficient storage and care of material, computer registration and the encouragement of specimen-based research programmes through both domestic and international networks.

New life to old museum collections: the case of the Tegelen clay-pits

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As mammal palaeontology developed as a science in the course of the 19th century, the number of known localities was still limited. Those sites that yielded large amounts of fossils, quickly became well known to all scholars in the field. Nowadays, these sites are usually known as classical localities. Part of the reason why these localities, often quarries, yielded so many fine fossils, is the 19th century method of exploitation. Much work was done by hand, and selling fossils provided an additional income to workers. Nowadays many of these sites are no longer accessible or machines have taken over, pulverising fossils as they are found. Thus, museum collections are the only possibility to continue studying these localities. A good example of such a classical locality is the only Dutch fossil mammal site that can be labelled as such: Tegelen.

The clay-pits near the village of Tegelen (Province of Limburg) were discovered as a locality for fossil mammals by the Dutch palaeontologist Eugene Dubois at the beginning of the 20th century. Dubois, then based as a curator in Teylers Museum, purchased fossils from the clay workers. At the time, the clay was dug by hand for the local pottery and tile industry, and teeth, bones and antlers were regularly encountered. The first publication on the site appeared in 1904, now nearly a century ago. Though Dubois published little on the locality, he continued purchasing material thus assembling a large collection for Teylers Museum. Since the locality yielded a fossil seed flora as well, he invited Charles Reid to study the material. Together with his wife Eleonor, Reid published the flora and in doing so created the Teglial (Tiglian) as a stage at the beginning of the Pleistocene. The mammal fauna of Tegelen was published by Dubois' assistants, Bernsen and Schreuder, in the late twenties, early thirties. Schreuder worked in Amsterdam. New material, including new species, found in the clay-pits was sent to her for identifications, and thus the Zoological Museum in Amsterdam also has a small, but important collection of Tegelen fossils. Other museum as well obtained small collections of Tegelen material, such as the Missionary Museum in Steyl and the Natural History Museum in Maastricht.

The largest collection of Tegelen mammal fossils is now housed in Naturalis. This material was collected in the 1950s. At that time palynological research was carried out by Zagwijn, strengthening the basis for the Tiglian as an internationally recognised period.

As a building project threatened the Tegelen Clay pits in the 1970s, scientists of Naturalis once more excavated the Tegelen clay-pits. This time the goal was to acquire fossils of micromammals, which till that time were very scarce in the collections. Seven consecutive years of sampling yielded a collection of 5000 molars of rodents and insectivores, which partly still await publication.

Whereas the clay-pits are now inaccessible for further excavations, the museum collection allows us to reconstruct the environment at the time the Tegelen Clay was formed, a little less than two million years ago. The main challenge in working these collections, is to discover whether or not all of the material belonged to a single fauna, or whether different periods are represented. Several species found in Tegelen raise doubts on whether all material can be assigned to a single fauna.

**Collections in Libraries;
A collection of travel-books in the University Library Leoben**

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Collecting seems to be a topic, which has become more and more interesting during the last years. It is not only the passion that seizes people of all parts of our society, it is more than some sort of eccentricity, it goes back to our roots, when we were hunters and gatherers to gain our living. Nowadays hunters and gatherers can be found in antique shops, but they are also to be found in museums and libraries.

Collecting in museums has started with “Cabinets of curiosities” (Kunst- und Wunderkammern), which housed “wonders” ranging from rare shells and coins to narwhal horns, coral carvings and perhaps mummified mermaids.

Libraries always collected not only the scientific books of their times, they always strove for the bigger, wider, the universal library. The first one to meet this high standard was the antique library of Alexandria, where all the knowledge of the time was collected in about 400.000 papyrus scrolls, nowadays we have the universal library in the internet.

Far from being universal, the small library of Leoben has a rather nice collection of travel books, which have been sources for our geologists and mining engineers during all the years of our existence. The books have been collected since the beginning of our University in 1840, and nowadays we still complete the collection with reprints from historic travel books.

The collection has books like F.E. Brückmann’s “Magnalia Dei” from 1727, where the author describes all the 1600 mines in the world, which were known at that time, or Emanuel Swedenborg’s “Regnum subterraneum” from 1734, where he describes the copper mines in Europe. Most of the literature in our collection comes from the 19th century, one of the most interesting books is Joseph Russegger’s “Travels through Europe, Asia and Africa in the years 1835-1841”. Russegger was the first one to draw a geological map of Egypt and the Sudan, he was the first European, to see the springs of the Nile. Another author to be mentioned is Belsazar Hacquet de la Motte, a physician, who travelled all over Europe. His work is best known by the ‘Travels through Slovenia’, in which he describes a.o. the Idrija mercury mine in 1779.

In our collection there are also travel books, who are not related to mining or geology, we have for instance Sven Hedin’s ‘Transhimalaya’ or Hans Meyer’s report on his travel to the Kilimanjaro in the year 1890.

All the books on travelling bring to us the adventure of being away, they “bring the world back into our hearts”, as the geologist Russegger notes at the end of his books.

International Symposium on Cultural Heritage in Geosciences, Mining and Metallurgy Ten years in retrospective

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Shortly after the fall of the Berlin wall, Peter Schmidt, librarian in the Rare Books Department of Freiberg's Technical University and Lieselotte Jontes, library director from the University of Leoben, started their first talks to establish a symposium on Cultural Heritage.

In 1993 the 1st International Symposium on Cultural Heritage in Geosciences, Mining and Metallurgy was held in Freiberg /Saxony. It was for the first time a get-together of geoscientists and mining scientists, who were interested in the history of their discipline. The symposium gave a definition of the position of these sciences. Librarians, archivists, museums curators and interested people from other disciplines took part, an exchange of opinions began to flow.

This very successful first symposium was followed by the second one in Leoben (Austria) in 1995. The general theme of this symposium was "Art and culture in mining and geosciences". The background for this theme was the rich collection in the Leoben library, where pictures of mining places, works in the mines, traditions of miners have been collected. Therefore this symposium was accompanied by a very fine exhibition on these topics from the funds of the University Library.

The third symposium was held in St. Petersburg, Russia in 1997. The famous Mining Institute was hosting the congress, many colleagues from different countries, but especially from Russia and the Southeast European countries were participating.

The Slovakian mining town Banska Stiavnica was hosting the fourth congress in 1998. The general theme was "World mining education traditions". In Banska Stiavnica was one of the world's oldest mining universities, the organization of the education of miners started in this town, therefore it was a good place to talk about these topics.

The fifth congress brought us to the United States, to Golden (CO) with its famous "Colorado School of Mines". This old mining town in the American West, where in former times the gold boom brought lots of people to the country, gave new topics, new colleagues and a very different surrounding.

As a contrast, the sixth Symposium was held in the small Slovenian mining town of Idrija, where the famous mercury mine is still working. Very appropriately, the general theme at this congress was "Occupational health and ecological aspects of mining".

The 7th Erbe-Symposium, as it is called in German, will now to take place in the famous Museum Naturalis in Leiden and will give the surrounding for our tenth anniversary. It is our hope, that these symposia on cultural heritage will continue, that the rich tradition of miners, metallurgists, geologists will with the help of these conferences be preserved and that they give help to the young workers and scientists to a better understanding of their profession. Indeed, the 8th Erbe-Symposium will be held at Schwaz, 3-7 October 2005.

The „Haus der Geschichte der Republik Österreich“ (House of the History of the Austrian Republic): a discussion document

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The installation of a „Haus der Geschichte Österreichs im 20. Jahrhundert“ is incorporated in the programme of the Austrian Government, based on a preliminary study by the author. It should be realised in 2006 and will include the history of the Austrian Republic from 1918 to the present, emphasising the history of the First and Second Republic and the Third Reich. Original sources will be collected and made available to schools, officials, the media and private persons.

Austria is seen as part of the European developments and, as such, also as part of the history of the World. Emphasis is placed on subjects to which Austria had an obligation, such as documents on the persecution and killing of Jews, Roma and Sinti, as well as the exile of Austrians from Central European countries. Further, its special position in the 1950s at the Iron Curtain during the Cold War is of interest.

The „Haus der Geschichte der Republik Österreich“ will have four aspects, to be discussed in some detail:

- 1) Museum with exhibitions;
- 2) Research network;
- 3) Data storage;
- 4) Services.

Economic history will be used as an example and in it mining history will have a special place. Local companies, their products and the captains of industry are important for society. So far, little research has been done on important events, such as the gradual change from guided economy to market economy, the influence of the Marshall plan and the „Staatsvertrag“, or the availability of raw materials (ore, water, oil, and wood).

The study of the archives of the allied nations (the four occupants, Americans, British, French and Russians) would be of great interest, and company archives in Austria should be studied and preserved. The institutes for economical history are to pay attention to this problem.

Of special interest are the external contacts of the different regions of Austria, e.g., Steiermark and Carinthia with northern Italy and Slovenia; Tyrol and Vorarlberg with southern Germany, northern Italy and Switzerland; Salzburg and Upper Austria with Bavaria; and Lower Austria and Burgenland with Hungary, the Czech Republic and Slovakia.

The archival documents of the State Central Mining Archives in Banská Štiavnica related to different kinds of museum collections at home and abroad

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The State Central Mining Archives in Banská Štiavnica (ŠÚBA) supervise about 6 km of archival documents. A part of these documents may serve also for identification or more exact description of different museum items, either at home in Slovakia or elsewhere in the world.

First should be mentioned the collections of minerals. The ŠÚBA documents deal with such samples of rocks and minerals which were collected in the mining regions on the territory of Slovakia and were sent abroad as well as with minerals which were found in foreign rocks and transferred to our home collections. The former minerals were intended for foreign natural cabinets, schools, embassies and for personal collections (starting with members of the royal family, high-ranked court officials, scientists, noblemen and ordinary collectors). The latter were previously intended for the mineral collection of the Banská Štiavnica's Mining Academy.

Another kind of museum items, the written materials to which can be found in the archival funds of the ŠÚBA, are models of mines and of other technical devices. They were constructed as illustrative tools for Vienna court offices as well as to assist in teaching of Banská Štiavnica's academy students. This group can include also creative pieces of art by naive masters, such as models of mines in bottles.

A lot of the ŠÚBA documents is related to coins and memorial medals thanks to one hundred year activities of Kremnica's mint and frequent visits of the imperial court members to the central Slovak mining region. However, we can read from documents also about forgers of bank notes, and even copper and timber substitutes of valid currency which could be used to pay only in special shops mostly owned by employers.

The written and pictorial ŠÚBA materials may serve also to give precise information about measures and weights (especially mining and metallurgical), clothing of miners, metallurgists and other persons, different memorials and pictures. They may add knowledge about some bells and their creators, public or factory clocks and clock masters, and musical instruments, as well as pieces of music and their authors, arms and military fortresses. There is an opportunity to get pictures of a lot of seals, to learn about old postal stamps and stationery, old books registered in the lists of school and office libraries, heritage and other lists. There can be found interesting records in our archives about architectural and technical monuments and sites, working tools of miners, metallurgists and foresters and, for sure, about other museum items which could be specified by museum employees.

**The Royal natural history collections in Vienna (18th century):
from possessing minerals as a treasure towards territorial ambitions**

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This paper deals with a famous private natural history collection of the court, transformed to a public collection of the state. Associated is a very important question: how cultural and political structures became a dimension of collection.

In order to establish a Court Natural History Cabinet of its own, separate from other collections ("Physical Cabinet", the Coin and Antique Collection), Emperor Franz I decided in the middle of the 18th century to buy the famous "museo" of Jean de Baillou, who had worked as a director of gardens and mines in Tuscany. The collection of Baillou consisted mainly of minerals, which were collected in Italy (only some came from famous places all over the world), and fossils, particularly mussels, snails and crustaceans. It was one of the most famous and richest European collections of its type. It represented in its new home in Vienna the Emperor's passion for science, modern know how and his self-confidence at being a personal centre, not for politics, but for a special taste. The Emperor spent a lot of money for the collection, furthermore, he sent naturalists to collect and thus increase the collection. The collection was the emperor's private treasure and was placed near the Library of the Viennese court. Baillou became managing director for life and after his death was succeeded by his son. In the first decades no catalogue was made.

After twenty years, following the death of Emperor Franz I, Maria Theresia wanted to have a survey about the collections in the court. Ignaz von Born, who had already made a name for himself at the Prague mint and Bergrath (mine inspector's) office was appointed, to write a first catalogue of the collection. He pointed out the low standard of the natural history collection and the scientific necessity of a rich mineral collection.

It was also a time in which the government started to work against particularism in administration. The government tried also to get more evidence from minerals of all over the governed countries of rocks, which were typical of the countries of the Habsburg Monarchy. The mining administration at Vienna ordered the mine inspectors in the periphery to send up a documentation of minerals and rocks, which were found there. Thus, the transfers represent a new concept of scientific interest in a political dimension. Treasure had no longer priority.

A second life for geological collections

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The Dutch National Museum of Natural History is at present the keeper of c. 1,100,000 fossil samples (partly in rocks, partly isolated), 300,000 rock samples (sedimentary and volcanic rocks, granites, and much more) and 40,000 mineral specimens. The most notable recent acquisition comprises c. 49,000 rock samples, 16,000 fossil samples and 100,000 thin sections from the former Geological Institute of the University of Amsterdam (UvA). This acquisition took place within the framework of the "Stichting Academisch Erfgoed" (Academic Heritage Foundation) and was funded by the "Mondriaan Stichting" (Mondriaan Foundation). The first part of this talk will address theoretical and practical aspects of the selection procedure, carried out under considerable time pressure.

The new acquisitions enhance the regional, temporal and phenomenological diversity of the rock and fossil collections at our museum. Notably, collections related to c. 80 academic dissertations presented at the UvA were joined to material formerly collected by earth scientists from the Universities of Delft, Leiden and Utrecht. It is envisaged that a vigorous programme is put in action to promote the (re)use of all collections by professional and amateur scientists at national and international level. The first steps will be to publish a catalogue and to advertize details of this (inter)national academic heritage on Internet. Electronic registration and securing international funding for museum visits are crucial issues on the long-term agenda. In view of the large number of unique specimens, and the added value of published research (classifications, chemical analyses, etc.), devoted to them, these collections certainly merit a second life.

The collections of the Slovak Mining Museum

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The Slovak Mining Museum in Banská Štiavnica belongs to a group of museums of Slovak field activity and contains at the moment several departments of presentation:

- **Natural** – a collection of minerals and fossils in the ‘Berggericht’ building. 37,500 specimens.
- **Historical** – collections and exhibitions linked to specific community developments of miners in the region, such as archaeology, history, numismatics, ethnography, development of architecture, and lapidary, with exhibitions in the Old and New Castles. 17,628 specimens.
- **Gallery** – The Gallery of Jozef Kollár contains a collection of art-historical character from the region and modern fine art; for example, sacral art, portraits of chamber earls, artists of the 20th century. 3,650 specimens.
- **Technical** – a unique Slovak collection with majority of objects from the region of Banská Štiavnica, such as mining tools, lamps and mine models. 9,651 specimens.
- **Open-air mining museum** – in the original place of the Ondrej shaft, 1,600 m in length, an exhibition of ore extraction established 2 km from the town in Bartolomej. Presentation of technical ground buildings, coal exhibition and non-representative houses of folk mining architecture from various mining regions of Slovakia.

In 1900 the Town Museum was established in the Old Castle in Banská Štiavnica during the Mining and Forestry conference. Some newly obtained items from particular families, churches and the town hall, and the older collection of the Mining Academy were included in the museum collections. The curator, V. Baker, gave the town museum in the Old Castle a new goal. Thanks to him the museum was transformed into a district museum and in 1935 14 rooms with 29 640 exhibits were open to public.

After establishment of the Czechoslovak Republic, several attempts were made to create a mining museum in Banská Štiavnica. The proposal was finally accepted that the museum should gather everything connected with mining – collections of minerals and ores, mining-technical, cultural and literature documents. On the 22nd May, 1927, the museum was officially established in the Berggericht house at the Holy Trinity square on the 100th anniversary of Dionýz Štúr's birth.

During World War II both museums faced a difficult existence. After the end of the war the museums were rearranged several times. New impulse into the progress of Štiavnica's museums came when, by unification of two museums, the new special one was founded – the Mining museum. On the 3rd January, 1964, it was renamed the Slovak Mining Museum to highlight its main purpose.

Recently, the Slovak Mining Museum possesses more than 80 thousand collection items, divided into six exhibition departments. Nowadays, these exhibits are logically situated in particular parts of the town, but any visitor can obtain a complex view on the precious metal sources, technical methods of mining, get to know the oldest beginnings of regional settlements and further historical development, variety of craft, professional art and folk art, or visit the open-air museum with the almost 2 km long shaft. Our exhibitions form a ‘model book’ on mining history which is widely used by school all over the region.

Alexander the First collection in the Lausanne Museum

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Unique samples and mineralogical collections presented by members of the Russian imperial family are stored in many of the oldest mineralogical museums of Russia and Europe. For example, the collection of Alexander I's sister – Alexandra Pavlovna (1783-1801) – is stored in the Budapest Natural History Museum (G. Papp, 1995). A significant collection of minerals received as a gift from the Emperor Alexander I in 1819 is exhibited at the Lausanne Natural History Museum. Alexander I presented a collection of minerals to his old friend Frederick de Lagarp, who was his tutor and instructor in childhood. Invited to Russia by the Empress Catherine the Great in 1783 as a tutor and instructor of grand dukes, de Lagarp has managed to become not only the teacher, but also a close friend of Alexander. Having returned home, de Lagarp was engaged in the natural sciences: chemistry and mineralogy in particular. He was disturbed by the state of affairs in the Swiss Academy of Sciences and addressed the young czar with the request to send a collection of Russian minerals. In 1819, he sent to Alexander I two Etruscan vases as a gift. Alexander I gives the order to assemble a complete collection of Russian minerals as soon as possible. From the letter of Prince P.M. Volkonsky to the Minister of Finance D.A. Guryev of May 1, 1819: "His Imperial Majesty, wishing to thank Mr. Lagarp, has ordered to prepare a complete assembly of our minerals for their supply to him..." (Russian State Historical Archive, Fund 37, Inventory 11, File 135). In October 1819, the Mining Military School already reported that the collection was ready.

The collection of Alexander I, totaling 1031 samples according to the Catalogue of 1877, consisted of five sections; salts (68), stones (362), metals (410), combustible minerals (13) and rocks (175). Samples of the collection represent more than 100 Russian sites, among which the principal mining areas of Russia prevail; the Urals, Altai and Transbaikal regions. The second, most numerous group of samples in the collection are referred to as stones. These are basically coloured and ornamental stones, and rock-forming minerals; varieties of quartz, nephrite, garnet, beryl, topaz, tourmaline, lazurite, and a large collection of ores, including ores of iron, copper, silver, lead, zinc, chromium, minerals of titanium, native gold, silver and copper. The collection of Russian minerals presented in 1820 to de Lagarp is preserved complete to the present day and is exhibited at the Lausanne Natural History Museum. It is a material testimony to the connections between Russia and Switzerland.

Historical mineral collections in the silver mining town Kongsberg

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The Kongsberg Silver Mines were established in 1623. The ore, dominated by native silver, was a sensation at the time. Specimens of native silver became popular collecting items. Most fine specimens, however, went to the Danish-Norwegian kings in Copenhagen; in Kongsberg officers from the mine and the mint had some specimens, but no information about any collections has been found, until the Royal Norwegian Mining Academy was established in 1757.

At the Academy geological specimens were needed for educational purposes. The lecturers had to use their own collections, even after the first grant for the acquisition of specimens in 1770 of one thousand Danish dollars spread over eight years. A fire destroyed Professor Peter Thorstensen's collection of about 3000 specimens in 1777. Revitalisation of the Academy in the 1780s resulted in new enthusiasm for the institution. In 1786 director Jørgen Hiort donated his comprehensive collection to the Academy. The large collections of director M.Th. Brünnich and lecturer at the Academy Jens Esmark were also acquired by the Academy.

In 1811 it was decided to locate Norway's first university at Kongsberg, but this was overruled in January 1812, and the university was built in Christiania (Oslo). The Academy was abandoned and the collections transferred to the university. The Academy's mineral collections became the nucleus of the present-day collections in the Geological Museum at the University of Oslo.

The mining officers at Kongsberg felt the need for geological specimens and scientific literature. Discoveries of very rich ores in the early 1830s improved the economic situation. The board of directors approached the Finance Ministry, requesting the establishment of collections of minerals and books. This was approved in a royal resolution of March 15th 1841. The man behind the request was probably director K.F. Böbert.

The collections were gradually increased by gifts, exchange, purchases and collecting. The Silver Mines participated in many exhibitions, among these most of the 'world fairs' during the 19th century, beginning in London in 1851. The collections were open to the public at regular intervals from about 1880. 1912-1914 became a new active collecting period as a preparation for the national fair in Christiania (Oslo) in 1914, celebrating the first hundred years of the Norwegian constitution. The collections were upgraded to a company museum in 1938 and to the national mining museum in 1965.

The Kongsberg Silver Mines' mineral collection is today an important part of the national mining monument at Kongsberg. The silver mineral collection contains specimens from most larger pocket finds in the silver mines since the 1830s, with many specimens of world class quality, both of wire silver and crystalline silver. It is a national silver treasure. The Kongsberg Silver Mines' mineral collection is kept by the Norwegian Mining Museum, together with collections of Norwegian crystalline minerals, industrial minerals and ores.

The mineral collection of the Royal Ajuda Museum, Lisbon, Portugal

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The origin, development and vicissitudes of the mineral collection of the Museu Real da Ajuda (Royal Ajuda Museum) in Lisbon are described, as well as its relationships with the collection of gems and jewellery that belonged to the Portuguese crown, deposited in the royal Ajuda Palace. The Museum was created around 1775 for the instruction of the royal prince D. José. Domingos Vandelli, an Italian naturalist and professor at the University of Coimbra, was in charge of its creation and development (Carvalho, 1987). Specimens of rocks and minerals were received mostly from the Portuguese colonies (mainly from Brazil), the most beautiful gems and gold nuggets being intended for the crown collection. A precious inventory was made in 1794 by Alexander R. Ferreira.

Vicissitudes in the 18th and 19th centuries affecting the Museum collections (Godinho, 1991; Almaça, 1996) included those derived from the invasions of Portugal by the Napoleonic armies (Ferreira, 1911), resulting in the transfer to France of many specimens; the removal of many sets to other Portuguese collections for scientific purposes, viz. to the Lisbon Academy of Sciences and to the Lisbon Polytechnics (Canêlhas, 1983); and, very recently, the robbery in Holland of some rich specimens from the crown collection that were in a public exhibition.

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Bohemian Mineralogy in the Early 19th Century: the 'Vaterländisches Museum des Königreichs Böhmen' in Prague

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The 'Vaterländisches Museum' in Prague was officially founded in 1822 by Caspar Count Sternberg and his cousin Franz Count Sternberg-Manderscheid. Caspar Sternberg (1761-1838) had previously followed a clerical career in Ratisbon as part of the bishopric of Mainz. He broke it off in 1810 as a result of the Napoleonic conquests in Germany, that did not meet with his markedly nationalistic political views and caused him to return to his westbohemian estates. Here and in Prague he dedicated the rest of his life to the care and development of science, mainly botany, palaeontology and the geosciences. The foundation of the 'Vaterländisches Museum' occurred as a manifestation of traditional Bohemian nationalism, particularly emphatic after the Napoleonic war. It essentially aimed at three targets: 1) the education of the public, 2) the sponsorship and encouragement of Bohemian scientific and cultural research, and 3) the economical utilization of scientific knowledge. Under these nationalistic and scientific aspects also the foundation and development of the oryctognostic collection of the 'Vaterländisches Museum' has to be regarded.

In 1818, the mineral collections from Johann Thaddäus Lindacker, Caspar Count Sternberg, Rudolph Count Wrba, Prokop Count Hartmann-Klarstein, and Franz Anton Count Kolowrat-Liebsteinský have been donated to the nascent museum. After the official opening of the museum in 1822, the united collection became split into two parts: into a systematic and into a local native collection. The systematic collection had to be modernised by reorganising it according to the natural historical mineral system of Friedrich Mohs from 1821. The local collection, on the other hand, exposed its specimens to the observer in an instructive disposition of their natural deposit, referring to their topographic location along the Bohemian mountain ranges and formations.

By exchange and purchase of specimens the museum became well known all over Europe within a short time. Within the borders of Bohemia, it was mainly members of nobility who enriched the two collections by generous gifts. Further collections were sold to the museum by oryctognostically interested amateurs, mining officials and university professors, reflecting the acceptance of the museum's scientific goals by the public at large and the national idea behind it. Thus the systematic collection covered by 1829 288 species from Mohs's mineral system, while the local collection comprised 130 mineral species. The latter was basically distinguished by a prominent range of gems, particularly by the typical Bohemian garnet species and varieties, furthermore by the meteorites of Ellbogen, Zebrek and Bohumilitz, and by a rich portion of metals and their ores.

The nationalistic endeavours behind the museum's enterprises were additionally manifested in its ambition in scientific research, which in the field of mineralogy has been largely done by the collection's curator Franz-Xaver Zippe (1791-1863). He explored the deposits of native mineral species and varieties, and notably augmented the knowledge on their number and characteristics. He is regarded as one of the most important mineralogists of the Austrian-Hungarian monarchy.

Mineralogical collections of the Museum of the Ilmen State Reserve (South Urals, Russia): the real past and the virtual future

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Natural Science Museum of the Ilmen State Reserve (South Urals, Russia) was found in 1930. At present, mineralogical collections of the Museum includes more than 20000 samples. The central place is taken by collections on mineralogy and geology of the Ilmen Mountains.

From the end of the 18th century the Ilmen Mts have supplied materials to the collections of the major mineralogical museums of Europe and Russia. History of studying of the mineral resources of the Ilmen Mts is inseparably connected with the names of such outstanding scientists of 18th to 20th centuries as Peter Pallass, Johannes Menge, Alexander von Humboldt and Vladimir Vernadsky. The 'Golden Age' of Ilmen mineralogy started in 1825 when the German philosopher and naturalist Johannes Menge traveled to the Urals. In the following thirty years eight new minerals were discovered here: ilmenite, aeschynite, monazite, samarskite, chevkinite, cancrinite, chiolite and ilmenorutile. A whole series of chemical and mineralogical discoveries in the 19th and 20th centuries was based on research of these minerals. Two examples: 1) in the end of 1870s the French chemist Lequoque-de-Boibordagne has extracted a new chemical element from samarskite and has called it 'samarium' after the mineral; 2) in the beginning of her study of radioactivity, Marie Sklodowska-Curie used samarskite from the Ilmen Mts for the extraction of pure radioactive elements.

Unfortunately, at present our museum hasn't any old samples that once were in the hands of the scientists of the past. The great part of such samples was exported from the Ilmen Mts long before the Reserve and the Museum were formed here. Now the historical samples of the Ilmen minerals are held in the museums of St Petersburg, Freiberg, Tatra, Athens and other cities. The oldest Ilmen samples were only accessioned by our museum in 1942 and most of our mineral collections have been assembled since 1970s. That is why we have had the idea of trying to locate the old samples taken from the Ilmen Mts in earlier times and to establish an unified data bank of these samples. And now we are in position to construct a 'virtual exhibition', such as could never be made in the real world. We cannot physically reassemble the samples now held in the other museums but this is possible in a virtual world!

Trautschold's collections in the Vernadsky State Geological Museum. of the Russian Academy of Science (Moscow, Russia)

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G.A. Trautschold (1817-1902) was a well-known naturalist of the second half of the 19th century, an expert in Carboniferous, and especially, Jurassic and Cretaceous deposits of Central Russia, first of all of the vicinity of Moscow. He described many taxa of sponges, corals, bryozoans, ammonites, crinoids, brachiopods, fishes, etc.; his descriptions are utilised by modern researchers. Trautschold was the author of more than 160 scientific publications, which formed the base for further development of palaeontology and geology in Russia.

Trautschold was born in 1817 in Berlin. After graduation from a grammar school, during six years he studied Pharmacy. Then he has matriculated the University of Berlin to study natural sciences. In Berlin he was the assistant of Link, a well-known botanist of that time. Moving to Hessen, he was engaged in chemistry, physics, mineralogy and crystallography. About two years he was assistant in the laboratory of the well-known chemist Liebich. In 1846 he became Doctor of Philosophy of Hessen University.

He came to Russia for the first time in 1846 with the family of the rich Kostroma landowner Luginin, but in 1848 he returned to Germany, where he worked in a private higher educational institution till 1857. In 1857, Trautschold returned to Russia as tutor in the family of Akhlestyshchev. He made annual geological excursions along the rivers Volga, Oka and Unzha, paying much attention to the geology and palaeontology of Moscow and its vicinity. From 1863 to 1868 he taught the German language at physical-mathematical and medical faculties of Moscow University. In 1868, Trautschold was invited to the faculty of mineralogy and geognosy of the Peter Agricultural and Forest Academy. From 1871 he was the professor of the faculty of geology of this Academy. In 1888, Trautschold retired and left Russia. First he moved to Breslau (nowadays Wrocław, Poland), then to Freiberg, and Karlsruhe (Germany).

The Vernadsky Geological Museum of the Russian Academy of Science keeps monographic collections to Trautschold's published works on fossils from Carboniferous, Jurassic and Cretaceous deposits of Central Russia and Cretaceous deposits of Crimea. The specimen of the last work – *Coccoteuthis hactiformis* Rupp. [= *Trachiteuthis zhuravlevi* Hekker & Hekker] – is unique, finds of these fossils are extremely rare in Upper Jurassic deposits of Central Russia. Apart from these collections, the Museum has also representative collections of additional fossil invertebrates from Carboniferous and Jurassic deposits of Russia, and Mesozoic deposits of Western Europe, collected by Trautschold in the second half of the 19th century.

**The Kinker diatom collection;
discovery – exploration – exploitation**

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Johannes Kinker (1823-1900) was a typical representative of the Victorian ‘amateur-savant’: as a well-to-do stockbroker he was able to invest considerable time and money in Nature studies, first entomology subsequently diatoms. The latter subject flourished in the late 19th century and among his international contemporaries, Kinker was regarded as “the only Dutch diatomist of renown”. There is a marked discrepancy between this reputation in his own time and his complete anonymity since, for which there are two reasons; Kinker did not publish and his collection was not known to exist.

Our discovery of the virtually intact Kinker diatom collection after it had vanished for a century can be regarded as a cultural heritage conservation paradigm. The collection is scientifically significant, and can be developed into a rich source of information for micropalaeontological, biostratigraphical and biodiversity studies. The conservation project – now under way – perfectly illustrates the importance of a synergy between materials and archives. Kinker’s extensive correspondence and notebooks have been preserved, and are essential to the conservation, documentation and future exploitation of these valuable materials. Although Kinker cannot be regarded as a productive scientist, his importance as an ‘information node’ is now evident.

Landesmuseum Kärnten – The Collections of Natural sciences

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At the time of Enlightenment rose also in Carinthia an interest in reappraising the natural history and historical past. A lot of private collectors tried hard to open their collections to the public.

In 1846, at a session of the „Geschichtsverein“ (historical society), the zoologist Meinard von Gallenstein made an application for the establishment of a Museum of natural sciences. Within the Agricultural society a committee was established which invited the population to contribute money or to donate their collections. When the committee found a suitable house, it engaged a curator from Ljubljana. One year later the material was ordered so far that on October 10th, 1848, a first guided tour for the committee was arranged. This date marks the establishment of the „Naturwissenschaftlicher Verein für Kärnten“ (Society for Natural Sciences Carinthia). The Society maintained the museum for many years. It was the successor to the „Montangeognostischer Verein für Innerösterreich“ (Mining geognostical Society for Inner Austria). The first curator was the well-known Friedrich Simony, who first sounded the depth of the Wörthersee. In 1861 the „Naturwissenschaftlicher Verein“ and the „Geschichtsverein“ together moved into the „Landhaus“, the most important representative building of Carinthia. From the beginning the library of the society was of special importance. The collections grew and to look better after them there were formed several professional groups. Over the winter professionals gave popular lectures.

In 1872 the independent „Verein Naturhistorisches Landesmuseum“ (Society Museum for Natural History) was established, and there was no longer an official connection to the Agricultural society. As the „Landhaus“ in the meantime was not big enough for the collections, the chairman Ferdinand Seeland together with the „Geschichtsverein“ and the „Kunstverein“ planned a new building. In 1879 there was the ceremonial laying of the foundation stone, and in 1884 the festival opening of the new museum.

Since 1898 there were full-time curators: Hans Sabidussi (botanics), Karl Frauscher (zoology), August Brunlechner (geology). When in 1925 the Carinthian museum of local history, was founded also these collections moved to the newly built museum.

The scientific publication, first for the societies, then for the museum, was „Carinthia“, established in 1811 by Carl Mercy, the third-oldest scientific magazine in German which has been published without a break. Since 1891 it is divided into Carinthia I („Geschichtsverein“) and Carinthia II („Naturwissenschaftlicher Verein“). The „Naturwissenschaftlicher Verein“ published from 1852 to 1912 the „Jahrbuch des Naturhistorischen Museums“. Another important series was the „Special magazines“ of Carinthia II.

In 1942 the collections of all three societies became property of the „Reichsgau Kärnten“ and so the government for the first time had to administrate the museum. After the war the collections remained in the ownership of the state of Carinthia; the government rebuilt the destroyed building and employed full-time curators. 1974 the „Geschichtsverein“ and the „Naturwissenschaftlicher Verein“ made a contract with the government and sealed the moving of the collections into public property. In 1998 the museum was privatized, but the two scientific societies have still their offices in the building, and work closely together with the curators and the library.

The Dubois collection in the National Museum of Natural History, Leiden, The Netherlands

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The Dubois collection is one of the famous collections in the world, mentioned in the book of 'World Palaeontological Collections'. It is a collection of vertebrate fossils made by Eugene Dubois in the former Netherlands East Indies, nowadays Indonesia, at the end of the 19th century. It is stored in the National Museum of Natural History, Leiden.

Marie Eugène François Thomas Dubois was born in 1858, a year before Darwin published his *On the origin*, and two years after the Neanderthal skull had been found. He grew up in a period that witnessed the rapid acceptance and dissemination of the theory of evolution. In the 1860s and 1870s the problem of human ancestry was central to many discussions on evolutionary theory. Until far into the 1880s opponents and adherents of an evolutionary ancestry for humans agreed that no hominid fossils were known that provided proof of human evolution. Dubois liked to find hard evidence that also Man is involved in evolution. Following this call, he left in 1887 for the Netherlands East Indies to begin his search for the missing link.

For Dubois the East Indies seemed a suitable area, the more so because this colony of the Netherlands lay wide open to him. In order to maintain himself he joined the Netherlands East Indies Army as a medical officer, and in December 1887 he arrived in Padang on Sumatra. Here, in caves he found a fauna, from which he made a collection of a few thousand specimens. However, this fauna proved too young to include any human forerunners. In 1890, Dubois therefore decided to continue his excavations on Java. Here he found, besides a few thousand other vertebrate fossils, during 1891 a skullcap with a cranial capacity halfway Ape and Man and in 1892 a femur, which was very human like. Dubois considered the three fossils as belonging to one individual and in 1894 he published the results of his studies under the title "*Pithecanthropus erectus*, eine menschenähnliche Uebergangsform aus Java". The skullcap, molar and femur are on display in the exhibition of the museum. The crucial factor is, however, that they showed themselves ready to adopt an evolutionist interpretation, meaning that for the first time a group of researchers acknowledged a fossil hominid as a transitional form. *Pithecanthropus erectus* was later put in the genus *Homo* and is now indicated as *Homo erectus*. Dubois died December 16, 1940.

The Jongmans Collection: Scientific collection or Cultural Heritage

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Wilhelmus Josephus Jongmans (1878-1957) was a Dutch Botanist, who became involved in palaeobotany at an early stage of his career. He became head of the department of the geological survey for coal winning in Limburg ("Geologisch Bureau voor het Mijng gebied"). He built the bulk of the fossil plant collection now kept in the Dutch National Museum of Natural History. A great deal of the collection consists of Carboniferous material gathered during the period of coal exploitation in the south of the Netherlands, but it also reflects the research interests of its collectors and keepers and consequently is a reflection of the state of the art in palaeobotany since approximately 1920.

In 1996 the Dutch Geological Survey was reorganised and the palaeobotanical collections needed to be kept safely for future generations. Our Museum felt that the collection was both a reflection of the Dutch history and a valuable scientific reference collection. Consequently half a floor of the collection tower was made available for the 60 000 plant fossils composing the collection.

Welcome to the National Museum of Natural History Naturalis

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In the welcoming speech, general information on Naturalis will be given and a short overview of the history of the Museum's geological collections.

Also, an introduction to the various sections of the exhibition will be presented. In particular, the room "Visies op de Natuur" (Views on Nature) will be explained: the outlook on nature by four different cultures is visualised, i.e. ancient Egypt of the pharaohs, Taoism of ancient China, 17th century Islam of India, and the Age of Enlightenment in Western Europe.

The geological collections of the National Museum of Natural History at Leiden: cultural heritage of the geosciences and mining?

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The role played by the geological collections of the Dutch National Museum of Natural History in documenting the developments in the earth sciences in The Netherlands and abroad is discussed, as well as the influence exercised by the mining industry in The Netherlands and its former colonies. Thus, an overview is given of the variety of the geological collections which were obtained from government institutions, including universities, and private persons.

First the early collections, which are poorly represented, are treated. An example is the Cabinet of the Stadtholder William V (Brongersma, 1978).

Geological exploration during the 19th century, mainly in Asia but also in the Americas, left its traces in our museum. Of special interest is the von Siebold collection, a small collection of unattractive minerals and fossils, but the first of its kind from Japan.

Interpreting the geological history of a region or a period is the next phase in geological research. An early example is the Staring collection, brought together by the Commission for the geological map of The Netherlands, of which Dr Winand Staring was the Secretary (Veldink, 1970).

The influence of mining developments is shown a.o. by the Jongmans collection of Carboniferous-Permian plants and stratigraphical samples of the Dutch coal mines, illustrating the rise and fall of the Dutch coal industry. Jongmans (Wagner, 1997) was the first Director of the 'Geologisch Bureau voor het Mijngebied' (Geological Bureau for the Mining area, a branch of the Dutch geological survey) at Heerlen and initiator of the International Carboniferous Congresses, the first being held in Heerlen in 1927. This was the first congress dedicated exclusively to a geological period.

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The mining community of Russia in the 18th-20th centuries as an object of research

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Expositions of mining-geological museums are the reflection of the activity of scientists, travellers, engineers, and inventors. The museums study the documents concerning the activity of working persons and the related iconography. Studying the mining professional community and the mining infrastructure is necessary for understanding the historical context, the position and significance of active figures in mining history. One can consider a mining community as a super-clan. It is possible to talk about their «metagenealogy», and «metademography» – about professional «generations», about temporary limits of the professional «life» and their «age-stages» (steps of the career).

The author's investigations are connected with the mining community of pre-Revolutionary Russia (from the 18th till the beginning of the 20th century). The computer data-bank contains information on more than 5000 specialists of different official levels and in different fields; prospecting and mining, metallurgy, gun-manufacture, and coin-making. The corporation of mining engineers is the most completely represented (until 1918 about 3250 mining engineers graduated from the Mining Institute founded in Petersburg in 1773). Materials of the Russian State Historical Archives (RGIA) were used, as well as editions of official inquiries and biographical and historical literature.

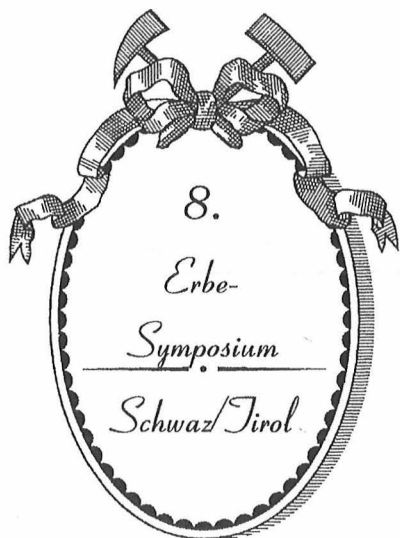
During analysis of data special attention was paid to the continuity in profession, of the mining dynasties (families of the mining specialists). Some 415 mining dynasties including 1295 specialists have been reviewed. The number of generations reaches five, the number of representatives in each generation reaches 14, and the duration of the existence is 100-150 years and more. The dynasties of mining engineers are the most interesting. Two hundred and forty three dynasties included 845 specialists, 580 of them mining engineers. The portion of the mining specialists' descendants in the total amount of the annual graduates from the Mining Institute reached 40-50% and more until the beginning of the 1860s.

The data on the mining engineers' service are numerous. The more stable career of the dynasties' representatives is characteristic. Since the beginning of the 1860s nearly the whole mining administration of the middle and higher grades consisted of specialists graduated from the Mining Institute. There were 254 mining specialists with ranks of 4, 3 and 2 classes (the generalitait) of whom 210 were mining engineers, including 86 representatives of the mining dynasties.

Invitation



8th International Symposium:
Cultural Heritage in Geosciences, Mining and Metallurgy
Libraries - Archives - Collections
3rd to 7th October 2005
Schwaz/Tyrol/Austria



preliminary Organizers:

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Historical Mining and early Geological Exploration in Tyrol - Introduction and invitation to the 8th International Symposium: Cultural Heritage in Geosciences, Mining and Metallurgy: Libraries - Archives - Collections, 3rd to 7th October 2005, Schwaz/Tyrol/Austria

Historical Mining and early Geological Exploration in Tyrol

Since prehistoric times mines were worked out in Tyrol, the investigation and documentation is still going on. Oldest "geological" descriptions are preserved from 1558 in the "*Landtreim der Fürstlichen Grafschaft Tyrol*" by the poet Georg RÖSCH VON GEROLDSHAUSEN. He describes in some verses mineral resources of ores, salt, jewellery, mineral pigments and others from Tyrol. The description of the county by Marcus SITTICUS VON WOLKENSTEIN in the beginning of the 17th century (preserved in the handwritten manuscripts collection at Museum Ferdinandeum, Innsbruck and Archive of Leopold-Franzens-University Innsbruck) contains "many important news about the nature in Tyrol". Further descriptions by Mathias BURCKLEHNER (1619) "*Tyrolean Eagle/Tiroler Adler*", "*De Metallurgia Tyrolensis*" (Stephanus Vinadus PIGHIUS, 1587, 1609) and some others are mentioned in Raimund VON KLEBELSBERG's "*History of geological Exploration of Tyrol*" (R. VON KLEBELSBERG, 1935).

The famous "*Schwazer Bergbuch*" published in the year 1556 contains different regulations, descriptions and rules concerning the work and security of the miners, use of the forest, dangers and organization. The "*Schwazer Bergbuch*" is richly illustrated and some of the figures became famous like the figures in Georgius AGRICOLAS's "*de re metallica*" (1556, 1557). At the Symposium 2005 detailed information about the content, different editions, reprints and scientific results will be given.

The very detailed and voluminous work by Josef Freiherr VON SPERGES „*Tyrolische Bergwerksgeschichte, mit alten Urkunden, und einem Anhang, worin das Bergwerk zu Schwaz geschrieben wird*“ (J. Freiherr VON SPERGES, 1765) was reprinted by 1st Tiroler Bergbauarchäologischer Verein in 1999).

A compilation of various descriptions of ores and rock types in the older Tyrolean literature can be read also in the "*Contribution to the Geography*" of Tyrol (Klebelberg-Festschrift: Otto STOLZ, 1950).

Already in the end of 18th and start of the 19th century the first Tyrolean "geologists" Alois VON PFAUNDLER, Karl VON PLOYER and Joseph VON SENGER did passionate research work. - Alois VON PFAUNDLER started with systematic collecting of minerals, tried to organize and to institute the worldwide

first association "*Mineralogisch-geognostischer Verein in Tirol*", but the time was too early - only 1836 the "*Geognostisch-Montanistischer Verein für Tirol und Vorarlberg*" was founded.

The first known geological map of Tyrol "*Mappa geognostico del Tirol*" is produced by a Spanish naturalist, Carlos DE GIMBERNAT, in 1808 and was unknown for a long time until Benno BAUMGARTEN from *Naturmuseum Suedtirol* discovered this map at a Munich archive (B. BAUMGARTEN, 1999; D. PARRA DEL RIO, 1993).

A far more detailed mapping of Tyrol started 1837 by the "*Geognostisch-Montanistischer Verein für Tirol und Vorarlberg*", organized by the director of the Museum Ferdinandeum, Michael STOTTER. This map consists of ten sheets at the scale of 1: 112.500; the year of publication was probably 1852. A collection of about 6.000 rock samples was in the museum Ferdinandeum (Th. BIDNER, 1998). The further development of geological mapping in Tyrol is well described in Th. HOFMANN & T. CERNAJSEK, 1993.

After the foundation of the Geological Survey of Austria in Vienna - "*k.k. Geologische Reichsanstalt*" - in 1848 the famous geologists Ferdinand Freiherr VON RICHTHOFEN (South Tyrol Dolomites), Eduard VON MOJSISOVICS (dolomite reefs in South Tyrol) and many others were working in Tyrol.

At about the same time the Tyrolean Adolf PICHLER (*1819 - 1900) investigated in the Northern Calcareous Alps of Tyrol, described the first time the "*Hoettinger Breccie*" which is overlaid by younger moraine, pumice stone from Koefels/Oetztal and other phenomena. In honour to him a place close to the town hall wears his name and his statue (renovated and reposted again last year) is there.

At last I just want to mention the following famous names of earth scientists: Joseph BLAAS (1851-1936), Otto AMPFERER (1875-1947), his friend Wilhelm HAMMER (1875-1942), Bruno SANDER (1884-1979), Raimund VON KLEBELSBERG (1886-1967).

Mining localities in Tyrol

Raimund VON KLEBELSBERG (1935, p. 627 ff) is listing 162 appearances of different ores, 24 localities bearing coal, bitumen or salt and 82 occurrences of marble, building stone, breccias, conglomerates, barite and fluorite in Northern and Southern Tyrol. By no means all these localities were mining localities only a few of them had a major importance and were of economic importance. A more recent survey of the mining activities (of whole Austria) is given by Leopold WEBER (1997 and IRIS/ Interaktives Rohstoff-Informationen-System CD-issue 1997ff).

As the symposium in 2005 will be held at Schwaz and will visit even Hall in Tirol some remarks to these old mining localities:

The first knowledge of mining ores in the area of **Schwaz** is proved from the bronze-age. In the beginning the content of copper was the aim of mining, only later, in the 15th and 16th century Schwaz became importance for whole Europe by his content of silver-ores. In this time a 10.000 to 12.000 miners were employed. In the best time (1470 to 1500) 1 million kilograms of silver and 17 million kilograms of copper were obtained. 1530 PARACELSUS visited the mines of Schwaz and developed and improved processing in melting the ore. With the acquisition of the new world and the cheaper metals from overseas the prosperity and climax of this mining area Schwaz became worse. The final closing of working out ores was after world war 2nd, after this time only dolomite was mined by blasting big caverns.

The salt mine **Hall in Tirol**, which became the rights of a town in 1303, was famous and of European importance. At least since the Roman time it was mined there until the closing in 1967. The exploitation of the salt was in the valley north of the town (Halltal), most time the saltwater flew through wooden pipes to the town Hall to generate there the salt for the commerce. Further importance of Hall in Tirol developed from 1477, when the mint of Meran/ South Tyrol was moved to Hall in Northern Tyrol. Until 1809 coins were struck with regularity, since 1975 sometimes the mint is activated again for special issues.

Annotations to the planned programm of the 8th Erde Symposium

The mayor of Schwaz, Dr. Hans Lintner, the local organizing committee and the working group for history of earth sciences in Austria, invites You to Schwaz to attend the 8th *International Symposium: Cultural Heritage in Geosciences, Mining and Metallurgy: Libraries-Archives-Collections* which will be held between 3rd and 7th October 2005.

Location: The lectures might be held in the festivity hall of the town hall, the final decision will be done as soon as the number of participants can be estimated. We might start in the morning of monday 3rd of October

with the opening session. Depending the amount of lectures we will have some excursions and visit remarkable historic sights at and around Schwaz.

Accommodation: A variety of accommodations at Schwaz and nearby are available, a certain amount of rooms is provided by the convent Fiecht (Benediktinerstift Fiecht). Transport from the accommodations arranged by the organizers will be provided.

Registration: A preliminary registration starts at the 7th Symposium in Leiden, the first circular will be distributed in a few month. The second circular will not be sent before the beginning of the year 2005. Those, who have any e-mail address and web-access are requested to use these to save postage-costs. The Registration fee depends on our luck with sponsors; we make efforts to keep prices as low as possible.

The organizers would be obliged if You could pass on information to other people who might be interested in the 8th Erbe Symposium.

The **Tyrolean State Exhibition 2005** (Tiroler Landesausstellung) under the topic "*The future of the nature (Die Zukunft der Natur)*" will be held at the Salzlager Hall in Tirol and at the Alpinarium at Galtuer. The organizer has given us good chances to invite us to a one day bus tour with a special guide to see the exhibition and invite us to a little snack: "*Tiroler Brettljause*" - all on the costs of the exhibition.

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