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Lichenology in Lund – an historical overview

Patrik Frödén

A pivotal person in the development of cryptogamic research in Sweden in the early post-Linnaean era seems to have been **Olof Swartz** (1760–1818) (Arvidsson 1999; Jørgensen 1999; Nordenstam 1991). While C. P. Thunberg, G. Wahlenberg and others continued Linnaeus' work on vascular plants, it was perhaps natural that other botanists would focus on the plant groups most neglected by Linnaeus, namely the cryptogams. Swartz's dissertation, *Methodus Muscorum Illustrata* (1781) under Linnaeus filius, dealt mainly with mosses and described Hedwig's new system and some new species of mosses and lichens. Apart from his studies on orchids, he also published on Pteridophyta, fungi and lichens, for example, in *Lichenes Americani* (1811) and in his publication on the West Indian flora (1788). Dealing with all the cryptogamic groups was too big a task for one man and he actively sought to inspire other Swedish taxonomists to specialize on one of the cryptogamic groups. He took on the Pteridophyta and mosses himself, Erik Acharius the lichens, C. A. Agardh the algae and Elias Fries fungi and lichens.

Before taxonomists began to specialize in the various plant groups, there were a few botanists in Lund who took more than a casual interest in lichens, the most important one being **Anders Jahan Retzius** (1742–1821). He was born in Kristianstad (province of Skåne) and it was there he received his early education. After his father died he began working at a pharmacy in Lund in 1757. A year later he began his studies which continued for about a year, but for financial reasons he had to leave to work at pharmacies in Karlshamn and Stockholm. After taking his examination as a pharmacist in 1761, he returned to Lund in 1762 where he graduated in 1766. He became *botanices demonstrator* in 1772 and extraordinary professor of Natural History in 1777. He included two newly found lichens in his *Anmärkningar vid Skånes Ört-Historie* (Retzius 1769), slightly over 100 species in *Florae Scandinaviae Prodromus* (Retzius 1779) and 174 in the second edition of the same work (Retzius 1795). Retzius, who generously donated his herbarium and collections of other naturalia to the university in 1818, has unfortunately been associated with a less positive event for lichenology in Lund.

In 1818 **Erik Acharius** (1757–1819), who was ill and wanted to secure some funds for his wife and children, offered to sell his whole herbarium to Lund University. However, due to the cost involved and the fact that the university already had a sizeable vascular plant herbarium donated by Retzius, the university board was hesitatant and after consulting Retzius, declined the offer. The lichens from Acharius' herbarium were later sold to the herbarium in Helsinki in Finland, although the remaining part was later donated to Lund University through the bishop Faxe. "The Father of Lichenology", as Acharius was later to be named by Nylander (1858), lived in Lund for three years after taking his medical degree here in 1782 (Kärnefelt & Frödén 2007). After that he resided a few miles NE of Lund in Landskrona until 1789, then he finally left for Vadstena further north in Sweden, which would be his home for the rest of his life. However, he does not appear to have been especially interested in lichens at this time, at least as seen from his

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publications. After his dissertation at Uppsala University in 1776, concerning a parastitic plant from Africa, and later his medical dissertation on tapeworms at Lund University, the only articles he wrote were a few notes on zoological matters (Kärnefelt & Frödén 2007). He seemed to have been focused more on his medical practice in Lund and later on his job as the local town doctor of Landskrona where he also started a family. As he did not write his first articles on lichens until 1794, he can hardly be called a lichenologist when he lived in Lund.

The same year as Acharius published his first work on lichens, **Elias Fries** (1794–1878) (Fig. 1) was born in Femsjö in the province of Småland. He could be said to be the first actual lichenologist in Lund. His life showed several similarities with that of Linnaeus. Both were born in Småland in southern Sweden. Their fathers were both priests interested in botany and introduced them to botany at a very young age. Both went to the same school in Växjö, followed by studies at Lund University, and finally went to Uppsala University. Fries also died almost exactly 100 years after Linnaeus died. While most of these similarities are naturally coincidental, Fries seemed to have striven to follow in Linnaeus' path already as a young boy. The centennial celebration of Linnaeus' birth in Växjö in 1807 impressed him deeply and made him finally decide to become a botanist. At the age of 12 he knew most of the plants in the surroundings of his birthplace in Femsjö and during his early teens he started publishing articles in his own home made paper called "Tidningar i Naturalhistorien" (Natural History Newspapers) which was distributed to friends at the school in Växjö. In one of these papers was an article on the lichens in his home region "Lavarna (lichenes) i Femsjö". He also wrote a first draft of a local parish flora called "Flora Femsjioensis" in 1810. After catching a severe cold in 1824, he feared he might not survive and dictated an extended version of this draft, properly published as *Stirpes Agri Femsionensis* (Fries 1825*a*; Strid 1994). Lichens (*c*. 300 species) were included with annotations on their frequency. It was noted

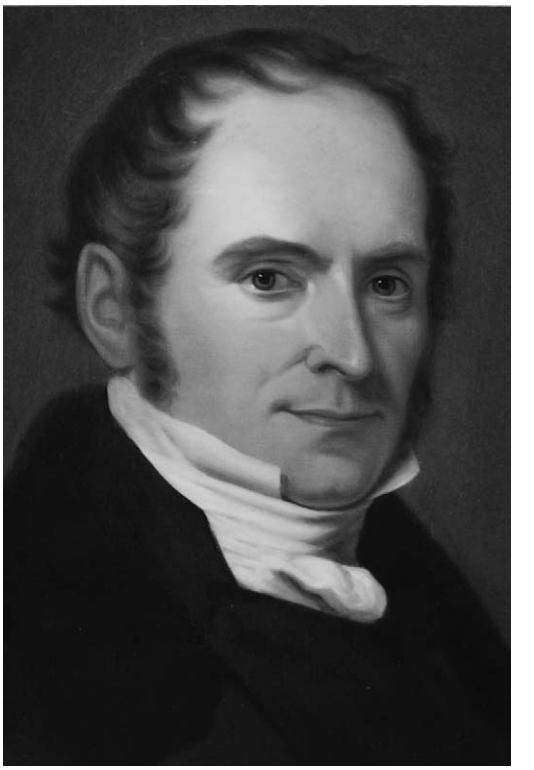


FIG. 1. Elias Fries (1794–1878). Oil painting from 1838 by J.G. Sandberg.

by his son, Thore Magnus Fries, that the flora had already changed considerably by the time he revisited his birthplace and surveyed the plants there in 1851 (Th. M. Fries 1852). The work of E. Fries and even more so of Th. M. Fries, with his detailed locality descriptions, has made it possible to compare the lichen flora of the parish of Femsjö for over 200 years.

Elias Fries came to Lund in 1811 at the age of 17. He was soon assigned to sort out the lichen herbarium of C. A. Agardh, something which awoke his interest in this group. He corresponded and exchanged material with both Swartz and Acharius during his early years in Lund until Swartz passed away in 1818 and Acharius the year after. Fries defended his dissertation in 1814, and the same year was appointed *botanices docens*.

Although Fries' greatest achievements were made in the non-lichenized fungi he

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published some papers on lichens, mainly after Acharius' death (Fries & Sandberg 1817; Fries 1820, 1821, 1822 & 1825*b*). During the 1820s Acharius work had been criticised by several German lichenologists and in response to that Fries developed a new system for the lichens which was presented in his European lichen flora *Lichenographia Europea Reformata* (Fries 1831), which was to be his largest lichenological work. This work became somewhat outdated in the next decades as microscopes improved and were used more extensively in systematics. Throughout his life Fries was more of a field botanist who wanted to be able to recognize the species in nature and never cared much for using microscopes.

During his time in Lund, Fries had financial difficulties as a salary did not automatically follow a position. He was appointed *botanices adjunct* in 1819, *professor regius* in 1824, and *botanices demonstrator* in 1828, and then had a salary although it was meagre. In order to save money he lived with his parents in Femsjö during much of the 1820s, when he did not have to be in Lund teaching students. Just as for Linnaeus a century earlier, the economic prospects did not look particulary good in Lund and as he had just married and was starting his family it was not difficult to accept the offer of a seat in practical economy (Borgströmska professuren) at Uppsala University in 1834, that had been made available for him.

A year later, in 1835, C. A. Agardh resigned from his position at the university to become a bishop in Karlstad. The students in Lund, among whom Fries was very popular, begged him to come back to Lund and apply for the vacant position, but, although this was tempting, Fries declined. The move had been strenuous and he had just settled in Uppsala where he had been hailed as the second Linnaeus. Although Fries had more or less abandoned lichenology for the study of non-lichenized fungi, his move to Uppsala would also move the Swedish centre of lichenology there, as his son took up lichens and he in his turn recruited several students to work with lichens.



FIG. 2. Carl Alfred Berg (1857–1929).

For the next century the taxonomic research in Lund would deal mostly with algae and vascular plants, although there were a few notable exceptions.

Herman Gustaf Falk (1840–1880)
Falk had studied at Uppsala University before he became a high school teacher in Karlskrona in 1868. He defended his dissertation on the lichen flora of the province of Blekinge called "Om östra Blekinges lafflora" (Falk 1874) at Lund University in 1874. However, he does not seem to have been particulary closely connected to Lund. His dissertation was printed in Karlskrona (province of Blekinge) and it is his former teacher in Uppsala, Th. M. Fries, who is thanked for assisting in the work.

Carl Alfred Berg (1857–1929) (Fig. 2)
'Fader Berg' as C.A. Berg was called due to his musical interests, began his studies in

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FIG. 3. Birger Nilson (1882–1931).



FIG. 4. Ove Almborn (1914–1992).

natural sciences at Uppsala University in 1877. After taking a break due to financial reasons he continued his studies at Lund University in 1886 and took his bachelor degree there in 1888. He did not publish much on lichenology (Berg 1890) before he turned his full attention to music, but his large collection of lichens is deposited at LD. Among other things, he was leader of the student's choir and musical director at the university, a position which he held from 1897 to 1922.

Birger Nilson (took the name Kajanus in 1909) (1882–1931) (Fig. 3)
Birger Nilson began his studies at Lund University in 1901 and worked at the Department of Botany from 1903 to 1907 when he took up a position as a plant breeder at Weibullsholm a few miles north of Lund. During his time in Lund he published several lichenological articles (Nilson 1902, 1903*a*, *b*, 1907). He proposed a new theory that the development of soredia and isidia are formed by the algae reacting to high humidity (Nilson 1903*b*). He also wrote a few more papers after that period (Kajanus 1911*a*, *b*, 1919), but essentially his remaining scientific production was in plant breeding. He seems to have been a free spirit, critical of many established scientific truths that were not supported by his own results, and fiercely independent. In 1925 he went to work as a cotton plant breeder in Egypt and died there a few years later of typhoid fever (Nilsson 1932).

Ove Almborn (1914–1992) (Fig. 4)
Almborn was introduced to lichenology by Bertil Hedvall, and when he came to Lund to study at the university in 1933 he was already

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interested in the subject. His first article on lichens was published in 1935 and concerned the lichen flora on the ancient cathedral in central Lund (Almborn 1935). He was otherwise inspired mainly by Degelius and the other Uppsala people under Du Rietz. His dissertation (Almborn 1948) was in the spirit of the 'Uppsala school' of plant ecology and sociology, and dealt with the distribution and ecology of some south Scandinavian lichens. This study contributed much to knowledge of the lichen flora in southern Sweden and was important for the project "Endangered lichens in southern Sweden" that was conducted by lichenologists at the Botanical Museum between 1987 and 1996 (Arup *et al.* 1997). From 1954 to 1966 he worked as a high school teacher in Malmö, then became keeper of the herbarium at the Botanical Museum in Lund. After finishing a careful study of the lichen flora of the small island, Hallands Väderö (Almborn 1955), he focused on the lichen flora of southern Africa and also worked for many years with revisions of the genera *Pertusaria* and *Teloschistes*. Unfortunately, Almborn was not able to finish these major undertakings, but he made two important contributions to the knowledge of *Teloschistes* (Almborn 1989, 1992), wrote about 100 reviews on lichenological papers (Kärnefelt 1994) and laid the ground for future lichenological research in Lund, both through his donation of his large lichen library and all his possessions and also the collections he incorporated at the Botanical Museum in Lund.

Hans Runemark (1927-) (Fig. 5)
After being introduced to lichenology through his work a few hours a week in an unpaid position (e.o amanuens) sorting lichens in the herbarium, Runemark began his PhD project on the yellow species of *Rhizocarpon* in 1948. His thesis (Runemark 1956*a*, *b*) was in two parts; the first dealing with the taxonomy and the second dealing with the distribution and ecology of the species. Originally, Runemark had considered becoming a geneticist and a plant breeder, but being interested in chemistry and biogeographical problems of species

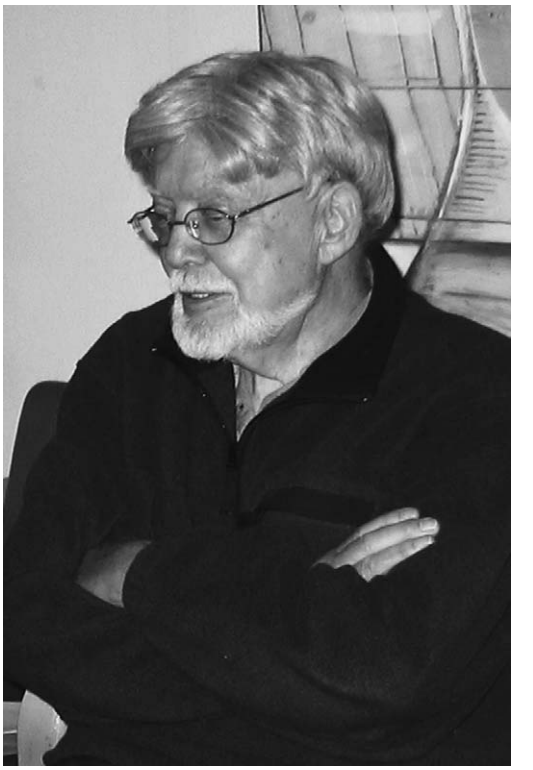


FIG. 5. Hans Runemark (1927–)

with limited distributions, the genus *Rhizocarpon* caught his interest. Important for this was the trip to southern Europe that he undertook together with G. Degelius in 1948. In the chemical analyses, he collaborated with C.-A. Wachtmeister, who developed the method of paper chromatography in the investigation of lichen substances (Wachtmeister 1952, 1956).

Immediately after completing his thesis he stopped working with lichens, and has since devoted himself to the vascular plant flora of the Greek islands.

Ingvar Kärnefelt (1944–) (Fig. 6)
After Runemark's 'defection' from lichenology, Almborn continued as the sole lichenologist in Lund until the spring of 1969 when I. Kärnefelt came to Lund University from Gothenburg. Just like Almborn and Runemark before him, Kärnefelt had become inspired by Degelius who had been

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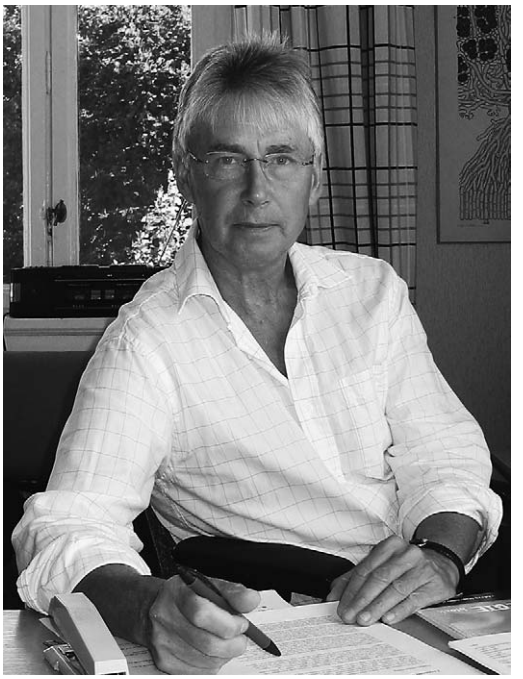


FIG. 6. Ingvar Kärnefelt (1944–)

his first teacher in his undergraduate studies in botany at the University of Gothenburg in 1968. He began his graduate studies in 1972 and his dissertation "The brown fruticose species of *Cetraria*" was published in 1979. It was followed by a major work on "*Bryocaulon*, *Coelocaulon* and *Cornicularia* and formerly associated taxa" in 1986. After securing a teaching position in 1986, he later became head of the Botanical Museum in 1994 and was appointed professor in 2000. After Kärnefelt was appointed, lichenology in Lund expanded considerably as he has supervised several PhD students in lichenology, all of whom are still active at universities or university colleges:

Lars Fröberg (PhD student 1984–1989) "The calcicolous lichens on the great Alvar of Öland, Sweden".

Jan-Eric Mattsson (PhD student 1985–1993) "The genus *Vulpicida*".

Ulf Arup (PhD student 1988–1995) "Littoral species of the lichen genus *Caloplaca* in North America".

Stefan Ekman (PhD student 1988–1996) "The corticolous and lignicolous species of *Bacidia* and *Bacidina* in North America".

Arne Thell (PhD student 1991–1996) Anatomy and taxonomy of cetrarioid lichens".

Louise Lindblom (PhD student 1992–1997) "The genus *Xanthoria* (Fr.)Th.Fr. in North America".

Martin Westberg (PhD student 1996–2005) "The genus *Candelariella* in western North America".

Patrik Frödén (PhD student 1997–) "The genus *Teloschistes*".

In the *Parmeliaceae* he has worked on both species taxonomy and floristics (e.g. Kärnefelt 1977*a*, 1980, 1986, 1987*a*; Kärnefelt & Mattsson 1989) and with phylogeny and generic problems (e.g. Kärnefelt 1977*b*; Kärnefelt *et al.* 1994; Kärnefelt, Mattson & Thell 1992, 1993; Kärnefelt & Thell 1996, 2000; Thell *et al.* 2002, 2004, 2005, 2006). The *Parmeliaceae* continued to be Ingvar's chief interest until the end of the 1980s, when he also developed an interest in the *Teloschistaceae*.

His first articles on *Teloschistaceae* dealt with some African *Caloplaca* species (Kärnefelt 1987*b*, 1988*a*, *b*) and morphology connected to evolution and phylogeny (e.g. Kärnefelt 1989, 1990). During his long collaboration with S. Kondratyuk he has published several articles on species systematics in *Teloschistaceae*, mainly concerning the flora of southern Africa and Australia (e.g. Kärnefelt & Kondratuyk 2004; Kondratuyk *et al.* 2007; Kärnefelt *et al.* 2002) and generic delimitation (Kondratuyk & Kärnefelt 1997, 2003; Kondratuyk *et al.* 2008; Søchting, Kärnefelt & Kondratyuk 2002), but he has also co-operated with other researchers in *Teloschistaceae* (e.g. Frödén & Kärnefelt 2007; Westberg & Kärnefelt 1998; Wetmore & Kärnefelt 1998; Wirth *et al.* 2005).

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