The influence of social background botanists in the 17–19th centuries:

William Wilson (1799–1871) of Warrington, Lancashire (now Cheshire) was Britain's leading bryologist in the mid-19th century, and chronologically links botanical all-rounders of the early 19th century (naturalists like Dawson Turner, William Jackson Hooker and Thomas Taylor) with leading British bryologists of subsequent generations, such as Robert Braithwaite, Hugh Dixon and Symers Macvicar. Wilson added many species to Britain and Ireland's moss flora, compiled *Bryologia Britannica* (1855), and planned but did not live to complete a second edition that would have included an additional hundred species discovered in Britain between 1855 and 1870.

Why research Wilson's background? What relevance can his background possibly have to his bryological career? Does study of Wilson's background and upbringing help us to understand why he became a top-class field bryologist?

This is the old debate about 'nature versus nurture'. In trying to understand why a person becomes a naturalist, one inevitably wonders whether he or she was 'born' to natural history and merely applied inherited traits in order to achieve their 'calling', or whether alternatively (or additionally) that individual took up natural history because of ways in which their social and cultural environment influenced their personal interests and development of their personality. I contend that we are born with intelligence (which is attributable to nature), and develop our intellect as a consequence of how we are nurtured, so that the cultural environment of our formative years influences whether we become naturalists. In particular, Wilson's upbringing exposed him to three influences that manifested themselves in the formative years of many bygone British naturalists – the textile industry, non-conformism, and medicines.

I shall discuss these general aspects of social and cultural history that at one time predisposed individuals to becoming naturalists, and then briefly consider how these circumstances may have influenced the development of Wilson's character and interests.

Links between field botany and the textile industry

Any correlation between centres of textile manufacture and the geographical occurrence of field botanists in Britain may seem implausible at first glance, but becomes eminently credible upon investigation. How so?

(a) Independent attitudes

First, the English woollen industry had been organized along entrepreneurial mercantile lines since the Middle Ages, and the cloth industry also developed similarly once it came into being after the woollen industry. In this respect the English textile trade anticipated developments only seen in other trades after the Industrial Revolution. In the 15th–17th centuries, non-textile trades remained largely mediaeval, organized as craft gilds and run by master craftsmen, each of whom had a few apprentices and journeymen

on the emergence of British field *William Wilson, a case study*

Mark Lawley discusses how the textile industry, non-conformism and medicines influenced the character and development of many British field botanists in the 17–19th centuries. *This article was delivered as a talk at the BBS Autumn 2007 meeting in Liverpool.*

living with him. Such circumstances encouraged and produced conforming attitudes and lives with limited horizons. In contrast, the entrepreneurial mentality and capitalistic lifestyles of English textile merchants of the 15th–17th centuries very likely also prompted an inquisitive and critical attitude to their environment – precisely the mind set needed by naturalists if they are to notice what others have hitherto overlooked.

(b) Travel

In addition to their distinctive mind set, the lifestyles of many textile merchants also distinguished them from their contemporaries, for they travelled over long distances and in doing so were well-placed to notice that different species of animals and plants inhabited different districts and countries, and that each species had a unique and finite geographical distribution – a feature of natural history which straightaway captured the imagination of travelling naturalists. Geographical differences in wildlife became universally appreciated when more people travelled widely and frequently in later eras, but most Englishmen of the 16th century would have been unlikely to realize how different the flora of, say, the Welsh hills was to that of pastoral country in southern England. In travelling extensively, textile merchants were ahead of their time, just as they were with their independent attitudes.

(c) Literacy

And thirdly, the textile industry's far-flung trading connections required merchants to be literate, in order that they might send and receive enquiries, instructions and orders, exchange contracts, and keep accurate accounts. Their literacy was also essential for an informed study of natural history, enabling merchants to compare and contrast species that they found with descriptions of those that other people had previously found elsewhere.

(d) Social ambition

Critical and enquiring attitudes, opportunity and incentive to travel, and literacy explain a good deal of why merchants working in the textile industry took interest in natural history. But there was also a very powerful social incentive for them to pursue their hobby as naturalists, for like most other people they aspired to join the social class above their own, and therefore copied the gentry in their interests.

By the 16th and 17th centuries, the rigours and exigencies of survival no longer intruded on the lives of the English upper class with brutal,

daily insistence, for they had attained a standard of living sufficient to buffer them from nature's vagaries and vicissitudes. Instead, English gentry were able to indulge in an early instance of inverted snobbery by taking a voluntary rather than compulsory interest in nature. Likewise for wealthy barons of the textile industry, there was no more powerful means of advertising one's superior social status than to muscle in on natural history as a way of proclaiming affluence, and so declare their intention of joining the upper class. For most leisured landowners the soiling of hands in trade or labour was anathema; they regarded natural history as more of a dilettantish abstraction, and proclaimed their control over nature by acquiring large libraries and gardens to die for. But the upwardly mobile bourgeoisie of middle England took a much more 'hands on' approach to natural history, as they muddied themselves in wayside and woodland while searching for previously unknown species. British bryology has always been a pastime for the bourgeoisie rather than aristocracy or working class. To be sure, a few exceptions come to mind, but the BBS of the 21st century is no more overrun by peers of the realm or the underclass from inner cities than botanical circles were in bygone times, when it was 'cool' to be a naturalist.

The capitalist organization of the textile trade was also unusual for bringing together people of very different backgrounds, and just as wealthy merchants aped the interest in natural history of the leisured social class above them, so artisan weavers followed the lead of merchants they worked with or for, and took up natural history in their spare time. Prime examples of working-class bryologists are John Nowell (1802–1867) from Todmorden in Yorkshire, and William Gardiner (1808–1852) of Dundee – who, although not a weaver himself, was a weaver's son. However, after the early part of the 19th century, when Nowell and Gardiner first became interested in field botany, the socially divisive impersonality of working life in the factory alienated employer from employee, so deterring further permeation of interests down the social hierarchy.

One might speculate that people working with textiles took interest in botany because some species were a source of dyes, but few plants – for example Saffron Crocus (*Crocus sativus*), Weld (*Reseda luteola*), and lichens such as various species of *Lasallia*, *Ochrolechia*, *Parmelia*, *Rocella* and *Umbilicaria* – produce chemicals that were used as dyes, so I think it unlikely that textile merchants became botanists because of any professional need to identify these few plants. Nor did the link between botany as a hobby and textiles as an occupation have anything to do with any supposed predisposition to brilliant floral colourings and intricacies of botanical form woven or sewn into patterns on wool or cloth, or finely developed appreciation of shapes and patterns. Rather, it had everything to do with economic performance and social standing. This was why centres of textile manufacture also tended to produce field botanists between the late 17th and mid-19th centuries.

In the late 17th and early 18th centuries, Richard Richardson (1663–1741) in Yorkshire and Samuel Brewer (ca 1669–1743) from Wiltshire were among the first prominent field botanists with links to the textile industry. Subsequently, in East Anglia, three botanists of the late 18th and early 19th centuries were to profoundly influence subsequent developments in British field botany – James Edward Smith, Dawson Turner and William Jackson Hooker. Each member of this botanical triumvirate was connected with the local textile trade, from which their families derived considerable wealth, and each inherited sufficient of this wealth to enable them to pursue their botanical interests without constant financial worries. James Edward Smith (1758–

1828) wrote the text for bryophytes in Smith and Sowerby's *English Botany* (1790–1814). His father was a wealthy non-conformist wool merchant, while Dawson Turner (1775–1858), a banker at Yarmouth, had both consanguineous and commercial connections with the cloth trade. Turner was the eldest surviving son of the head of a Yarmouth bank, and as a young man he inherited a fortune which enabled him to indulge his passion for plants, and cryptogams in particular.

With the Continent closed to cultural and commercial traffic during the post-Revolutionary Napoleonic era, British botanists could neither seek vascular plants abroad nor correspond easily with continental botanists, so were obliged to look for botanical diversions closer to home. However, most British vascular plants had been discovered and described by the early 19th century, so British botanists who studied vascular plants either turned their attention from searching for new species in familiar places to looking for familiar species in new places and recording their geographical distributions, or looked to cryptogams for new challenges. Accordingly, Turner co-authored the first book to list the regional occurrences of British flowering plants and ferns, and also investigated cryptogams, where there remained great scope for discovering species new to science as well as Britain.

Turner lost active interest in botany in his mid-forties, and in 1820 donated the bulk of his herbarium to his friend and son-in-law William Jackson Hooker (1785–1865), who was the East Anglian botanist to most profoundly influence British bryology in the 19th century. As with Samuel Brewer's family in Wiltshire, some of Hooker's ancestors were woollen merchants in Devon. William's father, Joseph Hooker (1753–1845) was a confidential clerk in a firm of woolstaplers at Exeter, but left to settle in Norwich, where he married the daughter of a worsted manufacturer. Like his son William, Joseph Hooker began his botanical career by studying mosses. William was born in Norwich, where his father was in business with Dawson Turner. Like Smith and Turner, William Hooker came into an inheritance sufficient to soften his exposure to life's exigencies, so was able to devote much of his youth and early adulthood to natural history.

The link between the industry of textiles and pastime of botany was clear and present from the time of Brewer in the late 17th and early 18th centuries until W.J. Hooker in the late 18th and early 19th centuries, when the industrial north west of England became a hotbed of ardour for field botany. The connection remained strong for bryologists later in the 19th century, but latterly perhaps became more attributable to tradition than any direct connection between occupational cause and leisured effect. Of Victorian botanists who took interest in bryology, Edwin Lees' (1800–1887) father was a woollen draper, Charles Hobkirk's (1837–1902) father was in the woollen trade, William Phillips Hamilton (1840–1910) joined his mother's family of tailors in trade at Shrewsbury, William Henry Pearson (1849–1923) was a yarn agent in Manchester, both the father and grandfather of James Alfred Wheldon (1862–1924) were drapers at Northallerton in Yorkshire, Albert Wilson's (1862–1949) father was a tailor and draper (and his paternal grandfather was a woollen manufacturer) and Arnold Thompson's (1876–1959) father was a cloth manufacturer. Indeed, the prominence of bryologists from industrial northern England is the main reason why several of the early meetings of the newly formed BBS in the 1920s were held there.

Non-conformism

It is also worthy of notice that many of those associated with field botany in the 18th and 19th centuries belonged to dissenting religious sects.

Indeed, most people working in the British textile industry during the 17th, 18th and 19th centuries would have been low church rather than high, so there was a good deal of overlap in the link between religious sect and the textile industry. Prominent examples of dissenting botanists are James Edward Smith from Norwich, William Wilson from Warrington, Hugh Dixon, and the working-class bryologists of northern England, a list which can easily be extended.

Non-conformists usually benefited from a utilitarian education that usefully prepared them for a future occupation, whereas acolytes of the high church were more typically educated in the classics, for example at Oxbridge, where all students were required to be members of the Anglican church. Quakers, for example, were denied entry to English universities and professions, as well as shunning the armed services because of their pacifist beliefs, and so turned to trades and mercantilism. Perhaps they sought consolation in nature for the sectarian discrimination and prejudice they encountered in everyday life. Certainly, the religious beliefs of non-conformists predisposed them to hobbies in which they studied and admired divine creation, without needing priests to interpret the natural world for them. (Many Anglican priests took up natural history in the 19th century, when compiling inventories of God's creations in their home parishes had become part of their Christian commitment. But only the more favourably placed of their parishioners also took up natural history, and then perhaps less from religious conviction than to comply with a prevailing social more.)

Apothecaries and doctors

Interest in British field botany in olden times was linked with knowledge of medicines too, when many medicines were extracted from flowering plants. Doctors and apothecaries therefore needed to know where to find and how to distinguish these species, and a high proportion of field botanists were either physicians or druggists. Some extended their interest to other plants they found. Long after the time of Samuel Doody (1656–1706, an apothecary who advised John Ray about bryophytes) and John Ziers (died 1793, a Polish apothecary living in London who assisted James Dickson with his accounts of cryptogams) doctors and pharmacists became required by the Apothecaries' Act of 1815 to know how to correctly identify plants, which further stimulated botanical interest among chemists and physicians in the 19th century. Prominent Victorian pharmaceutical chemists with an interest in field bryology included William Mitten (1819–1906), Edward Morell Holmes (1843–1930), James Alfred Wheldon (1862–1924), William Holmes Burrell (1865–1945) and his nephew Francis Eric Milsom (1889–1945), while doctors who took interest in bryology included Thomas Taylor (1786–1848), Robert Braithwaite (1824–1917), Benjamin Carrington (1827–1893), James Stirton (1833–1917), Frederick Arnold Lees (1847–1921) and Symers Macdonald Macvicar (1857–1932).

Wilson's own family, formative years, and cultural background

So did textiles, medicines and non-conformism all feature in Wilson's family and cultural background? Having carefully prepared the ground for this my thesis, you won't be surprised that I have no intention of allowing Wilson to slip from my grasp. Indeed he ticked all three boxes regarding circumstances propitious for becoming a naturalist – or more accurately, he had them ticked for him in his formative years.

(a) Textiles

Wilson's home town of Warrington was an important centre for manufacturing textiles in the

17th, 18th and 19th centuries. Until the early part of the 18th century, coarse linen and checks were important locally. After that, sail cloth became a principal manufacture of Warrington, and the town provided half the navy's requirement for sail cloth in the 1770s. Demand for sail cloth declined after the cessation of hostilities with France, and by the 1820s cotton spinning constituted a great proportion of the town's trade, with the production of muslin, calico, velveteen and other cotton goods. Wilson's maternal grandfather (John Allen, died 1812) had been a prosperous cotton-spinner.

(b) Medicines

William's father, Thomas Wilson (c.1760–1820) was a well-to-do druggist of Warrington, and must have known his plants in order to prepare medicines for dispensation. Perhaps he took William with him when he searched for plants in the countryside around Warrington.

(c) Non-conformism

William's family were devout Congregationalists, as was John Rylands (1771–1848), a wire-manufacturer of Warrington. John Rylands and a William Wilson were sometime trustees of Warrington Congregationalists' Chapel, which had been founded in 1776. John Rylands's son, Thomas Glazebrook Rylands (1818–1900) took much interest in natural sciences, including botany, and became co-executor for the estate of Mary Wilson (William's mother) after she died in 1855, and also for William's in 1871.

Warrington Academy was established in the mid-1750s as a vehicle for training Dissenting ministers, and rapidly acquired an impressive reputation for its quality of education, whose flavour was significantly more practical than that at contemporary Oxbridge. John Aikin (1713–1780), who taught at Warrington Academy, was interested in botany, and Joseph Priestley

△ William Wilson. *Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, PA, USA*

(1733–1804) also taught there from 1761 until 1767.

Other citizens of Warrington with an interest in botany included the Quaker George Crosfield (1785–1847) and the surgeon John Kendrick senior (1771–1847), whose son (also John Kendrick) ensured that Wilson's correspondence was saved for posterity. And there were the Blackburnes – the horticulturalist John Blackburne (1694–1786) of Orford Hall, and his daughter Anna (1725/6–1793) who corresponded widely with other naturalists, including Linnaeus. 40 or 50 years later, after marrying, William Wilson lived at Orford Mount for a time.

Thus, textile manufacture, medicines and non-conformism were all prominent parts of Wilson's

cultural environment during his youth. Moreover, Wilson's progression to the forefront of field botany was almost to be expected because of his neat and meticulous character (such important attributes in a top-of-the-range naturalist or scientist), combined with a delicate health that caused him to forsake full-time practice in law while still a young and energetic (albeit delicate) man, and which created ample leisure time for field botany.

What of Wilson's genealogy? In recent years, the internet has revolutionized genealogical research by making it possible to search for – and often find – a great deal of biographical material that might or would not otherwise have come to notice. For instance, one can readily look up Wilson and his family in the Census Returns for 1841, '51, '61 and '71. However, when searching online it is much easier to locate people who have unusual names than it is to find the right 'William Wilson', and in any case online genealogical research is no substitute for examining original sources such as wills and parish registers in the archives at county Record Offices. Even so, such a common surname as Wilson makes it frustratingly difficult to establish a reliable pedigree for William Wilson and his relatives. The water is further muddied (and the blood thickened) by his marriage to a cousin who was born a Wilson. Moreover, the Christian names of Hamlet, William, Mary, and probably also Eliza and Isabel were popular in the family, cropping up in branches of the Wilson clan (or clans) at Congleton, Manchester and Warrington, and making it still more difficult to be sure of individual identities and family connections. A forthcoming article in the 'Bygone Bryologists' series in *Field Bryology* will discuss what is currently known of Wilson's genealogical provenance (see also **http://ralph.cs.cf.ac.uk/HOB/HOBB.pdf**).

William Wilson was educated first at a dame school kept by a Mrs Du Garney, a former actress who had married a French refugee. Later he attended the grammar school at Prestbury, and finally the Dissenters' Academy in Leaf Square, Manchester.

From the Dissenters' Academy, William was articled to Messrs Barratt and Wilson, solicitors of Manchester. Was this partner Wilson a relative of William's? His cousin and future wife was born Eliza Wilson in Manchester, probably to Hamlet Wilson and Mary [née Lee (or Leigh?)]. Perhaps Eliza's father Hamlet was of the same branch of the family that practised law in Manchester. Later in her life, Eliza's widowed mother, Mary (d. 1861), lived in Congleton, Cheshire, and finally in the Warrington district. Some of William's immediate antecedents may also have practised law in Warrington, for Thomas, William's father, was 'of Sankey Street, Warrington' when he died in 1820, and Pigot's Directory for 1828/9 lists Wilson and Bradford as attorneys practising in Sankey Street.

A career in law did not suit William, though, and as he came of a comfortably placed middle-class background, he was able to forsake the profession a few years after his father died. By the mid-1820s, botany occupied much of William's time, and he was corresponding with Sir James Edward Smith, Professor John Stevens Henslow at Cambridge, and William Jackson Hooker at Glasgow. In 1827 Henslow introduced Wilson to Hooker, who wrote to him that year, recommending the study of mosses as a subject in need of attention, and inviting him to join his field-class for undergraduate botanists on a five-day excursion in the hills of Breadalbane in the central Scottish Highlands. Afterwards, Wilson stayed on at Killin until mid-September, and returned there in 1829, at the start of a nine-month tour that also encompassed Wales and Ireland.

Wilson's most active period as a field botanist spanned the late 1820s and early 1830s, ending

with several weeks in the company of Joseph Dalton Hooker (W.J. Hooker's son) in the Aberdeenshire hills and on Ben Lomond in 1836. Thereafter, marriage and the responsibilities of family life curtailed his opportunities for travel and botanical exploration.

Much remains to be discovered about the circumstances of Wilson's background and life. In particular, I have not read his vast and widely dispersed correspondence, which would doubtless yield many additional details about his life and relatives. He is a worthy subject for a full biographical study, so seminal were his accomplishments in field bryology, and a useful first step towards bringing this to fruition would be for the Natural History Museum in London to scan the letters he received, and publish them online. And if other institutions that hold Wilson's letters to his correspondents were also to publish them online, it would no longer be like trying to read a book whose text was only visible on alternate pages. I ask that his incoming and outgoing correspondence be scanned and published online, so that everyone who wishes to read these letters may do so.

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Further reading

For further discussion of the history of bryological exploration, and fluctuations in the extent of interest in bryological recording in Britain, see *A Social and Biographical History of British and Irish Field Bryologists* at **http://ralph.cs.cf.ac.uk/HOB/HOBBintro.htm**

For a more detailed biography of William Wilson, see **http://ralph.cs.cf.ac.uk/HOB/HOBB.pdf**

For more general discussion of how interest in natural history has waxed and waned down the years, in response to fluctuating economic and social conditions, see *The History of Nature* at **http://ralph.cs.cf.ac.uk/HON/Hon.html**

Bryophytes of Crete (Greece): Exit *Didymodon cordatus* Jur. and first record of *Orthotrichum acuminatum* H. Philib.

Blockeel (2007) recently published some remarkable bryophyte records from Crete. He cited also a small paper of the undersigned (Werner, 1998), where *Didymodon cordatus* was first mentioned for this island. Blockeel (2007) adds *Orthotrichum acuminatum* to the bryophyte checklist of Crete, where he discovered several localities in 2004. There are two points that require clarification.

1. *Didymodon cordatus* Jur. probably needs to be removed from the bryophyte checklist of Crete. The two records cited by Werner (1998) belong to *Didymodon vinealis* (Gortys, praetorium; rev. Juan A. Jiménez) and to *Didymodon fallax* (Papadiana, Kati Chorio; rev. Juan A. Jiménez).

2. *Orthotrichum acuminatum* H. Philib., a frequent epiphyte in the Mediterranean, had already been collected earlier by the undersigned: Dikty (Lassithi), epiphytic site below Zeus cave, alt. 900 m, leg. Werner 6307, April 1997 (herb. Werner), det. F. Hans, 2004.

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Werner, J. (1998). *Didymodon cordatus* and some other bryophytes from Crete. *Journal of Bryology* **20**, 249–250.