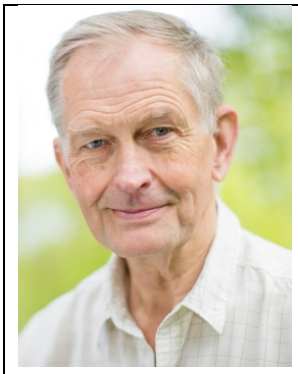
The foundation of Sweden's first learned society – The *Royal Society of Sciences at Uppsala*



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The importance of Scientific Academies

Scientific academies have played major roles in the development of science. Plato's *Academia* outside Athens was the starting point around 387 BC. However, it was not until the seventeenth century, when scientific thinking based on observations and experiments gradually became dominating, that scientific academies were founded in many countries, like Germany 1652, England 1660, and France 1666.

Figure 1. Eric Benzelius (1675-1743) the Younger, Founder of the Royal Society of Sciences. Painting by Johan Henrik Scheffel (1690-1781)

Founding of *Royal Society of Sciences at Uppsala*

The first Swedish academy, the *Royal Society of Sciences at Uppsala*, was founded in 1710, 29 years before the now internationally better-known *Royal Swedish Academy of Sciences*. A key-person in the creation the Uppsala academy was Erik Benzelius the Younger (1675-1743) (Figure 1). He was the son of Archbishop Erik Benzelius the Elder in Uppsala, Sweden. Like a number of other young men (in those days it was essentially only men) of the upper classes, the younger Benzelius made an educational journey abroad, in order to learn manners, to

meet influential people, and to hear about current thinking. At the age of 22, supported by a Royal scholarship, he began, in 1697, a three-year European tour, during which he became acquainted with a number of influential philosophers and scientists. The most well-known was the great mathematician and philosopher Gottfried Wilhelm von Leibniz, who, independently of Isaac Newton, had developed differential and integral calculus. In a letter to Professor Olof Rudbeck the Younger in Uppsala, Benzelius describes his meeting with Leibnitz in the following way: 'Not with one man but with several I felt that I was conversing, so great and so wide-ranging is his wealth of knowledge; there was nothing that I wanted to know that he was not able to tell me'. Benzelius was apparently also appreciated by Leibnitz since he wrote to one of Benzelius' Swedish benefactors 'You have done me a special favour in referring the young Mr. Benzelius to me, a man who is truly in my taste. For he not only burns to learn something and to use his time well but also possesses great actual knowledge and furthermore such a noble and charming manner that he will always win the hearts of everyone wherever he may be. In other words, I have no doubt that he will one day be a new adornment to his country and his family'.

Figure 2. Seal of the Royal Society of Sciences in Uppsala

Back in Uppsala the young theologian Erik Benzelius, with broad interests in science, was appointed University Librarian in 1702. He apparently became aware of the importance of scientific societies during his visit to Leibniz, who at the time was busy with the creation of a *Prussian Academy*. But Benzelius also visited l'*Académie des Science* in Paris and the *Royal Society* in London. He was also inspired by letters from his brother-in-law, the polymath Emanuel Swedberg (ennobled Swedenborg), who was studying Isaac Newton's works in London. However, the igniting spark for Benzelius to create a Swedish scientific society seems to be a letter from the inventor, engineer and mechanical genius Christopher Polhammar (the 'Swedish Archimedes' ennobled Polhem), who also suggested a name *Collegium curiosorum* (Association for the curious).

Early eighteenth century

The early eighteenth century was a turbulent time, when Sweden tried to defend its position as one of Europe´s great powers. The country was more or less constant in wars during the years 1700-1719, and the number of casualties in

warfare has been estimated to be 200 000, or more than 20 percent of the male population. In a huge fire in 1702, almost the entire Uppsala burned down. And the next few years were characterized by poverty and famine. The Swedish empire was on retreat, after losing the battle at Poltava in current Ukraine in 1709, followed by the exile of the Swedish King Charles XII in Turkey. This period did not seem to be optimal for creating a Swedish scientific society.
Unexpectedly, however, another disaster helped Erik Benzelius in this respect. In the late autumn of 1710 bubonic plague raged in nearby Stockholm, making its way towards Uppsala. When cases were reported as close as 10 kilometers from Uppsala city, the University Board took a decision to close the university and send its students home. As the teachers were out of students, Benzelius took the opportunity in November to assemble a handful of prominent teachers in the University Library, a stone building that had escaped the fire. They founded the *Collegium curiosorum*, with the purpose of meeting regularly, corresponding with colleagues in other countries, gathering information about curious phenomena, and trying to elucidate their causes. They also decided to collect and to systematize natural specimens, as well as spreading knowledge in astronomy, physics and engineering, that might be of general benefit. However, due to the general economic misery, the activity of the association was soon weak or absent for some years.
After the King´s return to Sweden, in 1716 *Collegium curiosorum* tried to get his support to build an astronomical observatory. This was not approved, due to the poor economy, and preparations for a new war against Denmark. However, the King was very interested in Polhem's technical achievements in mining, to some extent assisted by Swedenborg. Both were members of *Collegium curiosorum*, although corresponding ones, since most of the time they were not present in Uppsala. Encouraged by the King, Polhem and Swedenborg wrote articles about technical achievements in six issues of Sweden's first scientific journal; *Dædalus Hyperboreus* – published in Uppsala in 1716-1718. Since the purpose was to spread the important information widely, the language was Swedish, rather than Latin, the dominating scientific language at the time.
After the warrior King Charles XII had fallen in the battle at Fredrikshald, in Norway in 1718, and after a Russian attack in 1719 had been averted, Sweden's constitution was changed from a Royal autocracy to a parliamentary rule, the Age of Liberty, when science started to thrive. In 1719, Benzelius together with some founders of *Collegium curiosorum* and new members, decided to revive the society, which was then named *Bokwettsgillet* (the G*uild of Book Learning*) or *Societas Literaria*. This society was very active, with 30-40 meetings per year, dealing with a wide range of subjects. Among the more curious ones was a report in 1722 that a werewolf (*Lycanthropos*) had been seen in Western Sweden. However, this was denied six months later, and explained by the source being a fool, 'who said and made whatever people told him'.

Benzelius worked intensely to get economic support and Royal protection. In response to his application, Parliament gave permission to dig up and sell the iron pipes that had supplied Uppsala's castle with water, but were no longer in use. This provided capital, Parliament also granting free postage for domestic and international mail correspondence. In 1728, a Royal protection was finally granted under the name *Societas Regia Litteraria et Scientiarum,* which is now *Kungliga Vetenskaps-Societeten* (the *Royal Society of Sciences*). In the transition, Anders Celsius played an important role. Elected fellow of the G*uild of Book Learning* in 1724 at the age of only 23, he soon took over the important secretary position, which he held until his death in 1744. Today Celsius' name is mostly associated with the temperature scale, which he proposed in a paper to the *Royal Society of Sciences*. However, interestingly his original scale had 100° as the freezing point of water, and 0° as its boiling point!

The founder of modern biology – Carl Linnaeus

Sweden's most famous scientist in all categories, the organizer of flowers and animals, and inventor of the binomial nomenclature for naming species (*Systema Naturae*), was Carl Linnaeus (ennobled von Linné). He was intimately related to the early history of the *Royal Society of Sciences*. Linnaeus was born in 1707 and came to Uppsala in 1728 to study botany and medicine. In 1729 he wrote an article about the sexual reproduction of plants that attracted the attention of two prominent members of the *Royal Society of Sciences*, Olof Rudbeck the Younger and Olof Celsius the Elder (the uncle of Anders), and in 1732 the *Royal Society of Sciences* used most of its economic resources to approve Linnaeus' application for support of an expedition to Lapland in the north of Sweden. The expedition was a great success and was followed by others, and Linnaeus became member of the *Royal Society of Sciences* in 1739 and succeeded Anders Celsius as secretary, a position Linnaeus held for 23 years. One of Linnaeus early measures as secretary was to reverse the Celsius' temperature scale to its current form with higher temperatures indicated by higher numbers.

An important expedition in 1735

Another important event in the history of the *Society of Sciences* is related to the decision in 1735 by the French King, that *l'Académie des sciences* in Paris to send out two Arc-of-Meridian expeditions to clarify the correctness of Newton's proposal regarding the flattening of the earth at the poles. One expedition was sent to Peru and another to the Arctic Circle. Visiting Paris Anders Celsius advocated that the second expedition should go to northernmost Sweden and in this way Celsius himself and the *Royal Society of Sciences* became involved in confirming Newton's hypothesis.

The Future

After 308 years the *Royal Society of Sciences* is still going strong. Many things have changed during three centuries. One is the gender aspect. It actually took 271 years until the first female member was elected in 1981 and it will yet take some time to reach gender equality although the balance among current new members is fairly equal. Today the *Royal Society of Sciences* have eight regular meeting per year, when members representing most academic fields, including the humanities, gather for discussions and listen to lectures about virtually any subject. These meetings also decide about new members, and a number of awards, prizes and medals, to successful scientists at different stages of their careers. Every meeting ends with an enjoyable dinner buffet, and continued lively discussions. Each year there is also a '*Day of the Society',* when members of the general public are invited to attend an award ceremony, and listen to lectures by the laureates. Through activities such as these, the present members of the *Royal Society of Sciences at Uppsala* continue the work of their early frontrunners Erik Benzelius, Anders Celsius and Carl von Linné. In 2010, The Society held its 300th anniversary in Uppsala[1], when Foreign members were invited to a scientific meeting, and a white tie dinner with the Crown Princess of Sweden. The Society looks forward to the next 300 years.

Acknowledgements

Valuable feedback from the former *Royal Society of Sciences* Presidents Professors Ulf Göransson and Lars Engwall is gratefully acknowledged.

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