THE EARLY BRYOLOGISTS OF SOUTH WEST YORKSHIRE

by Tom Blockeel

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This account brings together information which I have encountered during work on the bryology of South West Yorkshire (v.-c. 63). It lays no claim to originality, but is rather a collation of biographical data from disparate sources, and is presented here in the hope that it may be of interest to readers. I have confined myself largely to those botanists of the eighteenth and nineteenth centuries who made significant contributions to the bryology of v.-c. 63. If there are any omissions or other deficiencies, I should be grateful to hear of them, and of any additional information which readers may have to hand.

The Parish of Halifax has been a centre of bryological tradition for over two hundred years. It was there that there appeared, in 1775, the first contribution of substance to South Yorkshire bryology, in the form of an anonymous catalogue of plants published as an appendix to the Rev. J. Watson's *History and Antiquities of the Parish of Halifax*. Traditionally, the catalogue was attributed to James Bolton (d. 1799) of Stannary, near Halifax, whose life was researched by Charles Crossland at the beginning of this century (Crump & Crossland, 1904; Crossland, 1908, 1910). Bolton was the author of fine illustrated botanical works, notably *Filices Britannicae* and the *History of Fungusses growing about Halifax*, the latter being the first British work exclusively devoted to fungi. However, his work extended beyond the purely botanical. Shortly after the completion of the *History of Fungusses*, which was dedicated to and sponsored by Henry, the sixth earl of Gainsborough, Bolton wrote to his friend John Ingham: 'You must know, John, that I have been so long tilted between roses and toadstools, and back again from toadstools to roses, that I am wearied out with both for the present, and wish (by way of recreation only) to turn for awhile to some other page in the great volume. I have not painted a bird this nine or ten years, and yet have so much of this ugly self-sufficiency about me, that I think I can do it tolerably, after a few days' practice.'

The result was an ornithological work, *Harmonia Ruralis*. As the letter indicates, Bolton etched his own plates for his works, and he was an acute observer. He worked with only a single lens - what he called a little spy-glass - and was therefore more or less restricted to macroscopic observations. His correspondents included James Dickson the cryptogamist. His mycological work showed him to be a fine taxonomist, fully aware of the need for discipline and accuracy. It is interesting that he expresses a thoroughly modern aversion to the 'unnecessary multiplying of names in our botanical nomenclature'. His approach is summarised in these words from the *History*: ' I have endeavoured to clear the subject from those difficulties wherewith it has long been encumbered.

In some species, indeed, it was very difficult to determine with precision; the plants are so very similar in figure; so very different in appearance, at different stages of their growth ... and so confounded by authors, that a man might spend his whole life amongst them, in order, clearly and accurately, to ascertain their species.'

The catalogue of plants in Watson's History (Watson, 1775) lists 87 mosses and 28 hepatics. W.B. Crump, the Halifax historian, found evidence (Crump, 1940) suggesting that James' brother Thomas (d. 1778) was responsible for the catalogue. Thomas, apparently, was also a good naturalist and made considerable collections. Pennant and Lightfoot, on a visit on their return from Scotland in 1774, were 'surprized with his vast collection of natural history got together to improve his mind after the fatigues of business'. Probably both brothers had a hand in the production of the catalogue. Though compiled over two hundred years ago, and without the aid of the compound microscope, the list is valuable because the Boltons were careful workers, and such mistakes as there are in the list are probably few. The great majority of the species have since been confirmed for the area, with the exception of the more sensitive ones which would not be expected to persist in industrial areas. This highlights the real value of the catalogue: it dates from the earliest industrial times before any real deterioration of the environment had set in. *Cryphaea*, *Leucodon*, *Antitrichia*, *Pterogonium* and *Ptilium* have never been seen since.

In the herbarium of F. Arnold Lees at Cartwright Hall, Bradford, are six bryophyte packets on which the collector's name has been written (probably by Lees) as J. Bolton. Though the origin of these packets is mysterious, they include a specimen, mis-named as *Anomodon*, of *Antitrichia curtipendula*, confirming the occurrence of this species in Calderdale in the eighteenth century (the locality is given as Elland).

Unfortunately, no localities are given for bryophytes in the catalogue, 'to avoid being tedious', in the author's words. The curious botanic reader is invited to apply to the publisher for further information! As the authors of the *Flora of the Parish of Halifax* said dryly in 1904, 'we should have preferred him being "tedious"'(Crump & Crossland, 1904, p.146).

Some ten years before the death of James Bolton was born the first of the long line of working-men, or 'artisan', botanists in Calderdale, Samuel Gibson of Hebden Bridge (c. 1790-1849). He was the son of a whitesmith and received no formal education other than at Sunday School. He was married at 19 and brought up a family of nine. He met misfortune in later life, being disabled by a fall, and had to part with most of his treasured collections in order to keep himself and his wife. For a time he had established a small Museum in an inn at Mytholmroyd, but this had failed to support him. He was a friend of Richard Spruce, who recorded meeting Gibson in his workshop with Hooker's *British Flora* 'so begrimed and blackened as to be almost illegible'.

Gibson was an all-round naturalist, with special interest in geology and botany. He contributed to Baines' *Flora of Yorkshire* (1840) and to early numbers of the *Phytologist*, and at the request of a local doctor, Robert Howard, wrote two letters, on the geology and botany respectively of Heptonstall, to be published in a pamphlet written by the doctor (Howard, 1844). His botanical contributions related, among others, to hawkweeds, sedges and ferns, but he was also interested in bryophytes, among which he discovered *Targionia* at Hebden Bridge, a species whose former occurrence on the millstone grit is

usually treated with some scepticism. However, his description of the plant (in Howard, l.c.) leaves no doubt that *Targionia* was the plant he found: 'The plant is a very rare one, and bears the name of *Targionia hypophylla*, It is a curious little *Cryptogamous* plant, whose green frond is somewhat similar to that of a *Marchantia*, and from the underside of which a black perianth takes its rise, occupying, when full grown, the whole of the under surface, and then forcing up the frond into nearly, and sometimes quite, a vertical position. The perianth now appears somewhat like a black skull-cap, or helmet with the vizor down, and thus transformed, the dried up prond [sic] or leaf is scarcely to be seen - acting as a peduncle to it. The glossy black perianth now splits into two concave valves, and numerous brown seeds ooze forth, accompanied by woolly filiments, forming a rather dense mass. '

Contemporary with Gibson was Roberts Leyland (1784-1847), an enthusiastic botanist and collector, a member of a respected Halifax family and of the firm of Leyland & Son, Printers. He was one of the original members, and a trustee of, the Halifax Literary and Philosophical Society and was curator of botany in the Society's Natural History Museum, in connection with which he also formed collections in conchology, mineralogy and ornithology. Like Gibson, he was interested in and contributed to Baines' *Flora of Yorkshire*, which was printed by his firm.

Leyland's herbarium at Halifax contained important vouchers of now-extinct species from Calderdale, including *Andreaea* spp., *Hedwigia ciliata* and *Breutelia chrysocoma*. Regrettably, the herbarium was destroyed some years ago with the exception of a single stem of *Breutelia* which had been transferred to the collection of James Needham.

A younger contemporary of Gibson and Leyland was John Nowell of Todmorden (1802-1867), most celebrated of the working-men bryologists, a worthy type of the genus. Since his life has been fully described in a recent number of this *Bulletin* (Foster, 1980), I do not repeat the details here but wish to emphasize the quality of Nowell's work against a most difficult background. It is a rare event indeed to find a moss mis-named by him. His packets, neatly folded from thin, plain paper, have found their way into many herbaria, though a collection formerly at Todmorden is now apparently lost.

Most of Nowell's work was done in his home district of Todmorden and in the Craven district of Yorkshire. He was occasionally able to travel more widely: in addition to his visit to Ireland in 1860, his letters to William Wilson (BM) show that he made excursions to North Wales in 1852 and 1853, Tadcaster in 1853, Pontefract in 1853 and 1857, Southport in 1854 and 1856, Derbyshire in 1855, the Lake District in 1857 and Skipwith Common (near Selby) in 1858. His friends and many botanical acquaintances must have assisted him in his travels. The visits to Pontefract were made no doubt by courtesy of Dr. J.B. Wood, who was born there but later resided in Manchester. Some of the more distant excursions were made on cheap trip trains, including those to Bangor. His Lake District ramble began with a train to the Lancashire seaside town of Fleetwood, from where he walked with a companion as far as Keswick, finding *en route Habrodon perpusillus* at Rydal Water. Nowell's own publications were few, though his records appear in many floras (e.g. Wilson, 1855; Braithwaite, 1887-1905; Windsor, 1873). He compiled a moss

flora of Yorkshire, published in Baker and Nowell (1854) and with his friend Abraham Stansfield wrote the Flora of Todmorden, although this was not published until many years after his death (Stansfield and Nowell, 1907-1909). A short paper, read by Nowell as vice-president to the Todmorden Botanical Society, is reported in the *Naturalist* for 1866 (p.1-3).

Of the large circle of botanists in Calderdale in the middle years of the nineteenth century, most are now unknown to us. By chance, the bryophyte collection of one of them, William Sutcliffe of Heptonstall, is preserved at the Bankfield Museum, Halifax (see Blockeel, 1980). By profession, he was most probably a schoolmaster, and evidently was one of the companions who accompanied Nowell to Ireland in 1860. Some of the plants they collected there are in Sutcliffe's herbarium.

The records of these early Calderdale bryologists formed the basis of the bryophyte portions of the *Flora of the Parish of Halifax* (Crump and Crossland, 1904). Charles Crossland (1844-1917) wrote the cryptogamic sections of this *Flora*. It is reported that his interest in botany was not aroused until the age of forty, when he assisted one of his daughters to collect wild flowers for a Sunday School competition. Subsequently he came into contact with members of the Halifax Scientific Society and formed a group devoted to the study of British flowering plants. Several of the group succeeded in qualifying as botany teachers. Another outcome of these studies was the formation of a Natural History Section of the Halifax Scientific Society, whose work laid the foundation for the *Flora*.

Eventually, Crossland turned to the study of cryptogams, including for a time mosses and hepatics. However, his attendance at a Fungus Foray at Leeds in 1888 led to a desire to know more about these plants, and in due course all his spare time from his business was directed to their study. He was a meticulous worker, and had some accomplishment in drawing fungi in their natural colours. His local colleagues included James Needham and H.T. Soppitt, and he was well acquainted with George Massee of Kew. He became a recognised authority on the fungi and his achievements were considerable, not least in the difficult and neglected field of micro-fungi. His knowledge of local history was also extensive and he published notes on local place-names, surnames and dialect.

Most of the new bryophyte records for the *Flora of the Parish of Halifax* were contributed by Crossland's friend and colleague, James Needham of Hebden Bridge (1849-1913). Like Crossland, Needham's major interest was the fungi, but he was also a competent bryologist. He was an iron-moulder by trade, and it was not until he reached the age of 36 that he became interested in botany - after a ramble to Hardcastle Crags under the auspices of the Hebden Bridge Co-operative Society. Four years later he met Crossland, and they became constant companions. Crossland introduced Needham to the mosses and fungi, and they went on many excursions together, and through their 24 years of acquaintance. Needham kept Crossland supplied with a constant stream of specimens for examination. He knew every corner of the Hebden Bridge district and often guided and assisted other naturalists, both local and visiting. After one such excursion, he received the gift of a microscope 'as a memento of a pleasant day spent in Crimsworth

Dean on Saturday July 6, under your leadership, and as an expression of hearty good wishes for further successes in your researches for micro-fungi'.

On the other hand Needham also had to tolerate a lot of leg-pulling from his workmates and the local farmers whose land he searched. His eccentric behaviour in searching one pasture for *Clavaria* was described by the farmer as 'babby wark'. Nevertheless, he gained admiration and respect in local circles and gave talks to Interested bodies. His house was a store of botanical specimens, the walls being closely hung round with framed, mounted mosses. His most important discovery was that of Jubula hutchinsiae in the Hebden Valley, of which he was very proud, visiting the site regularly. It is still there today. His herbarium is at Bankfield Museum, Halifax.

The last of the resident bryologists of Calderdale was Harold Walsh of Luddendenfoot (1881-1962). Though already over thirty years old when Needham died in 1913, it was another thirty years before his main period of bryological work, and he is therefore strictly outside the scope of this article. Nevertheless I include a brief mention here because he follows very much in the tradition of Gibson, Nowell and Needham. He left school at 10 to work as a half-timer and was in full-time work at 13. He was already interested in his youth in botany and biology, making a hand microtome at the machine tool shop where he worked during the first world war. He began to publish bryological notes at the end of the second war, and he joined the B.B.S. in 1946, contributing several short notes to early issues of the *Transactions*. His most outstanding local discoveries were a single capsule of *Buxbaumia aphylla* on a wall near Hebden Bridge in 1946, a colony of *Moerckia flotowiana* on the moors near Halifax, and at least a dozen sites for the hepatic *Solenostoma caespiticium* in various parts of Calderdale.

Calderdale has been unusually productive of bryologists and no other part of South Yorkshire has been so well endowed. Sheffield was the home of Jonathan Salt (1759-1815), described as a 'manufacturer' of that town, of the firm of J. and J. Salt, Table Knife Cutlers. He was a correspondent of Sowerby and collected plants widely in the Sheffield district, of which one, a sedge from near Rotherham, was identified by Dr. Smith as *Carex elongata* new to Britain. His manuscript 'Flora Sheffieldensis' (c.1800) has in addition to the vascular plants 66 mosses and 19 hepatics listed for the district, but unfortunately it gives few localities. Bryophytes are represented in his herbarium at Sheffield City Museum, again with minimal data.

Amos Carr (c. 1829-1884), originally of Frant on the Kent-Sussex border, and then of Warwick, lived his later years in Sheffield. As a rural postman, he learned many of the plants of the districts where he worked. In Sheffield, however, he was in trade as a bootmaker and spent his limited spare time in studying the local plants, specialising in roses, brambles and willows. He was evidently active with the Sheffield Naturalists' Club, leading an excursion up the Rivelin Valley in 1881 (reported in Sheffield Naturalists' Club Annual Report for 1881). A collection of his plants was presented to Sheffield Museum, now mostly lost. It contained 53 bryophytes (listed in Sheff. Nat. Club Ann. Rep. for 1884). Through his correspondence with F.A. Lees, many of his

records appeared in Lees' *Flora of West Yorkshire* (1888), and there are some of his bryophytes in Lees' herbarium at Bradford.

Abraham Shackleton of Keighley (1830-1916) was a printer of that town, first serving an apprenticeship with the printer and publisher Robert Aked, and later purchasing and running the same man's business. His grandfather - also Abraham - had a wide knowledge of natural history, and his own interest in botany developed early. He specialised in mosses and lichens. However, it was not until after his wife's death in 1876 and the subsequent termination of his business career, that he had any great degree of leisure for his studies. During this time he travelled widely in Britain and Ireland to collect specimens, and much of his work was in association with the lichenologist Thomas Hebden (1849-1931). His correspondents included Dr. Nylander of Paris. He published little specifically bryological, but was a principal contributor to the section on mosses in the *Flora of Skipton* (Rotheray, 1900). Thomas Hebden helped with the hepatics in the same publication.

A book of mounted mosses is preserved at Cliffe Castle Museum, Keighley, inscribed at the front: 'Collection of British Mosses, Arranged according to Dixon's Hand Book, 1896, By A. Shackleton, of Braithwaite Near Keighley'. It includes some of the rarest British mosses and indicates correspondence with a number of contemporary bryologists.

Charles P. Hobkirk (1837-1902) was a native of Huddersfield. His father was in the woollen business but he himself was a banker by profession rising to branch manager of the West Riding Union Bank at Dewsbury, and later at another bank. When still in his early twenties he published his book *Huddersfield: its History and Natural History*, 'and in the 1860s he was submitting moss notes to a short lived series of *The Naturalist*. When the present series of that periodical began publication in 1875, Hobkirk became editor with George T. Porritt, and he played a leading part in the evolution of the Yorkshire Naturalists' Union.

His bryological work included a brief and rather terse volume, the *Synopsis of the British Mosses*, first published in 1873, and in 1877 he compiled, along with Henry Boswell, the first *London Catalogue of British Mosses*. He also wrote on West Riding mosses in the *Journal of Botany*. His other activities . included the publication of a River Drainage Map of the West Riding for Scientific Purposes, and the serialisation of a novel 'Sir John de Eland, Knight, a Legend of the 14th Century', in the *Huddersfield Weekly News* !

One of the few bryologists to live in the relatively unproductive Humberside district was Dr. Franklyn Parsons (1846-1913), who first practised medicine at Beckington near Bath but moved to the port of Goole in 1874. He lived there for some six years, until his appointment as Medical Inspector of the London Government Board. He died in Croydon at the age of 67 after losing a leg from an obscure bone disease. Described as a man of great nervous energy, F.A. Lees said of him, 'Charles Darwin, alone of men I have met, impressed one with a like mental magic'.

He recorded some bryophytes for the eastern part of v.-C. 63, but was more involved with the East Riding (v.-c. 61), for which he compiled the first comprehensive moss list (in the *Botanical Transactions of the Yorkshire Naturalists' Union*, **1**, 51-61).

William West (1848-1914) is celebrated for his work on the freshwater algae. I mention him briefly, however, because of his contributions to the bryophyte portion of Lees' *Flora of West Yorkshire* and indeed to the remainder of that work. He was a native of Leeds and began his career as a pharmaceutical chemist in Bradford, though later, with his self-acquired botanical knowledge, he became a lecturer at Bradford Technical College. A full obituary was published by Roebuck (1914), who remarked that West's 'most extraordinary knowledge of cryptogams, which was both wide and deep, whether these were mosses, hepatics, lichens, or algae, and of their ecological conditions, made him quite a unique personality certainly in Britain, probably in Europe'.

This account would be incomplete without some reference to the bryologists of the Manchester area who made incursions into the part of Yorkshire (now within Greater Manchester) that encompasses the western slopes of the Pennines near Oldham. Some of them were friends of Nowell and like Nowell were acquaintances or correspondents of William Wilson of Warrington, who himself visited Seal Bark Rocks near Saddleworth on June 15, 1832 (see Cash, 1887).

Like most of the bryologists already described, these men were of humble origins. They include Edward Hobson (1782-1830), of whom Wilson said, 'He was unwearied in his pedestrian trips, disregarded refreshment, would stay till dark, sometimes exhausting the patience of his companions. Jethro [Tinker] said he was excessively abstemious and not to be deterred by rain or tempest.' There is a volume of Hobson's mosses at Warrington Museum; he was the first collector to find *Diphyscium* in v.-c. 63.

Jethro Tinker (1788-1871) was a native of Stalybridge in Cheshire. His father was an intelligent man who 'combined the vocation of hand-loom weaving with that of a village schoolmaster' (Bradshaw, 1945). At first in service as a shepherd, Jethro himself became a hand-loom weaver at the age of 18, but a year or two later he settled in the town of Stalybridge on the introduction of power looms. Subsequently he became overlooker and manager at his mill, then shopkeeper and publican and, towards the end of his life, a gardener. His interests extended to all branches of natural history, including bryophytes, and his enthusiasm is revealed by the story how, after choir one Sunday morning, on seeing an unusual butterfly, he chased along the street, top hat in hand, until he captured the specimen and returned home with it pinned to the top of his hat. As a participant in the excursion to Seal Bark Rocks in 1832, he was clearly already well acquainted with William Wilson.

Two extracts from a biographical note (Bradshaw, 1945) help to put his circumstances (and those of others like him) in context:
"He used to take long pedestrian journeys, thinking nothing of setting off on the Saturday evening - cotton mill hours being then 10 a.m. to 6.30 p.m. and 4. p.m. on Saturdays - into the districts round about. There were no trains, trams, or buses in those days. Shanks

ponies were invariably the organs of locomotion. The naturalists of the period would think little of walking o'er hill and dale to Buxton and Bakewell, or down to the Cheshire plain, even to Delamere ....
"In his later years he invariably attended some of the local botanical meetings and often acted as referee or umpire, and his decisions were always accepted as final. To anyone who has never attended any of these working-men naturalist meetings it is always a revelation, for here are perhaps 30 or 40 men from the. lathe or loom taking it may be a Butterfly, Moth, Beetle, or Snail, describing it as correctly as the most learned professor, giving you its name with, to-day, the most modern methods of nomenclature, often running through the whole gamut of Class, Division, Genus, and Species..... Here a group of men, lovers of the open air, of nature and her secrets, with one of them, a specimen in his hand, giving you his description of its habitat and all its characteristics without a pause. Then finally he may roll out Class, Dicotyledon, etc., Natural Order, and finally its Latin name, *Bellis perennis*, with unconcern."

The third and last of this group of botanists that I wish to mention is Richard Buxton of Manchester (1786-1865), interesting not just because his *Botanical Guide to Manchester* (1849) included a section on mosses, but because he is one of the few working-men botanists to have left an autobiographical memoir (in the introduction to his *Botanical Guide*).

He was born the second of seven children to John and Ann Buxton, at Sedgley Hall Farm, Prestwich. When Richard was not yet two years old, his father 'became much reduced in circumstances' and had to leave the farm to work as a labourer for the rest of his life. Consequently, Richard had almost no schooling other than three months at a 'dame's school', where he had 'no recollection of having learned anything', and a period at Sunday School between the age of eight and ten, where irregular attendance left him with no more than a knowledge of the alphabet and some monosyllabic words, and even this little he was subsequently to forget.

At twelve, he went to learn the trade of bat-maker with James Heap (bats were small leather shoes for children), and eighteen months later joined one James Hyde. Although the hours were long, trade was good and the wages relatively high (14 to 15 shillings a week), a situation that was to change later in life as leather bats fell into disuse. Nevertheless, at 16 Richard was pained that he alone of his family was unable to read, and he determined to teach himself, first with a common spelling-book, then with the New Testament, and finally with Jones's *Pronouncing Dictionary*, which he worked steadily through from beginning to end.

Although he recalled being attracted as a young child by wild flowers such as Tormentil and Germander Speedwell, it was not until he was 18 that his mature botanical interest was stimulated, when he returned to work for his old master, James Heap. This man was fond of country walks to gather herbs with which he made diet drinks, and he often took Richard along with him. Finding many unknown plants, he was eager to obtain greater knowledge and bought copies of Culpeper's *Herba*l, which he found very imperfect, and then Meyrick's *Herbal*, which was better but still inadequate. Subsequent books which he

found useful were Jenkinson's Flora, Robson's *English Flora*, Withering's *Botany* and Smith's *Introduction to Botany*.

In these early years, he botanized largely alone, and was very much a field rather than a herbarium botanist. 'To obtain a true idea of a plant, let me see it alive and flourishing in the place where it grows, surrounded by all the conditions necessary for
its growth. In my eyes, dried specimens look like pallid corpses. Besides a dislike to dead plants, I did not like to take away and destroy living things which might be enjoyed by others as well as myself' .

In 1821 Buxton became fully occupied with his trade and was compelled to discontinue his botanical excursions for some years.

When he resumed in 1826, he began to broaden his botanical acquaintances and activities, initially because of a chance meeting with John Horsefield, President of the Prestwich Botanical Society. In the following years, he came to know most of the Manchester botanists, including Jethro Tinker, and two of the Yorkshire bryologists already mentioned in this account, Samuel Gibson ('that superior naturalist') and John Nowell ('the first among working-men with whom I am acquainted, as a muscologist'). He first attended the Prestwich Botanical Society in 1833, and in 1839 attended meetings of the Natural History Class held at the Manchester Mechanics' Institution. The venues of his excursions included many parts of Cheshire, Derbyshire, the Craven district of Yorkshire, and North Wales (by steamer from Liverpool). Some of his excursions were sponsored by an unnamed gentleman 'who had just begun to study botany and appeared very anxious in its pursuit'. The results of his local work were published in his *Botanical Guide to Manchester* in 1849.

In later life he had to supplement his worn-out trade by delivering newspapers on a Saturday. He was never of a strong constitution, yet could still manage a thirty mile hike over the age of sixty. He remained single all his life and lived with an elder sister, Mrs. Robinson.

I end by quoting from Buxton's view of his situation and that of his fellow workers: 'The operative who lives in a large manufacturing town, sees plenty of the handyworks of his fellow-men in the giant steam-engine, the ingenious mule, which rivals the gossamer in spinning threads, the never-tiring power loom, and the countless other contrivances of mechanical skill which have resulted from the fertile brain of man. He sees much of what is termed the triumphs of science and art, but little of the works of nature. This renders him an intelligent, but to a certain extent, an artificial man .....'
'To the poor, as a class, it is to be feared that the possession of land in this country is not generally attainable ..... I hope that the lords of the soil will yet allow the pent-up dwellers of the crowded city to walk about and view the beauties of creation - yes, not only permit it, but derive much true pleasure from seeing the sons of toil rationally enjoying themselves in rambling through their domains, and exploring the wonders of nature, after a week of labour'.

POSTSCRIPT

There is a class of men in Manchester, unknown even to many of the inhabitants, and whose existence will probably be doubted by many, who yet may claim kindred with all the noble names that science recognises. I said "in Manchester," but they are scattered all over the manufacturing districts of Lancashire. In the neighbourhood of Oldham there are weavers, common hand-loom weavers, who throw the shuttle with unceasing sound, though Newton's *Principia* lie open on the loom, to be snatched at in work hours, but revelled over in meal times, or at night. Mathematical problems are received with interest, and studied with absorbing attention by many a broad-spoken, common-looking factory-hand. It is perhaps less astonishing that the more popularly interesting branches of natural history have their warm and devoted followers among this class. There are botanists among them, equally familiar with either the Linnean or the Natural system, who know the name and habitat of every plant within a day's walk from their dwellings; who steal the holiday of a day or two when any particular plant should be in flower, and tying up their simple food in their pocket-handerkerchiefs, set off with single purpose to fetch home the humble-looking weed .....

> And Margaret's grandfather was one of these.
> .....
> .....
> ".....grandfather has been out moss-hunting, and will not be home till late."
>
> Mrs. Gaskell, Mary Barton, ch. V.

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