ORGANISING GEOLOGY FOR DISPLAY THE MUSEUM OF THE SWEDISH GEOLOGICAL SURVEY, 1871-1915

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On 15 May 1871 the Museum of the Swedish Geological Survey (SGU) opened its doors to the general public. The new museum halls in the centre of Stockholm were cleaned and furnished, and minerals, species of rocks, soil types and fossils arranged in systematic orders. A bust of the founder and former director of SGU, Professor Axel Erdmann (1814-1869), was placed in the anteroom, and the high status of the museum confirmed by the presence of representatives of the Swedish government. The geology of Sweden was organised for display and from now on everyone was welcome to witness it for free.

Here, in an historically famous street Mäster Samuelsgatan, the official Swedish Geological Museum was housed for almost a half century. This epoch came to an end in the 1910s, when SGU including its geological collections, was incorporated into the Swedish Museum of Natural History (Naturhistoriska Riksmuseet) in the Frescati district. This geological museum is not, however, very well known either in the current literature of museology or history of science, and the main aim of this essay is to bring it to light, not least as an important part of Swedish nationalistic discourse.¹

I am not primarily interested in deconstructing the collections in themselves, or the scientific research within the museum in detail. Instead, my aim is to provide a more extensive description of the museum in both its historical and cultural contexts. Starting with a discussion of the «New museum idea» I will continue with a summary of the establishment and development of the museum and its collections, from 1867 to 1915, the case of science and education within the museum, and end with a discussion about its relationship to national and international exhibitions in this period.

*THE NATURAL HISTORY
MUSEUM MOVEMENT*

Geological museums, as well as natural history museums, zoological museums and botanical gardens are typical of modern European cultural expression during the nineteenth century.² The samples within these museums were often collected by private natural historians, sometimes connected to county and civic philosophical societies and field clubs. Since a passion for geology (and mineralogy) was quite strong at this time, many collections of stones and minerals were made, especially in Britain. «Geological advance and opportunity, combined with widespread interest in natural history gave birth to the literary and philosophical movement which swept through much of Britain», according to the geological museum curator Simon Knell.³ Results of such work in Sweden could be seen for example in the mineral collections of the Mine Councillor Nils Psilanderhjelm and the natural history collections of Gustaf von Paykull and Adolf Erik Grill (which formed the basis of the Swedish Museum of Natural History, established in 1819).⁴

Economic prosperity related to industrialisation, allowed governments in several countries to support the development of buildings to house these accumulated collections.⁵ During the second half of the nineteenth century, prominent geological museums for the public, staffed by expert researchers, were established in London, Paris, Berlin, Vienna, Zurich and Budapest, to name only the most distinguished.⁶ Several of these were connected to the Geological Survey of each respective country. The Geological Museum of

SGU was almost totally financed by the Swedish government. In addition to this, the museum also received gifts from industry and from generous individuals.⁷

Modern geological museums served many purposes, among which the training of mining engineers, scientific research, and public education and cultivation, are the most obvious. The diverse tasks of the museums are today commonly categorised as «the new museum idea». As several studies have shown, scientific museums, as symbols of rationality and knowledge, power and prestige, were also an important part of the official glorification of the nation.⁸ Museums in Victorian Britain for example, founded in an imperialistic context, exhibited not only objects gathered from Great Britain but as far as possible specimens from the colonies within the Empire. In the Royal Institution and the Museum of the Geological Society of London, for example, the specimens from Britain were subdivided by counties and the foreign ones by countries.⁹ The museums simultaneously expressed an agency of control towards these countries, and proved the cultural power of Britain.¹⁰ Something similar might be said about the Sedgwick Museum in Cambridge and the German museum of colonial science in Hamburg.¹¹

In the case of the Geological Museum of SGU, on the other hand, most of the objects were gathered during SGU's geological surveys, and therefore the objects were almost exclusively collected from localities within Sweden.¹² The official aim was consequently to display the unique geological character of the nation – 'to tell a story about its foundation' – as well as its rich supply of useful and valu-

able natural resources; to integrate fashionable geology into the cultural and national identity of Sweden.¹³ Therefore, it is possible to regard the Geological Museum of SGU as an expression of the nationalist movement in Sweden.¹⁴ The collections had political connotations as I will show in the following.¹⁵

THE ESTABLISHMENT OF THE MUSEUM

The nucleus of the museum collection was already gathered by the end of SGU's first working year, in the summer of 1858. Geological samples were collected by individual geologists who arranged them in specially constructed cabinets inside SGU's small institution at Lilla Nygatan 20 in Stockholm. Later on, these samples were completed with the director Axel Erdmann's private collections of minerals, stones and soil types, which were donated to the 'museum' in the 1860s. From the beginning, SGU also started to collect cube-shaped examples of ornamental stones and other species of rocks.¹⁶ In the opinion of SGU, Sweden was very fortunate in both the diversity and the amount of its beautiful and useful stones, and this favourable situation had to be taken into account. In 1866, 115 different kinds of cube were proudly exhibited at Allmänna Industriutställningen (The General Industry Exhibition) in Stockholm, the first exhibition in which SGU participated.¹⁷ It is easy to understand that SGU's responsibility for industry was in the minds of the geologists from the very beginning; its first aim was to examine and make an inventory of Swedish geology, especially in

order to support agriculture, mining, and similar industries.¹⁸

As the survey developed, the geological collections inside the Geological Bureau (Geologiska byrån), as the institution was usually called, grew rapidly. In 1861, Axel Erdmann wrote to the Minister of Public Administration and described the need for new premises. The campaign continued and two years later the Government approved Erdmann's request and decided to construct a new house at Mäster Samuelsgatan 36 (later renumbered 44). The building was primarily intended to house the Swedish Technical School (Svenska Slöjdföreningens söndags- och aftonskola), a Swedish geological museum, and other exhibitions connected with industry and agriculture. Later on, it was decided that the whole institution of SGU should also be housed there.¹⁹

In the autumn of 1867, SGU moved its activities and collections to its new building. Museum halls and a chemical laboratory were established on the ground floor, and a library, six work rooms, and two offices for the director, on the first floor. The museum was divided into several different sections, whose style changed over time. The main section was the Large Museum Hall, which was thirty metres long, thirteen metres wide and two floors high. It had a balcony gallery along one side and large windows along the other. Initially, there was also one room for the mineral collections, one for storing samples, one for unpacking materials, and one anteroom.²⁰ A grant of 18,000 Swedish crowns was made by the government for equipment and furnishing.

It took a lot of work to organise, label and catalogue the collections, and it was

114 several years before the first exhibition was completely finished. The master of engineering A. Verner Cronqvist was employed as a museum assistant in 1867, but as he was also engaged as a chemist he spent most of his time in the mineralogy laboratory. The director Axel Erdmann, who carried the main responsibility for the museum, unfortunately died in 1869. In order to get the project off the ground, his son Edvard (1840-1923) took on responsibility for the museum's work. He had graduated from the Institute of Technology in Stockholm in 1861 and since then had worked as an assistant geologist at SGU, principally on the survey in the province of Skåne in the south of Sweden.²¹ In 1871, Edvard Erdmann became the curator of the new museum; a position he held until 1910.²²

Like curators in many other natural history museums in Europe and elsewhere at this time, Erdmann had a great deal of responsibility and was independent with regard to the organisation of work inside the museum, despite having to follow general orders from the director. Erdmann tried hard to convey geology to the general public, both through exhibitions and texts. Among other works – for example as the secretary of *Geologiska Föreningens i Stockholm Förhandlingar* (Transactions of the Geological Society of Stockholm) – he published the well-known textbook *Populär geologi* (Popular Geology) in 1874, and wrote most of the articles concerning geology in the first and second editions of the Swedish encyclopaedia, *Nordisk familjebok*.²³ Through his writing, Erdmann made an ambitious effort to spread the honour of both Sweden and the geological research carried out by the

Swedish geologists. Proud to be a civil servant, he was indeed one of the most active spokesmen for the 'Swedish school of geology'. According to C. J. Otto Kjellström, Erdmann only become upset if somebody made fun of his patriotism.²⁴

THE FIRST EXHIBITIONS

The Large Museum Hall was furnished with 38 specially designed cupboards fixed to the walls, much like the national geological museum in Vienna. The idea was that these cupboards should display collections of species of rocks and soil types typical of each of the administrative provinces in Sweden, thereby constituting a Swedish natural landscape in miniature.²⁵ Since SGU started its survey in the middle of Sweden, the first collections that were finished were the administrative provinces of Nyköping, Stockholm, Västerås and Dalsland. Soon the cupboards for Södra Älvsborg, Kristianstad, Malmöhus, Örebro and Uppsala were also full. In one way, these geographical arrangements used the same pedagogical method as Artur Hazelius used when he created the open-air museum Skansen two decades later, displaying the typical cultural heritage of each administrative province in Sweden in different sections.²⁶

In addition to the province cupboards, eleven separate exhibition cases were placed on the floor. Through their glass doors, visitors could inspect different kinds of samples related to geology of the Quaternary Age: soil deposits, bog iron ore, molluscs, vertebrates, etc.²⁷ Most distinguished of all the specimens was a single fossilised insect wing found on Gotland. Together with a scorpion kept at

*The Geological Museum in 1874. Interior showing the east gallery (The Large Museum Hall).
Ny Illustrerad Tidning 1874.*

the Natural History Museum, this was considered to be part of the oldest terrestrial species known at this time in the world.²⁸ In addition, some pillars and pyramids made of the cube-shaped examples of ornamental stones and other types of rocks, stood on the floor; an exhibit which gave an almost 'ancient' impression. It also became an aim of the museum to display other aspects of scientific geology, particularly the results of different kinds of geological processes, such as earth weathering, folding, pressing, and other

phenomena. In 1876 some exhibition cases were set up specifically for that purpose.²⁹

It is interesting to note that the Geological Museum always contained both artificialia and naturalia, that is both geological objects and geological artefacts. Therefore there were not only old 'historical objects' but also modern objects. A special collection of samples connected with Swedish industry and 'practical geology' was displayed for several years in one of the smaller rooms. This collection of

- 116 metals, bricks, pottery, cement, glass, porcelain, pit-coal, peat, fertilisers, etc. was created in co-operation with about 40 owners of Swedish factories, metal works and quarries.³⁰ In addition, a separate exhibit containing an ore-collection from the ore-fields in Sweden was established in the middle of the 1870s at the request of the new director of SGU, the polar traveller and quaternary geologist Otto Torell (1828-1900).

THE DEVELOPMENT OF THE MUSEUM

Extensive rebuilding of the museum was carried out between 1879 and 1880, during which some of the installations were changed. The restoration was finished on 9 April 1880 when the museum was officially opened in the presence of the king of Sweden, Oscar II. Later a portrait of the King hung in the museum as a memorial to this occasion.³¹

The exhibitions were, however, constantly changing as the collection increased. Thousands of new samples were brought to the museum each year; in 1883 they numbered approximately 100,000 in total, in 1898, 140,000 and in 1910 more than 200,000. At the end of the 1870s, Erdmann started to sort out samples which did not necessarily have to be displayed in the museum. These samples were put in boxes and stored in the basement. In 1893, SGU had 393 such boxes and in 1898 almost 1,000.³² Samples associated with petrography and palaeontology formed the biggest collections. The steady influx of specimens was due both to the increase in the number of geologists and the extension of the railway

network throughout Sweden.

From Edvard Erdmann's humorous text *Geologiska brottstycken: Tillfällighetens skämt* (Geological Fragments: Accidental Occurrences), signed by the pseudonym «En Elak» (An Evil One), it is possible to imagine the curator's problematic situation in the museum.³³ One picture with the caption «Museiföreståndarens kritiska belägenhet» (The curator's critical situation) shows Erdmann himself standing scratching his head in the middle of piles of storage boxes. In the text below the picture, the author explains that the museum is receiving far too many samples, and hopes that at least some trains are going to be cancelled. «In deep cellar-vaults, such an amount of material is stored, that one is tempted to believe that 'stones are growing'».³⁴

In the 1890s, the exhibition of the administrative provinces was finally 'completed' with Småland, Dalarna, Gotland and Öland, and the provinces in the North of Sweden too. In addition eighteen oil-paintings depicting geologically important landscapes were donated to the museum. These were painted by the artists Artur Bianchi, Fritz Lindström and Björn Ahlgrensson, and funded by one of SGU's employees (probably Erdmann himself).³⁵ Some of the paintings, which were usually painted from photographs, were very large, some more than three metres in length. The island Gotska Sandön, the Omberg region, the mining district Kirunavaara, and the mountains Åreskutan and Sulitelma were among the motifs.

At the turn of the century, the museum became a little more open to international circumstances. In the interests of the Swedish chemical-geological industry,

PLAN ÖFVER SVERIGES GEOLOGISKA UNDERSÖKNINGS MUSEUM 1874.

Se Förklaring å följ. blad.

Förklaring till tav. 1. — Sveriges Geologiska Undersöknings Museum 1874.

Stora Museisalen: 1—26, Höga, väggfasta skåp med glastäckta överdelar, för länssamlingar (se fig. 1). Följande äro ordnade: 3 och 4 Nyköpings län; 5, Stockholms län; 6 och 7, Västerås län; 14 och 15, Dalsland, såväl urbergets som Dalformationens bergarter; 21, 22 och 23 Kristianstads och Malmöhus län (urberg, kambriumsilur, trias, jura och krita); 26, Kambriumsilur från Öster- och Västergötland, Närke, Dalarna och Norrland. — 1—11, fristående, glastäckta, dubbelsidiga bordsmonter innehållande: 1, berg- och jordarter från egendomarna Tosterup i Skåne och Skottorp i Halland, utgörande illustration till de däröfver upprättade geologiska och agronomiska kartorna; 2, samling av torv från olika landskap; 3, svåmlera, svåmsand, gyttna, snäckgyttja m. m.; 4, och 5, moränbildningar, glacialer, postglacialer, mosand m. m.; 6, samling av konkretioner (marlekor m. m.); 7, molusker från Sveriges glaciala och postglaciala avlagringar; 8, detaljsamling av grus och sand från rullstensåsar i Örebro och Nyköpings län samt diluvillera och d. sand från Skånes västkust; 9, lämningar av vertebrater från svenska glaciala och postglaciala bildningar samt samling av arktiska växter insamlade i Skåne, Mecklenburg, Bayern, Schweiz och England av A. G. NATHORST; 10, svenska sjö- och myrmalmer; 11, provstycken visande böjda lager, diskordant skiktning, gångar, ådror, förkylfning m. m. —

m, m, tvenne pyramidformade monter med malmstuffer; *P* två, omkring 3 meter höga fyrkantiga pelare, uppbbyggda av 176 huggna, delvis polerade kuber av svenska byggnads- och prydnadsbergarter; *p*, två mindre piedestaler uppbärande praktstycken av respektive skiktad järnmalm från Stribergs gruva och järnmalmshreccia från Norbergs malmfält.

Framför pelarna mellan de väggfasta skåpen äro större praktstuffer uppställda, nämligen orstensboll, linsformig, 60 cm. i diameter, från Hunneberg; bollar av orstenskalk, svavelkis m. m. ur alunskiffer vid flera lokaler; sandsten med böljsslagsmärken; urkalksten med böjt lager av hälleflinta; konglomerat med transversal skiktning; granit med inneslutna kantiga stycken av gneis; granatgneis med granater av 5—7 cm. storlek; konglomerat från Dalsland; kalktuff från Skåne; silverhaltig blyglans från Sala gruva; myrnmalm, 60 cm. stort stycke, från Småland, m. m. m. m.

I den smala avdelningen vid museisalens södra del: *S*, förstenad trädstam (harrträd) från Höganäs stenkolsgruva, nära 5 m. lång; *gl*, glaciärrepade berghällar och jökulstenar; på bänk till höger diverse större bergartsprov. Inom den motsatta, borte avdelningen äro placerade de gamla stuffskåpen, *st*, till förvaring av prov från under arbete varande kartblad.

Försalen: *a*, hyllformad ställning uppbärande olika slag av svenska leror jämte därav tillverkade produkter, såsom eldfast tegel, golvplattor, husgerädskärl m. m. av eldfast lera; vitglaserat kakel, dräneringsrör, mur- och taktegel, krukmakaregods m. m. samt prov visande brottytan hos tegel av olika sorter lera. — *b*, hyllformad ställning med koppar-, järn- och blymalmer jämte därav framställda metaller och hyttprodukter. — *c* och *d*, på konsoler vilande mindre fönstermonter, vari följande råämnen och produkter: färgat och ofärgat glas jämte råämnen; portlandcement jämte råämnena därtill; alunskiffer och därav beredd rödfärg, alun, järnvitriol och svavelsyra; urkalksten och silurisk kalksten med därav bränd kalk; provstycken av porfyr m. m. samt smärre slipade och polerade prydnads- och hushållsföremål därav. — *e*, piedestal av finhuggen grå Stockholmsgranit, varå byst av Pro-

Plan of 'The Large Museum Hall' drawn by Edvard Erdmann in 1874. It has 26 high wall cabinets and 11 freestanding low exhibition cases.

118 samples related to this field were gathered from factories in North America, Germany, England, Russia, France, Belgium and Holland. A large collection of boulders from Denmark, Germany, Holland and England was displayed as well.³⁶ It should also be noted that some of the oil-paintings which were bought to the museum represented non-Swedish motifs, for example, the famous volcano Vesuvius. However, in the exhibitions of 'pure geology', almost all the material was from Sweden.

In 1897, the geologist Alfred Elis Törnebohm (1838-1911) became the new director of SGU, and like the former directors, he wanted to leave his mark on the museum. In Törnebohm's view, the museum was too traditional and needed to have a more modern, advanced and scientific approach. Therefore, many of the exhibitions related to practical geology and industry were removed and replaced with several new exhibition cases, showing examples of different geological phenomena, principally connected with Törnebohm's own area of research: dynamic geology. In addition, geological maps, profiles and other scientific pictures were put on the walls to display geological processes.³⁷ It should, however, be mentioned that when Johan Gunnar Andersson (1874-1960) became the next director in 1906, he decided that the museum should exhibit industrial samples, and such an exhibition was once again constructed.

Thus, the four permanent directors of SGU – Erdmann, Torell, Törnebohm and Andersson – had a significant influence on the character of the museum, just as the contemporary context influenced them. The museum always expressed a fusion of

Swedish academic science and scientific practice, but there were debates about whether the main focus should be theoretical scientific geology or practical geology connected with industry. As the historian of science and ideas Ulf Lindberg has discussed, this situation was not unique to the museum but applied to SGU's activity as a whole during this period.³⁸ Similar controversies concerning the exhibitions were also common in other geological museums, for example, in the Museum of Practical Geology in London, in the Ecole des Mines in Paris, and in the Mining School in Freiberg.³⁹

SCIENCE AND EDUCATION

What then was the scientific role of the museum in geological discourse? One of the most obvious purposes of geological museums, in addition to other natural history museums, was to offer a space where objects and information could be gathered and analysed. According to the anthropologist of science Bruno Latour, these spaces, which he names «centres of calculation», were important nodes in the research processes – the «cycles of accumulation».⁴⁰ Such cycles were in short, a way of becoming familiar with things which are distant: (1) scientists were sent away on field-work and expeditions, (2) they made measurements, wrote in travel books and gathered objects, (3) these «immutable and combinable mobiles» were brought back to the centre, where specimens, maps, diagrams, logs, books, etc. were formed in «centres inside the centre», (4) scientists then went away again and more elements were gathered in the centre, and so on.⁴¹

Inside the geological museum, research

was carried out in order to compare and contrast the collected specimens so as to distinguish the details that divide one object from another. Through this work, geologists tried to identify and classify, to organise the materials into representative collections, according to the traditional method of natural history. The Museum, or more precisely Edvard Erdmann, had always to be prepared to supply the geologists with concrete information and to show reference material from all over Sweden whenever it was needed for research.⁴² Thus, the purpose of the collections was not only the accumulation of samples, but, by the selection of samples to provide examples, and to complete a set. Collecting related to taxonomy was intended to be the scientific method, «a process which is clearly circular and self-supporting», in the view of Susan M. Pearce.⁴³

This museological work contributed to a new view of the historical past (in a geological sense) and an interpretation of the materials that had been created through this process. There were also ideas that this material from nature, by the application of modern «scientific» principles, could be improved and then better used in industry. Thus, there were strong connections between theory and practice within the museum; it was both a science museum and a museum of science; it was a space where geological knowledge was expanded, codified and objectified.

For general education, the geological museum was open to visitors each Monday and Thursday between 1 and 3 p.m. and hence provided a contact between geology and the public. SGU did not charge an entrance fee, and to help visitors

Erdmann wrote a small guide book entitled *Kort vägledning i Sveriges Geologiska Undersöknings Museum* (A Brief Guide for the Geological Museum of the Swedish Geological Survey) which contained both information about SGU and the different collections, and an illustration of the museum as well.⁴⁴ Looking at the painting of the museum from 1874 that was published in Erdmann's booklet *Sveriges geologiska undersöknings museum* (1916) (The Museum of the Geological Survey of Sweden) one may believe that the exhibitions were popular and crowded. But, in reality the number of visitors seemed to have been very small, according to Erdmann, less than ten per day.⁴⁵ Presumably, there was a general idea of an educational project, to teach and to socialise the visitors and make them participate in the bourgeois order.⁴⁶ But like today – for example, in the Natural History Museum of Sweden – it seems likely that most of the visitors were children and students from different schools, particularly from Stockholm and Uppsala.

According to Anders Damberg, the former SGU archivist, there were also some environmental difficulties within the building, which obviously made the museum less attractive and fashionable. Since part of the building lay below ground level, some of the walls were damaged by damp. In addition to the smell of mould, the premises often stank of urine since people used to urinate outside the building. Thirdly, it was often very cold inside. The heating was only on in the morning, and therefore the temperature usually dropped five degrees or more in the afternoon when the museum was open.⁴⁷ The building itself also appeared to have defects.

The display presented in the World Exhibition of Vienna in 1873.

As the geologist Gerard De Geer explains, some formation of cracks and other «geological structures» on the walls were sometimes more complicated than the «real geology» outside the building.⁴⁸

Nevertheless, SGU and its museum facilitated geological education in many other ways, in addition to the various exhibitions. From all the duplicates of samples that the museum acquired, Erdmann made smaller sets of stone, soil and fossil collections, that were sent to other scientific institutions, secondary schools and adult education centres⁴⁹, both in Sweden and abroad. Since these collections became quite popular, the museum duplicates were soon exhausted. In 1907 SGU was granted extra money by the King, and was

therefore able to continue this activity.⁵⁰ Furthermore, the museum lent samples as well as maps to different institutions and also responded to inquiries regarding geology from the general public. The museum received on average more than one hundred inquiries each year.

NATIONAL AND INTERNATIONAL EXHIBITIONS

The development of institutions such as the Geological Museum of SGU may also be understood in the spirit of the great temporary international exhibitions between 1851 and 1939. The aim of these exhibitions was, as is well-known, to stimulate trade, industry and good practice

in craft and design. Principal features of the ideology were optimistic, modernistic visions of progress, faith in technological rationality and the importance of commerce and international competition in science, technology and industry.⁵¹ Of course, they were also shaped by, as they shaped, the nationalist movement.⁵²

In order to spread the glory of Sweden and its geology, SGU participated in exhibitions in London in 1862, Dublin in 1865, Paris in 1867, Vienna in 1873, Philadelphia in 1876, Paris in 1878, Chicago in 1893 and Paris in 1900, and in fact won many distinguished prizes. In addition, from 1862 until 1915, SGU also participated in twelve international exhibitions for industry, agriculture and geology and eleven national exhibitions for industry and agriculture.⁵³ Even if many of SGU's exhibitions looked similar, SGU and Erdmann in particular worked hard to adjust to the local circumstances and always tried to describe the most recent research results that had been carried out by Swedish geologists.⁵⁴

Among those exhibitions, SGU was particularly well represented in Vienna, Philadelphia, Paris and Chicago. But the most impressive exhibition by SGU during this period – if we are to believe Erdmann – was beyond doubt the «Exhibition of the Swedish Geological Survey» at the Skandinaviska konst- och industriutställningen (The Scandinavian Art and Industry Exhibition) in Stockholm in 1897.⁵⁵ To this event SGU was specially invited by the Royal Ministry of Public Administration, and through a letter from Otto Torell to the director of the Ministry, SGU was given funding to display an extended exhibition.

In this letter, Torell rhetorically described the scientific and industrial importance of geology and complained about the fact that knowledge in this research field was still too poor among the general public. Therefore, it was of great significance that SGU had the opportunity to set up an impressive exhibition.⁵⁶ SGU was given a fifty square metre rectangular room at Djurgården, which contained different kinds of geological collections as well as all SGU's maps and several hundred geological books and dissertations. As much as possible was done to interest and inspire the visitors, and to encourage a sympathetic view of geological research and Swedish nature.

The great 11th International Geological Congress in 1910, which was arranged by the Geological Society of Stockholm and held in Stockholm, should also be mentioned in this context. During this meeting – which is considered to be one of the most important events in the Swedish history of geology – famous geologists from all over the world were invited to see the museum. For this event, the museum was «festively dressed» and showed as far as possible the «fantastic Swedish geology» and the high standard of geological research, which had been carried out by Swedish geologists. A new museum guide was also printed.⁵⁷ As Erdmann proudly stated, the museum with its collections, maps and scientific literature did indeed give an impression of «completeness and realised orderliness».⁵⁸

In 1910, geology was one of the most celebrated sciences in Sweden, not least because of its connection with the polar expeditions and the results within quaternary geology, notably the 'discovery' of the marvellous ice-age.⁵⁹ On the one hand it

A view of the second gallery in 1915 with products from the stone industry.

served industry, on the other it fitted the nationalistic atmosphere. However public as well as scientific interest declined slowly but surely, and it could be said that the big Congress was the beginning of the end of SGU's participation in large exhibitions. Apart from its anniversary celebration in Göteborg in 1923, SGU's extended official exhibition activities have since then been very sparse.⁶⁰

CONCLUDING REMARKS

From its founding in 1871 until 1915, the Geological Museum of SGU served many interests. As I have suggested, the museum played an important role in the institutionalisation of geology in Sweden during the second half of the nineteenth century. It was *the* place where geological samples from the extended geological surveys were gathered, analysed and documented. It can be characterised, in the words of Latour, as a «centre of calculation». It is

clear that this centre was regarded as playing an important role both in the industrialisation process and the development of theoretical geology. But, the museum and its exhibitions should also be analysed as part of a wider natural history museum movement at the end of the nineteenth century; a movement in which public

education and glorification of the nation were significant tasks. In this context, the establishment and development of the geological museum – as with other museums in Sweden during this time – was also a part of the Swedish nationalist movement.

In 1900, SGU had to rent some external

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The Large Museum Hall, interior view in 1915.

124 premises to house its constantly growing collections. But as this space problem increased, SGU started to plan for a totally new building. The aim was to get its own building, but when this plan failed, it was decided in 1905 that SGU should be incorporated into the new expanding Swedish Museum of Natural History (much like the Museum of the Geological Society of London became part of the British Museum) and become a part of the growing scientific landscape *Frescati*.⁶¹ The reconstruction of the museum began in 1907 and was completed in 1915, when an area of 1,400 square metres was granted to SGU.⁶² A new epoch in the history of the Geological Museum of SGU began, but this history lies beyond the scope of this essay.

It should finally be mentioned that the Geological Museum no longer exists. When SGU celebrated its 125th anniversary in 1983, optimistic plans for a rebuilding of the museum halls were presented and discussed.⁶³ But instead of a renaissance for the geological exhibition in Sweden, the entire geological museum was closed by the Swedish Minister of Culture, Bengt Göransson, a year later.⁶⁴ Nevertheless, it appears that the idea of displaying geology is still alive in Sweden, since plans to create a new geological museum (within the same building as before, the Natural History Museum) are now in fact being prepared. Perhaps it will be possible to visit this new museum in 2008, when SGU celebrates its 150th anniversary?

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NOTES

1. Historians of geology have drawn extensively on the written and graphic sources, but according to Miklós Kázmér there are still few comprehensive studies deriving information from museum collections. Miklós Kázmér, «Carpathian Minerals in the Eighteenth-century Woodwardian Collection at Cambridge», *Journal of the History of Collections* 10:2 (1998), p. 159.
2. Susan M. Pearce, *Museums, Objects and Collections: A Cultural Study* (Leicester, 1992), p. 2; Dorinda Outram, «New spaces in natural history», in *Cultures of Natural History*, eds. Nicholas Jardine, James A. Secord & Emma C. Spary (Cambridge, 1996), p. 250.
3. Simon Knell, «The Roller-Coaster of Museum Geology», in *Exploring Science in Museums*, ed. Susan Pearce (London, 1996), p. 31.
4. Gunnar Broberg, «The Swedish Museum of Natural History», in *Science in Sweden: The Royal Swedish Academy of Sciences 1739-1989*, ed. Tore Frängsmyr (Canton, 1989), pp. 150-151.
5. Susan M. Pearce, *On Collecting: An Investigation into Collecting in the European Tradition* (London, 1995), p. 132.
6. Edvard Erdmann, «Geologiska museer», *Nordisk familjebok: Konversationslexikon och realencyklopedi* 9 (Stockholm, 1908), p. 981.
7. Except for the Geological Museum of SGU, smaller geological museums were also established in Uppsala and Lund in co-operation with the universities, and at the Technical school in Kristianstad as well. See for example Karl A. Grönwall, «Tekniska skolans i Kristianstad Handels- och industrimuseum», *Geologiska Föreningens i Stockholm Förhandlingar* 33 (Stockholm, 1911). Mineralogical collections have been housed in the Swedish Museum of Natural History since 1819.
8. See, for example, Susan Sheets-Pyenson, *Cathedrals of Science: The Development of Colonial Natural History Museums during the Late Nineteenth Century* (Kingston, 1988), pp. 3-23.
9. D.T. Moore, J.C. Thackray & D.L. Morgan, «A short history of the Museum of the Geological Society of London, 1807-1911, with a catalogue of the British and Irish accessions, and notes on surviving collections», *Bulletin of the British Museum (Natural History)*, Hist. Ser. 19:1 (1991), p. 54.
10. On natural history and imperialism, see for example Lucile H. Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens* (New York, 1979); *Imperialism and the Natural World*, ed. John M. MacKenzie (Manchester, 1990); *Scientific Colonialism: A Cross-Cultural Comparison*, eds. Nathan Reingold & Marc Rothenberg (Washington DC, 1987).
11. David Price, «John Woodward and a Surviving British Geological Collection from the Early Eighteenth Century», *Journal of the History of Collections* 1 (1989).
12. Erdmann, «Geologiska museer», p. 981.
13. *Ibid.*, p. 980. On the relationship between museums and the creating of cultural heritage, see for example, *Museums and the Making of «Ourselves»: The Role of Objects in National Identity*, ed. Flora E.S. Kaplan (London, 1994).
14. On the relation between science and nationalism in Scandinavia, see for example Elisabeth Crawford, *Nationalism and Internationalism in Science, 1880-1939: Four Studies of the Nobel Population* (Cambridge, 1992), pp. 36-37.
15. Regarding museum, objects and politics, see for example, Langdon Winner, «Do Artifacts Have Politics?», *Daedalus* 109 (1980), pp. 121-136.
16. Edvard Erdmann, *Sveriges geologiska undersöknings museum: Dess första anläggning, samt tillväxt, innehåll och utseende m.m. före flyttningen*

- 126 *till Frescati 1915*, SGU serie C 265, Årsbok 9 (Stockholm, 1916), p. 2.
17. Edvard Erdmann, *Sveriges Geologiska Undersöknings Utställning vid Allmänna Konst- och Industri-utställningen i Stockholm 1897: Jemte meddelanden om institutionens verksamhet, landets geologiska beskaffenhet och tillgångar af malmer, användbara berg- och jordarter m.m.*, SGU serie C 174 (Stockholm, 1897), pp. 40-41.
 18. Gunnar Eriksson, *Kartläggarna: Naturvetenskapens tillväxt och tillämpningar i det industriella genombrottets Sverige 1870-1914*, Acta universitatis umensis, Umeå Studies in the Humanities 15 (Umeå, 1978), p. 44.
 19. Anders Damberg, «SGUs lokaler före Frescatitiden: Det började vid Kornhamstorg i Gamla stan», *SGU information: Personaltidning för Sveriges Geologiska Undersökning* 1 (1991), p. 13.
 20. Erdmann, *Sveriges geologiska undersöknings museum*, pp. 3-4.
 21. Edvard Erdmann, *Sveriges geologiska undersöknings första halfsekel: Minnesord och anteckningar af Edvard Erdmann* (Stockholm, 1908), p. 16.
 22. Erdmann, *Sveriges geologiska undersöknings museum*, p. 5. During the first decade Erdmann participated in the geological survey at the same time as he was curator. From the middle of the 1880s his main work was inside the museum.
 23. Edvard Erdmann, *Populär geologi (jemte mineralogi): En framställning af jordytans sammansättning, bildning och fortfarande omgestaltning, med afseende särskildt fäst vid svenska förhållanden* (Stockholm, 1874).
 24. C. J. Otto Kjellström, «Har någon sett E.E. ond? Det är nog icke många, som kunna säga det, men jag kan det», in *En elak bok: Tillägnad en snäll sjuttioåring 31 oktober 1910* (Stockholm, 1910), p. 35. Kjellström wrote a poem about this: «Du tålde ej att höra känslan gäckas, För gamla Sverige, ty då blef Du vred; Den borde, tyckte Du, i stället väckas, Då skulle ej så mycket gå på sned. En tanke gick då upp för mig, Du ädle, store själ! Nu vet jag hur det kommer sig, Att Du gör allt så väl. Af kärlek ond jag fick dig se, Med kärlek sköter du ditt kall. Det varma hjärtat aldrig skall, Förneka sig hos E.»
 25. Erdmann, *Sveriges geologiska undersöknings museum*, pp. 4-5.
 26. On Skansen, see for example *Skansen under hundra år*, ed. Arne Biörnstad (Höganäs, 1991). See also Sverker Sörlin, «Att skapa traditioner som aldrig öfvergifvas»: Arthur Hazelius och det nationella arvet under 1800-talet», in *Att forma bilden av den svunna tid: Nordiska museet i den svenska kulturhistorien: En bok om Nordiska museet under 125 år*, eds. Elisabeth Hidemark & Bengt Nyström (Stockholm, 1998), pp. 15-37.
 27. Erdmann, *Sveriges geologiska undersöknings museum*, p. 6.
 28. *Ibid.*, pp. 19-20.
 29. *Ibid.*, pp. 8-9.
 30. *Ibid.*, p. 6.
 31. Edvard Erdmann, *Sveriges Geologiska Undersöknings Museum: Innehåll och planteckning* (Stockholm, 1908), p. 4.
 32. Erdmann, *Sveriges geologiska undersöknings museum*, p. 13.
 33. Edvard Erdmann («En Elak»), *Geologiska brottstycken: Tillfällighetens skämt* (1896).
 34. *Ibid.*, p. 12.
 35. Erdmann, *Sveriges geologiska undersöknings museum*, 15. Later on, SGU bought four more paintings by some other artists. It seems that the generous employee was Edvard Erdmann himself, see for example Gerard De Geer, «E.E.», in *En elak bok: Tillägnad en snäll sjuttioåring 31 oktober 1910* (Stockholm, 1910), p. 39.
 36. Erdmann, *Sveriges geologiska undersöknings museum*, pp. 14-15.
 37. *Ibid.*, p. 16.
 38. Ulf Lindberg, *Geologi som kartläggning: Kring tillkomsten av Sveriges Geologiska Undersökning*, Institutionen för idéhistoria, Umeå universitet (1996), p. 22.

39. See for example H. E. Wilson, *Down to Earth: One Hundred and Fifty Years of the British Geological Survey* (Edinburgh, 1985); Philip S. Doughty, «Museums and Geology», in *Exploring Science in Museums*, ed. Susan Pearce (London, 1996).
40. Bruno, Latour, *Science in Action: How to follow scientists and engineers through society* (1987), 6th printing (Cambridge, 1994), p. 232.
41. *Ibid.*, pp. 215-237.
42. Erdmann, *Sveriges geologiska undersöknings museum*, p. 19.
43. Pearce, Museums, *Objects and Collections*, p. 85.
44. Edvard Erdmann, *Kort vägledning i Sveriges Geologiska Undersöknings Museum* (1874). The guide book was also available in French, *Petit guide au Musée du Lever géologique de la Suède*.
45. Erdmann, *Sveriges geologiska undersöknings museum*, p. 31.
46. Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London, 1995), pp. 1-13.
47. Damberg, «SGUs lokaler före Frescatitiden», p. 13.
48. De Geer, «E.E.», p. 38.
49. In Swedish: folkhögskolor.
50. Erdmann, *Sveriges geologiska undersöknings museum*, pp. 21-23.
51. Anders Ekström, *Den utställda världen: Stockholmsutställningen 1897 och 1800-talets världsutställningar*, Nordiska museets Handlingar 119 (Stockholm, 1994), pp. 22-61.
52. Pearce, *On Collecting*, p. 135; Eric J. Hobsbaw, *Nationer och nationalism* (1990), Swedish transl. (Stockholm, 1994), pp. 133-170.
53. Erdmann, *Sveriges geologiska undersöknings museum*, pp. 24-25.
54. Erdmann, *Sveriges Geologiska Undersöknings Utställning vid Allmänna Konst- och Industriutställningen i Stockholm 1897*, p. 4; Edvard Erdmann, «Kort redogörelse för Sveriges Geologiska Undersöknings utställning af kartor m.m. vid Nordiska industri- och slöjdutställningen i Malmö 1898», Guide paper (Stockholm, 1898). Erdmann had the responsibility for SGU's exhibitions at all these exhibitions.
55. About this exhibition, see Ekström, *Den utställda världen*, pp. 106-202.
56. Erdmann, *Sveriges Geologiska Undersöknings Utställning vid Allmänna Konst- och Industriutställningen i Stockholm 1897*, pp. 3-4.
57. Erdmann, *Sveriges Geologiska Undersöknings Museum: Innehåll och planteckning*.
58. Erdmann, *Sveriges geologiska undersöknings museum*, p. 17.
59. Urban Wråkberg, *Vetenskapens vikingatåg: Perspektiv på svensk polarforskning 1860-1930*, Institutionen för idé- och lärdomshistoria, Uppsala universitet, skrifter nr 12 (Uppsala, 1995).
60. Anders Damberg, «From LONDON 1862 till 'UR TIDEN'», *SGU information: Personaltidning för Sveriges Geologiska Undersökning* 2 (1989), p. 14. On the exhibition in Göteborg 1923, see for example *Kunskapsarv och museum: Rapport från museidagarna 1995 och 1996 i Umeå*, eds. Bengt Lundberg & Per Råberg, Idéhistoriska skrifter 21, Institutionen för idéhistoria, Umeå universitet (Umeå, 1997), part II.
61. On the Swedish Natural History Museum, see *Naturen berättar: Utveckling och forskning vid Naturhistoriska riksmuseet*, ed. Kjell Engström (Stockholm, 1989).
62. Damberg, «SGUs lokaler före Frescatitiden», p. 14.
63. By that time SGU owned approximately three million samples.
64. Sven Laufeld, «Geologiska undersökningens museum upphör», *SGU information: Personaltidning för Sveriges Geologiska Undersökning* 6 (1984).

BIBLIOGRAPHY

- Bennett, Tony, *The Birth of the Museum: History, Theory, Politics* (London, 1995).
- Broberg, Gunnar, «The Swedish Museum of Natural History», in *Science in Sweden: The Royal Swedish Academy of Sciences 1739-1989*, ed. Tore Frängsmyr (Canton, 1989).
- Brockway, Lucile H., *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens* (New York, 1979).
- Crawford, Elisabeth, *Nationalism and Internationalism in Science, 1880-1939: Four Studies of the Nobel Population* (Cambridge, 1992).
- Damberg, Anders, «Statens geologiska undersökningar», *SGU information: Personaltidning för Sveriges Geologiska Undersökning* 9 (1985).
- , «From LONDON 1862 till 'UR TIDEN'», *SGU information: Personaltidning för Sveriges Geologiska Undersökning* 2 (1989).
- , «SGUs lokaler före Frescatitiden: Det började vid Kornhamstorg i Gamla stan», *SGU information: Personaltidning för Sveriges Geologiska Undersökning* 1 (1991).
- De Geer, Gerard, «E.E.», in *En elak bok: Tillägnad en snäll juttioäring 31 oktober 1910* (Stockholm, 1910).
- Doughty, Philip S., «Museums and Geology», in *Exploring Science in Museums*, ed. Susan M. Pearce (London, 1996).
- Ekström, Anders, *Den utställda världen: Stockholmsutställningen 1897 och 1800-talets världsutställningar*, Nordiska museets Handlingar 119 (Stockholm, 1994).
- Naturen berättar: Utveckling och forskning vid Naturhistoriska riksmuseet*, ed. Kjell Engström (Stockholm, 1989).
- Erdmann, Edvard, *Kort vägledning i Sveriges Geologiska Undersöknings Museum* (Stockholm, 1874).
- , *Populär geologi (jemte mineralogi): En framställning af jordytans sammansättning, bildning och fortfarande omgestaltung, med afseende särskildt fästet vid svenska förhållanden* (Stockholm, 1874).
- , («En Elak»), *Geologiska brottstycken: Tillfällighetens skämt* (1896).
- , *Kort redogörelse för Sveriges Geologiska Undersöknings utställning af kartor m.m. vid Nordiska industri- och slöjduitställningen i Malmö 1898* (Stockholm, 1898).
- , *Sveriges Geologiska Undersöknings Utställning vid Allmänna Konst- och Industri-utställningen i Stockholm 1897: Jemte meddelanden om institutionens verksamhet, landets geologiska beskaffenhet och tillgångar af malmer, användbara berg- och jordarter m.m.*, SGU serie C 174 (Stockholm, 1897).
- , *Sveriges geologiska undersöknings första halfsekel: Minnesord och anteckningar af Edvard Erdmann* (Stockholm, 1908).
- , «Geologiska museer», *Nordisk familjebok: Konversationslexikon och realencyklopedi* 9 (Stockholm, 1908).
- , *Sveriges Geologiska Undersöknings Museum: Innehåll och planteckning* (Stockholm, 1908).
- , *Sveriges geologiska undersöknings museum: Dess första anläggning, samt tillväxt, innehåll och utseende m.m. före flyttningen till Frescati 1915*, SGU serie C 265, Årsbok 9 (Stockholm, 1916).
- Eriksson, Gunnar, *Kartläggarna: Naturvetenskapens tillväxt och tillämpningar i det industriella genombröttets Sverige 1870-1914*, Acta universitatis umensis, Umeå Studies in the Humanities 15 (Umeå, 1978).
- Grönwall, Karl A., «Tekniska skolans i Kristianstad Handels- och industrimuseum», *Geologiska Föreningens i Stockholm Förhandlingar* 33 (Stockholm, 1911).
- Hobsbawm, Eric J., *Nationer och nationalism* (1990), Swedish transl. (Stockholm, 1994).
- Imperialism and the Natural World*, ed. John M. MacKenzie (Manchester, 1990).

- Kázmér, Miklós, «Carpathian Minerals in the Eighteenth-century Woodwardian Collection at Cambridge», *Journal of the History of Collections* 10:2 (1998).
- Kjellström, C. J. Otto, «Har någon sett E.E. ond? Det är nog icke många, som kunna säga det, men jag kan det», in *En elak bok: Tillägnad en snäll sjuttioåring 31 oktober 1910* (Stockholm, 1910).
- Knell, Simon, «The Roller-Coaster of Museum Geology», in *Exploring Science in Museums*, ed. Susan M. Pearce (London, 1996).
- Kunskapsarv och museum: Rapport från museidagarna 1995 och 1996 i Umeå*, eds. Bengt Lundberg & Per Råberg, Idéhistoriska skrifter 21, Institutionen för idéhistoria, Umeå universitet (Umeå, 1997).
- Latour, Bruno, *Science in Action: How to follow scientists and engineers through society* (1987), 6th printing (Cambridge, Massachusetts, 1994).
- Laufeld, Sven, «Geologiska undersökningens museum upphör», *SGU information: Personaltidning för Sveriges Geologiska Undersökning* 6 (1984).
- Lindberg, Ulf, *Geologi som kartläggning: Kring tillkomsten av Sveriges Geologiska Undersökning*, D-uppsats, Institutionen för idéhistoria, Umeå universitet (1996).
- Moore, D.T., Thackray, J.C. & Morgan, D.L., «A short history of the Museum of the Geological Society of London, 1807-1911, with a catalogue of the British and Irish accessions, and notes on surviving collections», *Bulletin of the British Museum* (Natural History), Hist. Ser. 19:1 (1991).
- Museums and the Making of «Ourselves»: The Role of Objects in National Identity*, ed. Flora E.S. Kaplan (London, 1994).
- Nordlund, Christer, «Surveying Sweden: The early organization of the Geological Society of Stockholm», in *Science Unbound: Geography, Space and Discipline*, ed. Brian P. Dolan, Idéhistoriska skrifter 24 (Umeå, 1998).
- Outram, Dorinda, «New spaces in natural history», in *Cultures of Natural History*, eds. Nicholas Jardine, James A. Secord & Emma C. Spary (Cambridge, 1996).
- Pearce, Susan M., *Museums, Objects and Collections: A Cultural Study* (Leicester, 1992).
- , *On Collecting: An Investigation into Collecting in the European Tradition* (London, 1995).
- Price, David, «John Woodward and a Surviving British Geological Collection from the Early Eighteenth Century», *Journal of the History of Collections* 1 (1989).
- Scientific Colonialism: A Cross-Cultural Comparison*, eds. Nathan Reingold & Marc Rothenberg (Washington DC, 1987).
- Sheets-Pyenson, Susan, *Cathedrals of Science: The Development of Colonial Natural History Museums during the Late Nineteenth Century* (Kingston, 1988).
- Skansen under hundra år*, ed. Arne Björnstad (Höganäs, 1991).
- Sörlin, Sverker, «Att skapa traditioner som aldrig öfvergifvas»: Arthur Hazelius och det nationella arvet under 1800-talet», in *Att forma bilden av den svunna tid: Nordiska museet i den svenska kulturhistorien: En bok om Nordiska museet under 125 år*, eds. Elisabeth Hidemark & Bengt Nyström (Stockholm, 1998).
- Wilson, H. E., *Down to Earth: One Hundred and Fifty Years of the British Geological Survey* (Edinburgh, 1985).
- Winner, Langdon, «Do Artifacts Have Politics?», *Daedalus* 109 (1980).
- Wråkberg, Urban, *Vetenskapens vikingatåg: Perspektiv på svensk polarforskning 1860-1930*, Institutionen för idé- och lärdomshistoria, Uppsala universitet, skrifter nr 12 (Uppsala, 1995).

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