On some mostly forgotten but important British lichenologists

The present knowledge of British lichens has been accumulated through the centuries and is the result of numerous persons' activities. Most of them are forgotten which is to be expected. Some, however, deserve to be remembered particularly since their achievements are of greater importance. For that reason I present here a selection of a few whom I believe deserve to be better known today.

Early history

Lichens were certainly observed and used by our early forefathers, and they first entered the British scientific literature in the herbals which were produced in the sixteenth and seventeenth centuries (Hawksworth & Seaward 1977). Gradually they began to be mentioned in learned texts about the regions and their natural environment. They were also collected for study in a few known cases (Hawksworth & Seaward 1977) and the oldest preserved are from the end of the seventeenth century. However, any serious research did not occur until later. The first professional botanist who took lichens seriously appears to be the Scottish-born **Robert Morison** (1620–1683, Fig.1) who had a remarkable knowledge of lichens, describing numerous new species, and even reflecting on their position in the plant system. He had an unusual career which started in his native city of Aberdeen. There he earned an MA at the early age of 18 but his education was interrupted by the Civil War where he served in England's Cavaliers. Morison was seriously wounded at the battle of Dee in 1629 and fled to France. There he took up his studies again, at the University of Angers, and he graduated with an MD in 1648.

Fig.1 Robert Morison as shown on the frontispiece of his 'Historia...', LINN.

During these studies he developed an interest in botany and became closely associated with the great French botanist Vespasian Robin (1579–1667), botanist to the French King. Through him he got a position as head of the gardens of the Duke of Orleans and later became director of the royal gardens at Blois in the Loire valley. However, after the restoration he was called back to England. From 1660 he was physician to King Charles II and superintendent of all royal gardens. In 1689 he was appointed the first professor of botany at Oxford university, the position for which he is mostly remembered today. He died prematurely after an accident outside his house where he was run over by a horse carriage. His efforts in lichenology appear to have been forgotten and there are several reasons for that. Most importantly he was a pre-Linnean botanist, far ahead of botanical science in Britain. His works are rather complicated and there are no keys or illustrations with which to identify species.

We tend to focus on the later professor of botany at Oxford, J. J. Dillenius (1684–1747), primarily since Linnaeus based much of his treatment of lichens in 'Species Plantarum' (1753) on his work interpreting the illustrations, (see Jørgensen et al. 1994), ignoring Morison. Linnaeus' work was later chosen as the starting point of our binary nomenclature. Morison made use of phrase names which are ruled invalid by our standards, so all of them disappeared from the literature. He was generally regarded with scepticism. In academic circles in Oxford he was noted for his poor English, spoken with a broad Scottish accent (Oliver 1913), and he introduced new ways to classify plants by their fruits which led to numerous changes in the taxonomy which were not appreciated. Most of his phanerogamic taxa were regarded as unimportant and superfluous (Pulteney 1790).

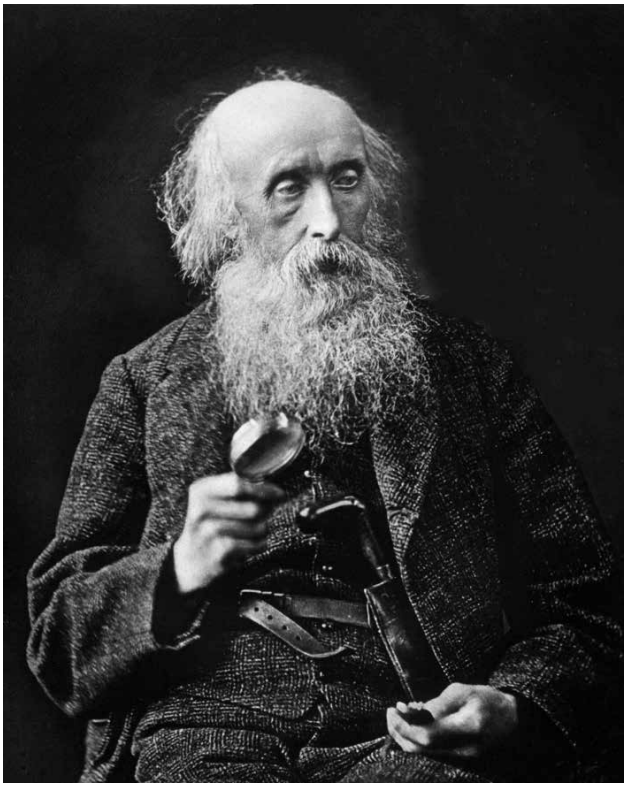

Fig.2 John Hutton Balfour, the regius keeper of the Royal Botanic gardens, Edinburgh in the years 1845–1879, E.

Morison's lichenology has never been properly analysed and it is hard to say anything certain about his species concept without having studied his herbarium which still exists at OXF (Vines & Druce 1914), but he undoubtedly described many species new to science, the names of which are invalid today (see above). In his main botanical work 'Historia plantarum universalis' of which only the first volume was published in his lifetime,

he discussed the systematic position of lichens, the first British botanist to do so. The last (fourth) part was published posthumously, first in 1699 with a second edition in 1729. Interestingly he understood that they were related to fungi but as they did not quite fit in there in his system, he coined a new name for them – *Muscofungi*. Being trained in France, he might have heard about Tournefort's acceptance of them in the genus *Lichen* (Tournefort 1700). Linnaeus (1753) followed Tournefort, though his publication was a year after Morison's with a less clear definition (the genus also contained some frondose hepatics which Michelius later (1729) excluded.) Linnaeus (1753) followed Michelius without any comment.

Fig.3 William Lauder Lindsay about the time he wrote his popular book on lichens, E.

Periods after Dillenius (1742)

It was another Oxonian botanist, the imported German botanist Johan J. Dillenius (1684–1747), who became the most important lichenologist in The British Isles before Linnaeus, though he had a rather vague understanding of the group as such.

He included lichens in his lavishly illustrated work, 'Historia muscorum' (1742). This work clearly triggered the interest for lichens in the coming years but it took some time before a special lichen flora was published (Turner & Borrer 1839). A renewal of interest came twenty years later from a most unexpected place, the Royal Botanic Gardens in Edinburgh. Here the new regius keeper from 1845, John Hutton Balfour (1808–1884, Fig.2), established a botanical laboratory for microscopic studies and physiology soon after his appointment.

He had the luck to attract the gifted medical student **William Lauder Lindsay** (1825–1880, Fig.3). Lindsay was born In Edinburgh and had been from his school days a brilliant pupil who won prizes and became known as an inquisitive person and a master at formulating his observations and thoughts. At university he continued to win prizes, and he became captivated by lichen anatomy in the new laboratory. In 1852 he earned a doctorate with a thesis about the anatomy and physiology of lichens. His

professional career was within the ward of psychiatric patients, ending his career as director of Murray's Royal Asylum in Perth (1854–1879). Here he adopted revolutionary and disputed methods. Rather than locking up the patients, which was the common practice, he let them out to experience the natural environment. Fortunately he also found time to study lichens. In 1856 he published the first popular book on lichens in English, a work which is surprisingly modern and still worth reading. He was a far-reaching lichenologist, interested in many aspects of the subject from dyeing properties (1853–54) to detailed microscopic characters and classification. He also travelled widely, as far as New Zealand. His most important contributions to British lichenology are his works on pycnidial structure and spermogonia (1859) and on the then neglected group of lichenicolous fungi (1869), both themes which had not been in the forefront of lichenological research in the British Isles: he probably was undeservedly forgotten.

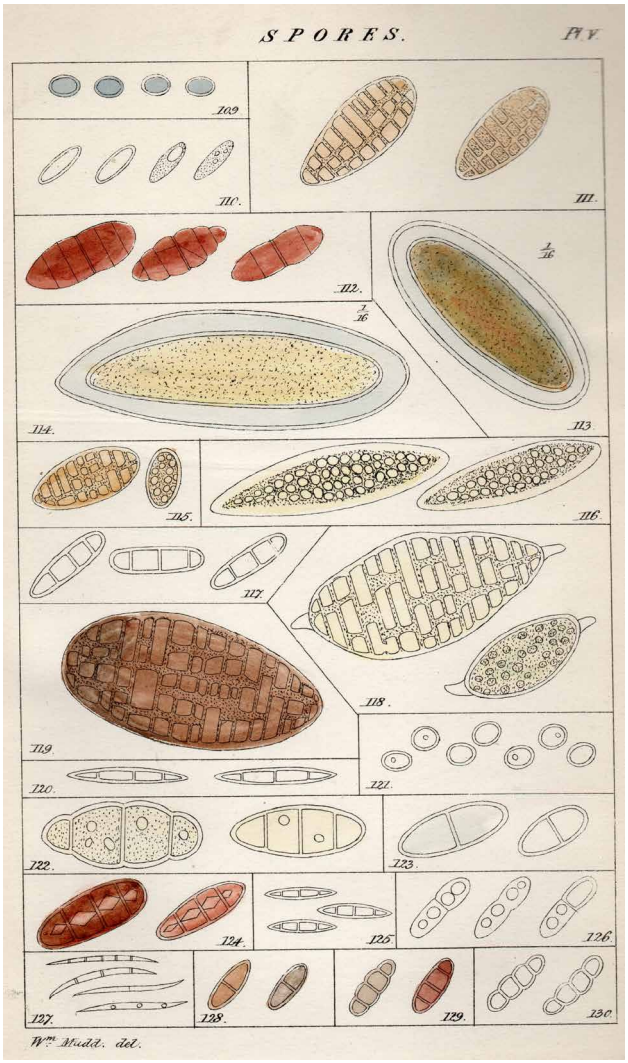

Fig.5 One of Mudd's spore tables in his Manual, O.

He was also the only British lichenologist who was critical of the taxonomy of Nylander, the leading expert of this time (Hawksworth 2007).

In 1854 a young man from Great Ayton, North Yorkshire, arrived in Edinburgh circles. His name was **Alexander Carrol Maingay** (1836–1869). He also studied medicine but became interested in cryptogams (initially algae) and as witnessed by his papers about lichens in the Breadalbane mountains (1857), turned to lichens. His thesis concerned the *Parmeliaceae* of the British Isles where he made a special study of the spores in search for characters supporting the generic taxonomy. Unfortunately spores are rather uniform in this family, so he did not make any remarkable finds. Nevertheless his work was awarded a gold medal in 1858 but never published.

This was probably caused by his appointment in the following year to the Indian Medical

Service and he spent the rest of his short life in East Asia. He was killed in a riot at a prison in Rangoon in Burma. While in Asia he continued his botanical activities, and Crombie later published work based on a manuscript discovered among his remains. Maingay therefore appears to have not made much of a mark in British lichenology. However he was significant in the shaping of an important work by **William Mudd** (1830–1879), a seemingly unpretentious, small book called 'Manual of British lichens' (1861). Mudd was a gardener, born in Bedale in Yorkshire, who after training in the gardens of Joseph Pease (1799–1872) in Darlington, advanced to be superintendent of the gardens of Thomas Richardson (1821–1890) in Great Ayton where he also became affiliated to the North of England Agricultural School. Here he was hired as an assistant by the headmaster, the botanist George Brown Dixon (1812–1904), who most probably introduced him to the use of a microscope (Seaward 1993). This method captivated him so much that he started microscopic studies of the lichens in the region after having discovered "the inner elegance of the lichens" as he himself called it. This resulted in his first lichenological work, a survey of the lichens in the Cleveland region (1854).

He became one of the most ardent collectors of lichens in his time and he also prepared an important work about British lichens, a manual (1861), based on careful microscopic studies. This he apparently did in cooperation with the above mentioned Maingay who lived in the region. From an unpublished letter (Seaward *pers. comm.*) it is obvious that there were plans for this work to be illustrated by Maingay but this probably had to be abandoned when he got a position in Asia in 1859. Nevertheless, Mudd's friendship with Maingay was of importance, as reflected in the preface to the work, and several of his collections are cited. Mudd illustrated the work with his own spore drawings (Fig.4) as well as issuing a set of lichens ('Herbarium lichenum britannicum') to illustrate his manual (to be bought with the book or separately). Unfortunately he was appointed curator of the Botanic Gardens in Cambridge (Fig.5) where he was never happy (Walters 1982) and appears to have then given up lichenology as other tasks kept him busy. In addition to his work in the gardens, he tutored students in botany for economic reasons. One of them described him as "a rude Scotsman [sic!]

Fig. 5 The curator of the Cambridge Botanical Garden, William Mudd, on a festive occasion (centrally with a top hat), CAM.

who smoked strong tobacco ad smelled of whisky."

Mudd's rather modest work accidentally came to play a major role in British lichenology. The accident occurred in 1860 in the Braemar region in Scotland where the botanically inclined Irish admiral, Theobald Jones, (1790–1868, see Mitchell 1986) fell off a cliff when collecting lichens, and was rescued by a local team led by the local vicar, a young missionary named James M. Crombie (1830–1906) (Mitchell 2003). As a sign of appreciation, Jones later sent him the recently published work by Mudd, which admiral Jones rightly regarded as an important step in British lichenology. This triggered Crombie's interest in lichens and was instrumental in Crombie's work resulting in his monumental lichen flora of Great Britain; he managed to publish only the first volume (1894) and Mudd's results are incorporated among others.

Final reflections

Morison's work was overshadowed by Dillenius' (1742) much more practical survey of British lichens, particularly since Linnaeus in his groundbreaking 'Species Plantarum' (1753) mainly followed Dillenius. Maingay and Mudd were rather anonymous contributors to the next major lichen flora of The British Isles, the monumental monograph by Crombie (1894), who nevertheless owed much to them, particularly to Mudd's Manual (1861). It is more difficult to understand why Lauder Lindsay has not been more prominently visible after his death. He admittedly had an interest in rather special themes: parasites and anatomy of pycnidia, but his popular book on lichens (1856) is well written and still worth reading as it is far ahead of its time, and may explain why this first attempt on a general, popular work on lichens did not appear to have gained the popularity it deserved. Lindsay was indeed ahead of his time and the only British lichenologist of his time who did not follow Nylander, the godfather of lichenology at that time (Vitikainen 2000).

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