



Veale, Lucy and Endfield, G.H. and Naylor, Simon  
(2014) Knowing weather in place: the Helm Wind of  
Cross Fell. *Journal of Historical Geography*, 45 . pp. 25-  
37. ISSN 0305-7488

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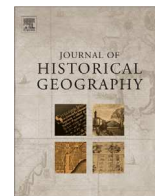
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## Knowing weather in place: the Helm Wind of Cross Fell



Lucy Veale<sup>a,\*</sup>, Georgina Endfield<sup>a</sup> and Simon Naylor<sup>b</sup>

<sup>a</sup> University of Nottingham, School of Geography, University Park, Nottingham NG7 2RD, UK

<sup>b</sup> University of Glasgow, School of Geographical and Earth Sciences, East Quadrangle, University Avenue, Glasgow G12 8QQ, UK

### Abstract

The Helm Wind of Cross Fell, North Pennines, is England's only named wind. As a product of the particular landscape found at Cross Fell, the Helm is a true local wind, and a phenomenon that has come to assume great cultural as well as environmental significance in the region and beyond. In this paper we draw on material from county histories, newspaper archives, and documents relating to investigations of the Helm Wind that were conducted by the Royal Meteorological Society between 1884 and 1889, and by British climatologist Gordon Manley (1908–1980), between 1937 and 1939, to document attempts to observe, measure, understand and explain this local wind over a period of 200 years. We show how different ways of knowing the Helm relate to contemporary practices of meteorology, highlighting the shifts that took place in terms of what constituted credible meteorological observation. We also acknowledge the overlapping nature of these ways of knowing and the persistence of multiple testimonies about the Helm and its effects.

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**Keywords:** Weather; Place; Helm Wind; Royal Meteorological Society; Gordon Manley; Cultural Climatology

There is a growing literature in the humanities on the relationship between climate and culture in historical perspective. By demonstrating that climate 'means different things to different people in different contexts, places and networks',<sup>1</sup> this work has highlighted the importance of 'taking seriously the spatial, the geographical, the location specific' in understanding how climate is experienced.<sup>2</sup> Historical geography is well placed to contribute to the study of climate narratives 'of all kinds in historical–geographical perspective, as forms of knowledge produced and distributed in particular periods and places'.<sup>3</sup>

People interact with climate through day-to-day weather. Weather has been woven or inscribed into human experience of life

and 'punctuates our daily routines' in countless ways.<sup>4</sup> It follows that in order to consider the particularities and specificities of human experience of and responses to climate, and how these vary over time and space, it is important to study the multiple human experiences and interpretations of weather.<sup>5</sup>

As Lazarus and Pepler have recently demonstrated, it is not only advances in science but 'local observations and experiences in nature and oral histories' that can help to conceptualize and understand how weather and its variations affect, and have affected, people at the local level.<sup>6</sup> There is increasing recognition that all such forms of knowledge have value.<sup>7</sup> As a result, local, lay or, in Vetter's terminology, 'experiential' perspectives are assuming new

\* Corresponding author.

E-mail address: [lucy.veale@nottingham.ac.uk](mailto:lucy.veale@nottingham.ac.uk).

<sup>1</sup> M. Hulme, *Why We Disagree About Climate Change*, Cambridge, 2009, 325.

<sup>2</sup> D. Livingstone, Reflections on the cultural spaces of climate, *Climatic Change* 113 (2012) 91–93.

<sup>3</sup> S. Daniels and G. Endfield, Narratives of climate change: introduction, *Journal of Historical Geography* 35 (2009) 215–222, 215.

<sup>4</sup> J. Golinski, Time, talk, and the weather in eighteenth-century Britain, in: S. Strauss, B. Orlove (Eds.), *Weather, Climate, Culture*, Oxford, 2003, 17–38, 17.

<sup>5</sup> T. Pillatt, Experiencing climate: finding weather in eighteenth-century Cumbria, *Journal of Archaeological Method and Theory* 19 (2012) 564–581.

<sup>6</sup> H. Lazarus and R. Pepler, Ways of knowing: traditional knowledge as key insight for addressing environmental change, theme introduction, *Weather, Climate and Society* special collection (2013) <http://journals.ametsoc.org/page/Ways> [accessed 20/11/2013].

<sup>7</sup> For example see: H. Collins and R. Evans, The third wave of science studies: studies of expertise and experience, *Social Studies of Science* 32 (2009) 235–296; A. Lawrence, The first cuckoo in winter: phenology, recording, credibility and meaning in Britain, *Global Environmental Change* 19 (2009) 173–179. Scientists (perhaps most notably biometrician Tim Sparks) have recently provided the rigour that has enabled phenology to make a significant contribution to both the interpretation of the historical climate record and contemporary understanding of climatic and seasonal trends, through initiatives like 'Nature's Calendar': <http://www.naturescalendar.org.uk/> [accessed 7/03/2014]. See D. Roy and T. Sparks, Phenology of British butterflies and climate change, *Global Change Biology* 6 (2000) 407–416.

importance as legitimate sources of weather knowledge.<sup>8</sup> Scholars across the disciplines of geography, history and anthropology have begun to explore how ‘ordinary’ people understand, talk and write about weather, and how they engage with and ascribe meanings to it.<sup>9</sup> Recent work has also addressed the significance of relational contexts for the shaping of weather experiences and identities.<sup>10</sup> Different regional circumstances, particular physical conditions, an area’s social and economic activities and embedded cultural knowledges, norms, values, practices and infrastructures, all affect community experiences and responses to the weather.<sup>11</sup> ‘Weather constantly makes and remakes place’, it shapes the material features of a place and modifies the nature of the human engagement with place.<sup>12</sup> Drawing on Ingold’s concept of the ‘weather world’, Pillatt argues that weather is integrated into people’s interpretation of place.<sup>13</sup> His examination of eighteenth-century diaries shows ‘that an understanding of the weather is bound deeply into people’s lives, their cosmologies and their senses and uses of the landscape’. He conceives of weather, landscape and people as inseparable, such that ‘the weather *in* which one stands can be as much responsible for generating a sense and use of place as the ground *on* which one stands’.<sup>14</sup> There has been some work to explore these ideas in relation to one, often neglected, manifestation of weather – the wind – to which we turn now.

Low and Hsu argue that ‘The value of discussing wind lies in what it brings not only, on a theoretical level, to elucidating human relationships with one of the planet’s basic aspects of life but also to exploration of how the materiality of wind shapes social practice at a number of fundamental levels’.<sup>15</sup> Long before a scientific understanding of the atmosphere emerged, people were aware of the impact of different winds on their daily lives and general welfare. The variety of names given to winds around the world reflects the importance awarded to them.<sup>16</sup> Local names referencing direction or character were used to refer to specific winds, and were often associated with a sense of geographic orientation. The Ancient Greeks conceived of four winds; winds from the north (Boreas), winds from the south (Notos), from the east (Eurus) and from the west (Zephyrus). Today, many locally-acting winds have names.

For Massey, it is the ‘different winds that reach us’ that ‘provide a kind of sensual orientation’ and are ‘reminders of this place’s place in the wider scheme of things’.<sup>17</sup> Following Ingold, we suggest that wind should be conceived as a component of landscape; a force that acts to shape landscapes. Wind scatters seeds, erodes surface material, and shapes the growth of vegetation. Together with other elements of weather, wind interferes with daily life (whether in a disruptive or beneficial way) and shapes behaviour. Indeed, winds hold a special place in Ingold’s weather world, being ‘sometimes barely perceptible, at other times... so strong that they can uproot trees and bring down buildings’.<sup>18</sup> In this paper, we consider a range of different narratives charting the implications and understanding of a single local weather feature, the Helm Wind of Cross Fell, Cumbria – England’s only named wind.

The Helm Wind is a true ‘local’ wind, being a product of the very particular landscape and weather conditions found in the area around Cross Fell, the highest point along the 268-mile Pennine Way, standing at 893 metres above sea level (Fig. 1). The climate of the North Pennines is generally temperate, with a small area classified as subarctic.<sup>19</sup> The hills tend to receive more rain and snowfall, stronger winds and colder temperatures than the surrounding areas.<sup>20</sup> Uttley describes the Helm Wind as: ‘A strong, cold, north-easterly wind that occasionally blows down the western slope of the Cross Fell range into the Vale of Eden in north-western England. It occurs when the horizontal component of airflow is virtually perpendicular to the hills, which restricts directions to the north-east, and when a stable layer of air lies about 600 m above the summit of the range’.<sup>21</sup>

During an occurrence of the Helm Wind, a heavy bank of cloud (the ‘Helm’ or ‘Helm Cloud’) rests along the Cross Fell Range, whilst, three or four miles from the foot of the Fell, a signature cigar-shaped, rolling cloud (the ‘Helm Bar’), forms and remains stationary over the mountain tops (Fig. 2).<sup>22</sup> The Helm probably takes its name from the Anglo-Saxon, signifying a helmet or covering for the head, and is a reference to this distinctive cloud formation.<sup>23</sup> It is usually thought of as a ‘Foehn’ type wind, typically dry and acting down slope in the lee or downwind side of a mountain range. In an account of the Foehn in Switzerland,

<sup>8</sup> J. Vetter, Introduction: lay participation in the history of scientific observation, *Science in Context* 24 (2011) 127–141.

<sup>9</sup> S. Strauss and B. Orlove, Up in the air: the anthropology of weather and climate, in: S. Strauss, B. Orlove (Eds), *Weather, Climate, Culture*, Oxford, 2003, 3–14; V. Jankovic and C. Barboza, *Weather, Local Knowledge and Everyday Life*, Rio de Janeiro, 2011; R. Hitchings, Seasonal climate change and the indoor city worker, *Transactions of the Institute of British Geographers* 35 (2010) 282–298; R. Hitchings, Coping with the immediate experience of climate: regional variations and indoor trajectories, *Wiley Interdisciplinary Reviews: Climate Change* 2 (2011) 170–184; E. de Vet, Exploring weather-related experiences and practices: examining methodological approaches, *Area* 45 (2013) 198–206.

<sup>10</sup> R. Slocum, Consumer citizens and the cities for climate protection campaign, *Environment and Planning A* 36 (2004) 763–782; I. Lorenzoni and N. Pigeon, Public views on climate change: European and USA perspectives, *Climatic Change* 77 (2006) 73–95.

<sup>11</sup> A. Oliver-Smith and S. Hoffman, *The Angry Earth: Disaster in Anthropological Perspective*, London, 1999.

<sup>12</sup> P. Vannini, D. Waskul, S. Gottschalk and T. Ellis-Newstead, Making sense of the weather: dwelling and weathering on Canada’s rain coast, *Space and Culture* 15 (2012) 361–380.

<sup>13</sup> T. Ingold, Footprints through the weather-world: walking, breathing, knowing, *Journal of the Royal Anthropological Institute* 16 (2010) S121–S139; T. Ingold, Earth, sky, wind and weather, *Journal of the Royal Anthropological Institute* 13 (2007) S19–S38. Ingold posits that weather’s ‘myriad expressions’ on the landscape provide the medium in which we live.

<sup>14</sup> Pillatt, Experiencing climate (note 5), 4134.

<sup>15</sup> C. Low and E. Hsu, Preface, *Journal of the Royal Anthropological Institute* 13 (2007) Siii.

<sup>16</sup> These impacts could be constructive, facilitating navigation or promoting health, and also destructive through their force or that of the other weather components that accompanied them. For more on wind lore since Greek and Roman times see; F. Forrester, Winds of the world, *Weatherwise* 35 (1982) 204–210; D. Thompson, The Greek winds, *The Classical Review* 32 (1918) 49–56; E. McCartney, Greek and Roman weather lore of winds, *The Classical Weekly* 24 (1930) 11–16 and 25–29.

<sup>17</sup> D. Massey, Some times of space, in: O. Eliasson, *The Weather Project*, London, 2003, 107–118.

<sup>18</sup> Ingold, Earth, sky, wind and weather (note 13), S28.

<sup>19</sup> Gordon Manley was instrumental in ascertaining that the climate of the Cross Fell region was more like that of Iceland than Britain, see G. Manley, The climate of the northern Pennines: the coldest part of England, *Quarterly Journal of the Royal Meteorological Society* 62 (1936) 103–115.

<sup>20</sup> BBC *Wild Weather*, [http://news.bbc.co.uk/local/cumbria/hi/people\\_and\\_places/nature/newsid\\_8929000/8929136.stm](http://news.bbc.co.uk/local/cumbria/hi/people_and_places/nature/newsid_8929000/8929136.stm) [accessed 20/11/2013].

<sup>21</sup> D. Uttley, *The Anatomy of the Helm Wind: The Scourge of the Cumbrian East Fells*, Cumbria, 1998.

<sup>22</sup> This study of the Helm Wind is also therefore a contribution to literature on the history of cloud studies: L. Howard, *On the Modifications of Clouds, and on the Principles of Their Production, Suspension, and Destruction*, London, 1804; R. Hamblin, *The Invention of Clouds: How an Amateur Meteorologist Forged the Language of the Skies*, London, 2002; F. Pouncy, A history of cloud codes and symbols, *Weather* 58 (2003) 69–80; G. Pretor-Pinney, *The Cloudspotter’s Guide. The Science, History and Culture of Clouds*. London, 2006.

<sup>23</sup> The equivalent cloud at Table Mountain is similarly referred to as ‘the tablecloth’. Roll or arcus clouds attracted observers all around the world in the nineteenth century, see F. Proctor, Horizontal atmospheric rolls, *Monthly Weather Review* 24 (1896) 367–368.

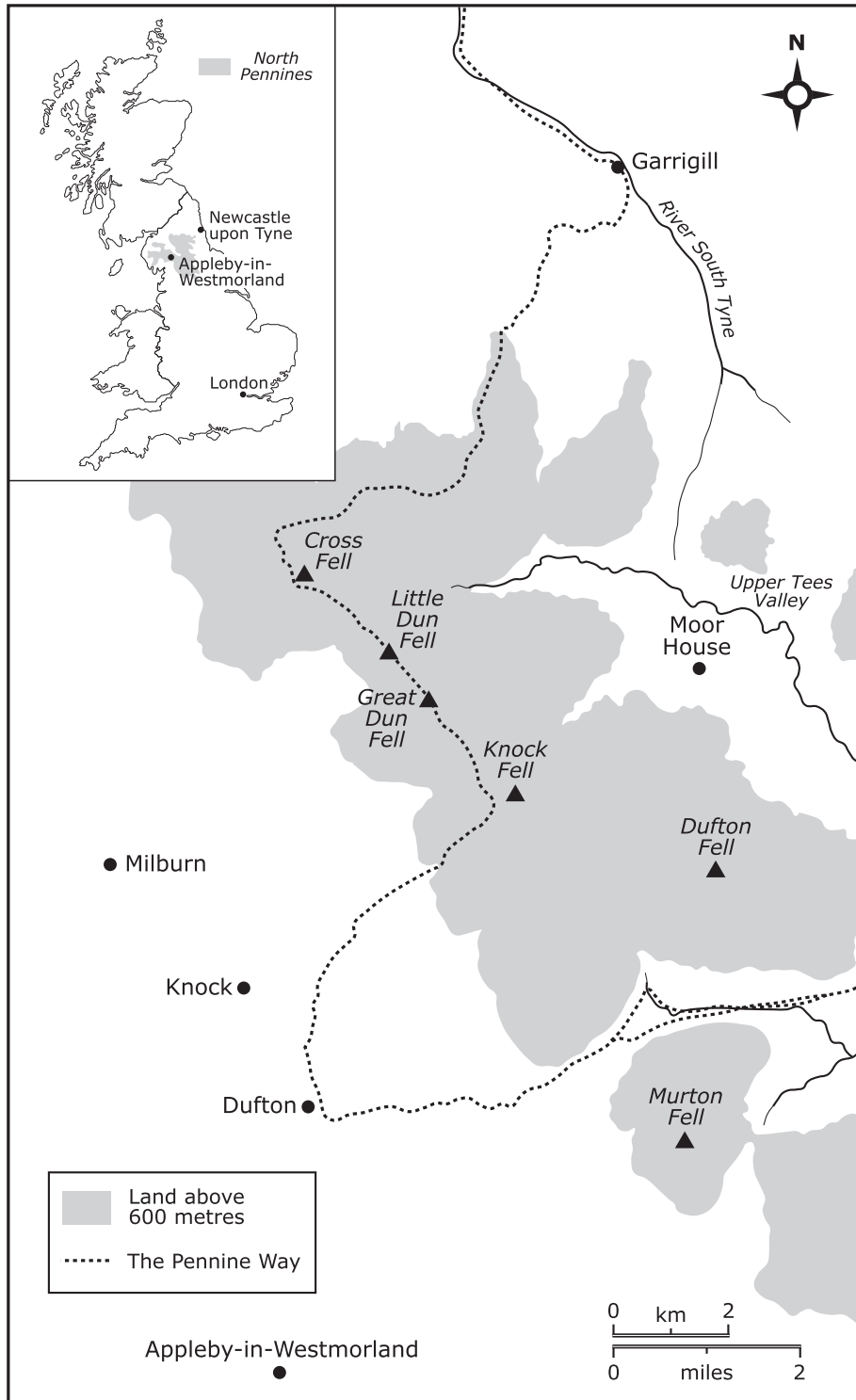


Fig. 1. Map of the Cross Fell Region. ©Elaine Watts, School of Geography Cartographic Unit, University of Nottingham.

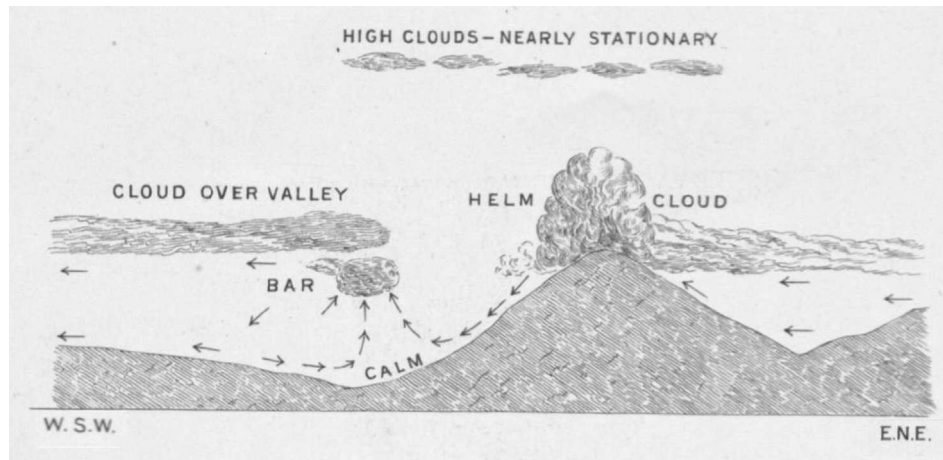


Fig. 2. Diagram illustrating Helm Wind formation. ARCHIVE T23.A-B RP062(CROS) BOX 12, Royal Meteorological Society Collection, reproduced with the kind permission of the National Meteorological Archive, Exeter. (Note: the original diagram had 'ENE' and 'WSW' transposed. This has been corrected here.)

Strauss acknowledged the unlikely nature of an 'ethnography of the wind', but concluded that it might be a necessary activity in the case of special, named winds. As she explains, '...some winds help to define the places in which they reside; often, these winds have names – testaments to the strength of their identities, each recognisable from afar by internal or external indicators, such as a "feeling in the bones" or a particular pattern of cloud cover'.<sup>24</sup> In Ingold's words, winds like the Helm give 'shape and direction to people's lives', being 'creatively (and destructively) powerful' in their own right.<sup>25</sup>

In this paper we employ a variety of historical sources to explore different ways of knowing and interpreting the Helm over time.<sup>26</sup> While the Helm Wind was unique to Cumbria, its study was always informed by ideas and activities elsewhere. We show how ways of knowing the Helm related to contemporary practices of meteorology and to wider assumptions about the study of place and region. First, we consider the role of the eighteenth- and early nineteenth-century county history and the 'meteoric tradition' in studies of the Helm. This is followed by a discussion of the significance of Victorian associational science and the assembly of daily instrumental weather records, with an examination of the work of the Royal Meteorological Society (RMetS) and their inquiry into the Helm Wind. Our final section moves into the mid-twentieth century and the deployment of modern meteorological practices in the study of the Helm, where we focus on the investigations conducted by British climatologist Gordon Manley. Throughout we highlight the shifts that took place in terms of what constituted trustworthy and credible meteorological observation, while acknowledging the overlapping nature of these ways of knowing and the persistence of multiple testimonies about the Helm and its effects.

### County histories and public meteors: co-existing perspectives on the Helm

The study of the weather in the eighteenth century encompassed a number of different approaches and social groups. Understood as an aspect of natural history, the weather was routinely included as one component of a chorographical account or county history, which in turn 'acted as the prime organizer in the quest for spatial and social physiognomies of regions'.<sup>27</sup> By the end of the century, few counties were left without a multi-volume history and almost all were perambulated by naturalists, often local clergyman, who used their university education, 'stationary residence', social standing, and connections to the local gentry and wider connections in the international republic of letters to develop book-length studies of the locality.<sup>28</sup>

Enlightenment meteorologists exhibited an interest both in extraordinary weather events and in the weather's 'quotidian regularity', with lengthy accounts of lightning strikes and storms sitting alongside diaries that subjected the weather to routine, meticulously recorded daily observations.<sup>29</sup> Observers aimed to build up 'comprehensive annals of the weather in their own locality in an attempt to discern long-term patterns', and to detach discourse about the weather 'from expectations of impending apocalypse or fears of divine punishments'.<sup>30</sup> Keeping weather records was meant to demonstrate 'the discipline, industry, and refinement of the society in which they were kept', which would rescue meteorology from superstition, 'enthusiasm and exaggeration, unreliable memory and vulgar gossip'.<sup>31</sup> All that said, the weather's anomalies and extremes constantly presented awkward questions of the enlightenment project to find order in nature. Even if extreme weather was no longer blamed literally on an act of God,

<sup>24</sup> S. Strauss, An ill wind: the Foehn in Leukerbad and beyond, *Journal of the Royal Anthropological Institute* 13 (2007) S165–S181, S166. A useful review of European interest in foehn winds is provided by C. Lüdecke, "I always feel the foehn, even if it's not there"; the Bavarian foehn phenomenon in everyday life, in: Janković and Barboza, *Weather, Local Knowledge and Everyday Life* (note 9), 203–212.

<sup>25</sup> Ingold, *Earth, sky, wind and weather* (note 13), S31.

<sup>26</sup> This builds on our preliminary review of historical sources relating to ways of knowing the Helm, L. Veale and G. Endfield, *The Helm Wind of Cross Fell*, *Weather* 69 (2014) 3–7.

<sup>27</sup> V. Janković, *Reading the Skies: A Cultural History of English Weather, 1650–1820*, Manchester, 2000, 105.

<sup>28</sup> Janković, *Reading the Skies* (note 27); M. Sweet, *Antiquaries: The Study of the Past in Eighteenth-century Britain*, London, 2004; S. Naylor, *Regionalizing Science: Placing Knowledges in Victorian England*, London, 2010.

<sup>29</sup> J. Golinski, *British Weather and the Climate of Enlightenment*, Chicago, 2007, xii and 4; V. Janković, The place of nature and the nature of place: the chorographic challenge to the history of British provincial science, *History of Science* 38 (2000) 79–113.

<sup>30</sup> Golinski, *British Weather* (note 29), 4.

<sup>31</sup> Golinski, *Time, talk, and the weather* (note 4), 24–25.

the weather's stubborn unpredictability nonetheless 'demonstrated the limits of human understanding and control of nature'.<sup>32</sup>

Studies of meteorology in regional context fed an emerging consciousness of the British national climate and allowed for comparison between the climates of places that were distant from one another.<sup>33</sup> Alongside county histories and essays in the journals of learned societies, the weather received increasing coverage in the burgeoning regional and national press, and continued as a popular topic of verbal discourse. Many metropolitan savants in the early nineteenth century worked hard to break meteorology's association with the popular and the folk, criticising the 'general lethargy that supposedly prevailed in the investigation of weather-systems, of the insufficiency and profusion of observations, of the public uselessness of the existing stock of facts, and of the imprecision of means for standardizing and using meteorological instruments'.<sup>34</sup> Nonetheless, accounts of regional weather melded common, local wisdom and expert testimony; descriptions of extreme events existed alongside everyday weather; and the atmosphere was recorded using both quantitative data and Romantic prose.

Published accounts of the Helm Wind appeared in historical and geographical guides for the counties of Cumberland and Westmorland from the late eighteenth century. Joseph Nicolson and Richard Burn's *The History and Antiquities of the Counties of Westmorland and Cumberland* (1777) included a description of the distinctive cloud formation and Helm Wind, which it described as 'a violent roaring hurricane... tumbling down the mountain'. The authors identified it as a 'remarkable phenomenon' rare in the county, though similar to winds experienced in 'places bordering upon the mountains of Ingleborough, Pendle and Penigent' in Yorkshire and Lancashire.<sup>35</sup> William Hutchinson's two volume *History of the County of Cumberland*, published between 1794 and 1797, carried a lengthy, Romanticised description of the cloud: 'This *helm*, or cloud, exhibits an awful and solemn appearance, tinged with white by the sun's rays that strike the upper parts, and spreads like a gloom below, over the inferior parts of the mountains, like the shadows of night'.<sup>36</sup> The account then drew upon the observations of a Mr Ritson, who had identified the wind as a function of the particular landscape formation at Cross Fell and likened it to winds at the Cape of Good Hope and the Straits of Gibraltar.

Ritson's accounts were reproduced in *The Beauties of England and Wales* in 1813,<sup>37</sup> and by Thomas Sopwith in *An Account of the Mining Districts of Alston Moor, Weardale and Teesdale in Cumberland and Durham* in 1833.<sup>38</sup> Sopwith also included the thoughts of

Charles Slee, originally presented in a paper read before the Royal Physical Society, where he concluded that the facts concerning the Helm were 'hardly compatible with the laws of matter and motion',<sup>39</sup> while Pinnock's *The History and Topography of Cumberland*, published in 1822, described the Helm as a 'singular' phenomenon: 'upon the summit of this lofty ridge there sometimes hangs a vast volume of clouds, apparently stationary... the tempest begins to rage violently; though, perhaps at a short distance, there is a dead calm, and a sunny sky'.<sup>40</sup> The stationary nature of the cloud also attracted Parson and White's attention in their 1829 *History, Directory and Gazetteer for the Counties of Cumberland and Westmoreland*.<sup>41</sup>

The 'sound' of the Helm was also a source of fascination. Reverend William Walton of Allenheads near Hexham provided written remarks on the Helm Wind to the Royal Society in 1836, in which he explained that, 'It is accompanied by a loud noise, like the roaring of distant thunder: and is carefully avoided by travellers in that district [Cumberland], as being fraught with considerable danger'.<sup>42</sup> Thomas Barnes, Fellow of the Royal Society of Edinburgh and Physician Extraordinary to the Dispensary, provided an account for Whellan's 1860 *The History and Topography of the Counties of Cumberland and Westmoreland*, in which he explored the effect of temperature on the atmospheric uptake of water vapour.<sup>43</sup>

Reverend J. Watson of Cumrew read a paper on the subject of the Helm Wind of Cross Fell at the 1838 meeting of the British Association for the Advancement of Science (BAAS), in which he described the unusual cloud formation, and irregularity of the Helm Wind, as well as its sound: 'When heard and felt for the first time it does not seem so very extraordinary; but when we find it blowing and roaring morning, noon and night, for days together, it makes a strong impression on the mind, and we are compelled to acknowledge that it is one of the most singular phenomena of meteorology... it has been compared to the noise made by the sea in a violent storm, or that of a large cotton mill when all the machinery is going'.<sup>44</sup> He also accounted for the local geography of the wind and named the places most subject to its effects as Milburn, Kirkland, Ousby, Melmerby and Gamblesby. A newspaper account of the meeting revealed that Watson concluded his paper by detailing his use of a meteorological journal kept by Mr Spedding of Crewgarth, the latter having formed the opinion that the Helm was something like a 'horizontal whirlwind'.<sup>45</sup>

As Foxhall has recently asserted, 'the utility of different forms of weather and environmental knowledge is as much a geographically determined question related to the immediate relevance of other

<sup>32</sup> Golinski, *British Weather* (note 29), xiii.

<sup>33</sup> Golinski, *British Weather* (note 29).

<sup>34</sup> V. Janković, Ideological crests versus empirical troughs: John Herschel's and William Radcliffe Birt's research on atmospheric waves, 1843–50, *British Journal for the History of Science* 31 (1998) 21–40, 24.

<sup>35</sup> J. Nicolson and R. Burn, *The History and Antiquities of the Counties of Westmorland and Cumberland*, Vol. 1, London, 1777, 7.

<sup>36</sup> W. Hutchinson, *The History of the County of Cumberland: and Some Places Adjacent, From the Earliest Accounts to the Present Time*, London, 1794–1797, 224.

<sup>37</sup> J. Britton, E.W. Brayley, J.N. Brewer, et al., *The Beauties of England and Wales, or, Delineations, Topographical, Historical, and Descriptive, of Each County*, Vol. 3, London, 1813.

<sup>38</sup> T. Sopwith, *An Account of the Mining Districts of Alston Moor, Weardale and Teesdale in Cumberland and Durham*, Alnwick, 1833.

<sup>39</sup> Sopwith (1803–1879) was a member of both the Royal Meteorological Society and the Royal Geographical Society and President of the RMS 1858–1860, see: M. Field, Pen portraits of Presidents – Thomas Sopwith, *Weather* 67 (2012) 50–51, and J. Kenworthy, 'Air, earth, and skies... and man's unconquerable mind', relationships between the Royal Meteorological Society and the Royal Geographical Society, *Occasional Papers on Meteorological History* 6 (2003).

<sup>40</sup> W. Pinnock, *The History and Topography of Cumberland*, with *Biographical Sketches*, London, 1822, 60.

<sup>41</sup> W. Parson and W. White, *History, Directory, and Gazetteer of the Counties of Cumberland and Westmoreland*, Leeds and Newcastle, 1829.

<sup>42</sup> W. Walton, A few remarks on the Helm Wind, *Abstracts of the Papers Printed in the Philosophical Transactions of the Royal Society of London* 3 (1800–1843) 459–460, 459.

<sup>43</sup> Whellan, *The History and Topography of the Counties of Cumberland and Westmoreland*, Pontefract, 1860, 578. Barnes's account was subsequently reproduced in T. Bulmer, et al., *History, Topography, and Directory of Cumberland*, Preston, 1901.

<sup>44</sup> J. Watson, On the Helm Wind of Cross Fell, *Report of the Eighth Meeting of the British Association for the Advancement of Science Held at Newcastle in August 1838*, London, 1839, 34. Watson's account was reprinted many times, including in: Whellan, *History and Topography* (note 43); S. Jefferson, *The History and Antiquities of Leath Ward: in the County of Cumberland*, Carlisle, 1840; J.P. Espy, *The Philosophy of Storms*, Boston, 1841; P.J. Mannex, *History, Topography, and Directory, of Westmorland; and Lonsdale North of the Sands, in Lancashire; Together with a Descriptive and Geological View of the Whole of the Lake District*, London, 1849.

<sup>45</sup> British Association, Meeting at Newcastle-on-Tyne, *Carlisle Journal*, 1 September 1838.

types of knowledge... as it is about the chronological development of new scientific modes of understanding and predicting weather'.<sup>46</sup> Certainly, accounts of the Helm Wind routinely went further than simply trying to capture its physical appearance and relationship to underlying topography. Some applied neo-Hippocratic medical thinking and environmentally-influenced discourses, including ideas from medical topography, to analyses of the wind. Janković notes that as a 'public meteor', such a wind would be described as an agency with attributes such as 'those of breath, omen, fertilizer, or destructor'.<sup>47</sup>

Surveying the medical topography of 'Appleby, Westmoreland and the circumjacent country,' surgeon William Bayers wrote, 'The state of the winds in this climate is very variable; I have known a long series of boisterous weather, and I have known the reverse happen'.<sup>48</sup> The Helm Wind was seen to have qualities that affected the human body and the land, both as a purifier and a pathogen. Hutchinson's *History of Cumberland* drew on the testimony of a Mr Richardson, who named the air at Cross Fell very clean and healthy, although he had found that 'the inhabitants of the countries immediately influenced by that wind are more subject to rheumatic complaints'.<sup>49</sup> A report in 1794 in the *Ipswich Journal* suggesting that the Helm Wind could threaten human health by its very presence in the atmosphere was supported by an account of a penal action against a Vicar in the county of Cumberland due to his absence from his parish:

...this gentleman was greatly afflicted with a spasmodic asthma; that his house stood on one of the highest mountains in England, where the wind, called the helm-wind, was excessively sharp and piercing... When he was at the communion-table, his lungs were so much affected by the helm-wind that he fell down. He was unable to reside in that place, and therefore he removed from thence by the advice of his physician. It was admitted... that if he had continued to reside there, suffocation was unavoidable.<sup>50</sup>

Later popular Victorian consensus was that windy environments were healthy, with winds helping to blow away toxic vapours from the atmosphere. A reference to the Helm Wind, in a death notice in the *Kendal Mercury* from 1854, supports this view: 'It is a curious fact that fever still lingers about Ousby, and is ever breaking out with fatal effect. A more salubrious situation would be difficult to meet with, as the atmosphere is regularly purified by the helm wind'.<sup>51</sup> Watson had made a similar observation in his paper, suggesting that the Helm's 'effect on the spirits is exhilarating, and it gives a buoyancy to the body. The country subject to it is very healthy, but it does great injury to vegetation, by beating grain, grass, and leaves of trees, till quite black'.<sup>52</sup>

As a public meteor, the Helm Wind was commonly described in terms of its deleterious agricultural and economic implications; that 'desolation follows in the train of this devastating wind'.<sup>53</sup> Such an assumption was found in the more learned accounts and

also in regional press reports. A paper on 'the atmosphere' by Reverend Thomas Clarke to the Kendal Literary and Scientific Institute in 1857 included a discussion of the Helm that drew on local accounts and paid particular attention to its effects on crops, livestock and rural infrastructure:

It sometimes blows the sheep about like so many pieces of wool; it frequently breaks down large forest trees – overthrows stacks; it has been known to blow a person from his horse, to overturn a cart completely on the level road, and houses which stand in its way are often unroofed or the roof broken to pieces... on one occasion, near Dufton, it took the entire roof from a man's house, but lifting it up and carrying it to a distance, as I am told, of fifty yards into a field.<sup>54</sup>

Local newspaper reports also traced the pathological effects of the Helm Wind on the landscape surrounding Cross Fell. For instance, the *Newcastle Magazine* noted in 1827 that 'The corn stacks, the stone walls which divide the inclosures [sic], the roofs of the houses, the stunted trees that grow in exposed situation, in short everything that is exposed, bear marks of its impetuous force'.<sup>55</sup> Damage to vegetation, and the disruption of agricultural activities was frequently reported, with the wind most feared at harvest time when it could prevent mowing, shake the unharvested grain from heads of corn and overturn stacks of grain and hay out in the fields.<sup>56</sup> Commercial forests were also affected. One reporter for *The Border Magazine* in 1863 said that 'I have known it strike like a chain-shot into a plantation of Scotch fir and larch, at Flakebridge, near Appleby, and for a space of about 150 yards in width, have seen nearly every tree torn up by the roots, and those trees which happened to have better hold of the ground, and refused at once to yield, had their tops snapped off, as if they were so many dried twigs or windlestraws'.<sup>57</sup> When the Helm coincided with heavy snowfall, the drifts it created led to losses of sheep and rendered transport across the fells difficult or impossible. In 1844 the *Morning Post* reported, 'The postman of the mail between Penrith and Alston was several times nearly blown out of his gig, and in the most bleak parts he was obliged to walk, holding on by the vehicle'.<sup>58</sup>

Such records not only relay the drama associated with particular Helm events but also point to the importance and value of place and local testimony in the formation of meteoric weather knowledges. Yet key changes in meteorological science were about to be introduced that would challenge, though not entirely replace, this form of meteorological reportage.

### Measuring and monitoring the Helm Wind

The science of meteorology went through a number of changes in the nineteenth century, whilst maintaining some of its enlightenment traits. For many, meteorology continued to be pursued as part of the natural history tradition – undertaken in a person's leisure

<sup>46</sup> K. Foxhall, Heat, calms and witches in the sky: interpreting the tropical Atlantic in the mid-nineteenth century, *Weather, Climate and Society* 2 (2010) 91–102, 92.

<sup>47</sup> V. Janković, Gruff boreas, deadly calms: a medical perspective on winds and the Victorians, *Journal of the Royal Anthropological Institute* 13 (2007) S147–S164, S148.

<sup>48</sup> W. Bayers, Medico-topographical sketches of Appleby, Westmoreland, and the Circumjacent Country, *Edinburgh Medical and Surgical Journal* 22 (1824) 320–331, 324.

<sup>49</sup> Hutchinson, *The History of the County of Cumberland* (note 36), 267.

<sup>50</sup> Wednesday's Post, *The Ipswich Journal*, 15 November 1794.

<sup>51</sup> Died, *Kendal Mercury*, 29 April 1854.

<sup>52</sup> Watson, On the Helm Wind of Cross Fell (note 44), 34.

<sup>53</sup> Holiday tours – High Cup Nick, Edendale to Upper Teesdale, *Leeds Times*, 3 September 1898.

<sup>54</sup> Kendal Literary and Scientific Institute, *Westmorland Gazette*, 25 April 1857.

<sup>55</sup> The Helm Wind (from the *Newcastle Magazine* for November), *Bath Chronicle and Weekly Gazette*, 22 November 1827.

<sup>56</sup> The Helm Wind, *Blackburn Standard*, 3 September 1856.

<sup>57</sup> *The Border Magazine*, November; *Carlisle Journal*, 13 November 1863.

<sup>58</sup> Tremendous wind storm, *Morning Post*, 5 November 1844.

time and anchored in an understanding of the nature of place. Like other subjects of natural history it also continued to acknowledge the value of non-elite knowledge.<sup>59</sup> The insights of ‘weather wisdom’ were seen by many as ‘characteristically rapid, in distinction to the labour of gathering observations from instruments, or poring over comparisons of recorded numbers’.<sup>60</sup> For others, British meteorology needed to undergo a re-conceptualisation – to fully embrace instrumentation and to treat the atmosphere as a laboratory. While Janković dates this shift in emphasis to the late eighteenth century, the argument gained momentum in the scientific reform movement of the 1820s and 1830s.<sup>61</sup>

Concerns about the level of training and expertise of meteorological observers preoccupied the likes of Charles Babbage, John Herschel, James Forbes and William Whewell, all of whom argued that meteorology should be centred on precision observations and conducted by experts in their field. The reform movement involved criticism of Britain’s foremost scientific institution, the Royal Society, and led to the establishment of an alternative venue for scientific discourse, the BAAS, and the Association’s takeover of the Kew Observatory, which could in turn supply (and test) instruments to provincial and overseas observatories and to voyages of exploration.<sup>62</sup> All of these institutions effected a change in the way Britain’s burgeoning provincial scientific societies practiced meteorology, by encouraging and supporting them to establish their own weather stations, to keep uniform meteorological registers and to enact strict observational regimes.<sup>63</sup>

Anderson reminds us that contestation over the engineering of the public spaces of science in the early Victorian period – spaces that sought to characterize authoritative knowledge – was a matter for ‘vital disputes’. This continued in the second half of the nineteenth century, where the public meaning of science was experienced more sharply than ever, ‘as men of science sought to justify government funding for scientific work in an increasingly literate, urban and democratic culture’.<sup>64</sup> In 1854 the Meteorological Department of the Board of Trade, headed by Robert FitzRoy, was established, to assist Britain’s merchant and naval fleets to better understand and predict the weather at sea.<sup>65</sup> From the 1850s onwards, there was an increasing emphasis on the statistical analysis of meteorological data. While there was scepticism about the value of collecting more meteorological data, the Department did fund and support six first order, self-recording observatories across the British Isles in the 1860s, which provided a model for the conduct of smaller second-order stations to follow.<sup>66</sup> The British (later Royal) Meteorological Society (RMetS) was established in 1850 and took on the role of supervising meteorological practices and testing instruments at numerous local, voluntary stations across England and

Wales. The increasing influence of these various institutions encouraged a shift from individual authority and judgement, discouraged the use of folk wisdom, and rejected weather prophesy.<sup>67</sup> That said, there was an uneven coverage of RMetS observers across the British Isles – northwest England and Scotland were particularly under-represented – and so lay and folk knowledge of the weather continued to enjoy a place in meteorological science alongside instrumental technologies and regulated practices.<sup>68</sup>

Such changes to the institutional structure and practices of meteorology were evident in the way the Helm Wind was investigated in the latter half of the nineteenth century, although Walton’s work had established an earlier precedent. Walton’s notes for his 1836 paper drew on local Helm Wind folklore but also stressed the importance of making regular instrumental observations – he kept a meteorological journal at his home, in which he recorded temperature, air pressure, wind direction and rainfall, which he supplied to the Royal Society. Walton believed that it was only through such an approach that the cause of the Wind would be ascertained and ‘the superstitious notions which are still entertained among the vulgar in the neighbourhood respecting the frequent recurrence of so extraordinary a phenomenon’ effectively repressed.<sup>69</sup>

The first paper read on the subject of the Helm Wind to the RMetS was by Reverend Joseph Brunskill at the 18 June 1884 meeting. Brunskill drew the Society’s attention to the noise of the Helm Wind and was able to refer to personal experience of it. The discussion following the paper centred on descriptions of similar winds on the west coast of Ireland in County Sligo and around Table Mountain, Cape Town. Comments also referred back to Watson’s paper of 1838, and the printed proceedings included remarks from Walton, Sopwith and Barnes. As an aid to those unfamiliar with the landscape of Cross Fell, the Reverend J. Ainsworth, ‘by means of the black-board... gave some details respecting the peculiar form of the land in the district’.<sup>70</sup> Following the interest generated by Brunskill’s paper the RMetS appointed a Committee, consisting of the Society’s President Robert Henry Scott, the Secretaries, Professor Archibald, Mr C. Harding and the Kew Observatory Superintendent, George Whipple, to collect information on the subject.<sup>71</sup>

At the first meeting of the RMetS Helm Wind Committee on 22 October 1884, the members considered it desirable ‘that a circular letter should be inserted in the Penrith newspapers, calling attention to the subject, and inviting the contribution of records of past dates of Helm winds, and simple observations of various kinds in future’.<sup>72</sup> From the material received, 93 instances of the Helm were identified in the period 1871–1884.<sup>73</sup> The testimonies pointed to continuing local enthusiasm for investigations of the Helm: ‘Mr

<sup>59</sup> J. Vetter, Lay observers, telegraph lines, and Kansas weather: the field network as a mode of knowledge production, *Science in Context* 24 (2011) 259–280.

<sup>60</sup> K. Anderson, Looking at the sky: the visual context of Victorian meteorology, *British Journal for the History of Science* 36 (2003) 301–332, 307.

<sup>61</sup> Janković, *Reading the Skies* (note 27).

<sup>62</sup> See J. Morrell and A. Thackray, *Gentlemen of Science: Early Years of the BAAS*, Oxford, 1981.

<sup>63</sup> Simon Naylor, Nationalising provincial weather: meteorology in nineteenth-century Cornwall, *British Journal for the History of Science* 39 (2006) 407–433.

<sup>64</sup> K. Anderson, The weather prophets: science and reputation in Victorian meteorology, *History of Science* 37 (1999) 179–216, 181.

<sup>65</sup> J. Burton, Robert FitzRoy and the early history of the meteorological office, *British Journal for the History of Science* 19 (1986) 147–176.

<sup>66</sup> Naylor, Nationalising provincial weather (note 63). These observatories were at Falmouth, Valencia, Aberdeen, Armagh, Glasgow and Stonyhurst, along with those at Kew and Greenwich.

<sup>67</sup> Anderson, The weather prophets (note 64).

<sup>68</sup> For the period 1878–1885 George Whipple noted that there was only one RMetS observer for North West England and that person was based in Llandudno in North Wales: G. Whipple, The non-instrumental meteorology of England and Wales, *Quarterly Journal of the Royal Meteorological Society* 14 (1888) 92–100.

<sup>69</sup> W. Walton, A few remarks on the Helm Wind, 28 November 1836, AP/21/10, Archives of the Royal Society.

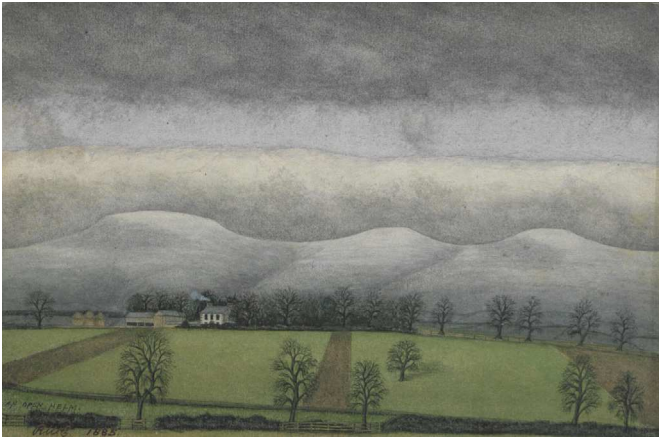
<sup>70</sup> J. Brunskill, The Helm Wind, Proceedings of Meetings, June 18th 1884, *Quarterly Journal of the Royal Meteorological Society* 10 (1884) 267–275, 270.

<sup>71</sup> RMetS, Report of the Council for the year 1884, *Quarterly Journal of the Royal Meteorological Society* 11 (1885) 73–104, 76.

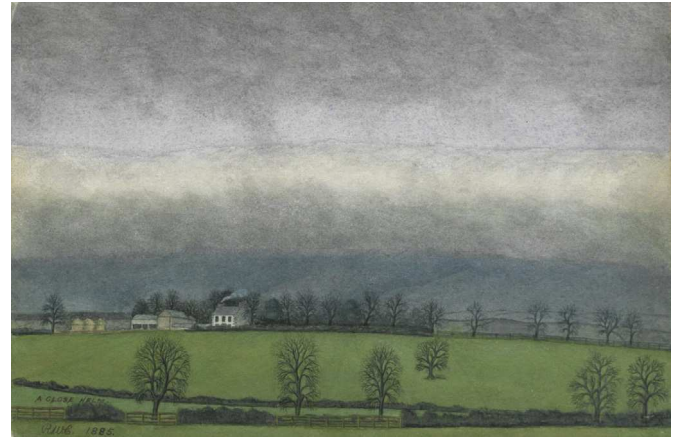
<sup>72</sup> RMetS, Report of Committee on the occurrences of the Helm Wind, *Quarterly Journal of the Royal Meteorological Society* 11 (1885) 226–238, 226.

<sup>73</sup> RMetS, Report of Committee (note 72), 227.





**Fig. 3.** An 'open helm', watercolour by R.W. Crosby, 1885 ARCHIVE T23.A-B RP062 (CROS) Box 12, Royal Meteorological Society Collection, reproduced with kind permission of the National Meteorological Archive.



**Fig. 4.** A 'close helm', watercolour by R.W. Crosby, 1885 ARCHIVE T23.A-B RP062 (CROS) Box 12, Royal Meteorological Society Collection, reproduced with kind permission of the National Meteorological Archive. In these documentary topographical watercolours the land and its features act to anchor the shifting atmospheric conditions, while the Helm raises the profile of the summit and gives the agricultural scene a sublime aspect. In Fig. 3 the lack of leaves on the trees, snow on the fell and sections of ploughed field suggest very early spring whilst Fig. 4 probably depicts late autumn.

Grierson had from time to time, prior to 1865, made experiments with small fire balloons and rockets during some of the Helm winds, but unfortunately his numerous memoranda and diaries containing detailed accounts have been lost.<sup>74</sup> Other local residents described detailed episodes of cloud appreciation: 'By close watching I thought I could discern a process of evaporation going on and wasting away the South-west edge of this lower bank like the melting away of a cloud of steam.'<sup>75</sup> Another described seeing the form of Dufton Pike reproduced in the clouds when the Helm was blowing. Local studies also included visual accounts, such as five observational watercolour sketches showing the Helm that were submitted shortly after the conclusion of the RMetS appeal in 1885 (Figs. 3 and 4). Three were by R.W. Crosby – one depicting 'an open helm', and two 'a close helm' – one by Mr Thompson of Penrith depicting the appearance of the Helm, and the fifth was unsigned illustrating the 'Helm Burr'.<sup>76</sup>

As part of the Committee's ongoing investigations, William Marriott (Assistant Secretary of the RMetS) visited Cross Fell and the Helm Wind district, accompanied by T.G. Benn, a Fellow of the RMetS and resident of Penrith, who volunteered to act as local superintendent for the Society in the investigation. On descending Cross Fell on the evening of 18 August 1885, they were 'so fortunate as to witness a slight Helm'.<sup>77</sup> Their subsequent account highlighted the sudden transition in air temperature and wind speed as they walked away from the Helm. The men also travelled around the area and were presented with multiple accounts of the Helm Wind and its effects: 'We were frequently told that haystacks were sometimes overturned, men on horseback blown out of the saddle, and other damage done by the wind'.<sup>78</sup> Marriott found it difficult to synthesize these reports into a coherent and reliable account of the phenomenon and commented that 'at very few places could we get precise information as to what the persons had actually seen or

experienced: the statements being very vague, or consisting of what they had been told by other people. The conclusion we arrived at was that past accounts were of little value, and that observations must be made on a systematic plan in order to obtain reliable data to throw light on the cause of the Helm Wind'.<sup>79</sup> This statement supports the argument that late-Victorian meteorological science both continued to rely on, as well as foster a distrust of, lay and folk knowledge of local weather but prioritised standardised instrumental records and registers taken and completed by reputable individuals. These individuals were ideally – like Benn – members and Fellows of scientific institutions.<sup>80</sup>

Marriott presented his findings in the RMetS's *Quarterly Journal*, and suggested a list of observations that should be made on each occurrence of the Helm to build a scientific study of its effects and cause. '[M]uch valuable information could be obtained', Marriott claimed, 'if some six or eight gentlemen would go out in pairs during the occurrence of the Helm Wind and make observations with thermometers &c'.<sup>81</sup> By the time the paper was published in 1886, eight members of the Penrith and District Literary and Scientific Society had responded to this call. Marriott also raised the possibility of making regular meteorological observations in the area: 'A meteorological station should be established at Penrith, and, if the observer has leisure and interest for the question, he would certainly make more frequent observations on days with Helm Wind'.<sup>82</sup> Other schemes were forwarded to measure the Wind's direction and force and to mitigate its effects. The RMetS Committee suggested that if several large bonfires were lit when the Helm Wind was blowing, some indication of the direction and strength of the current might be afforded by the drift of the smoke

<sup>74</sup> RMetS, Report of Committee (note 72), 231. The Committee was particularly pleased with the record received from Mr Thomas Grierson (of Camforth), who submitted extracts (dated from 1873–1877) and draft sketches from his diaries compiled while he resided in Penrith.

<sup>75</sup> RMetS, Report of Committee (note 72), 232.

<sup>76</sup> R.W. Crosby, Helm wind – Correspondence and water-colours, 1885–1889, ARCHIVE T23.A-B RP062 (CROS) Box 12, Royal Meteorological Society Collection, Archive of the Meteorological Office. Crosby's death is reported in W. Marriott, Report on the Helm Wind Inquiry, *Quarterly Journal of the Royal Meteorological Society* 15 (1889) 103–118.

<sup>77</sup> W. Marriott, The helm wind of August 19th, 1885, *Quarterly Journal of the Royal Meteorological Society* 12 (1886) 1–10, 3.

<sup>78</sup> Marriott, The helm wind (note 77), 1.

<sup>79</sup> Marriott, The helm wind (note 77), 2.

<sup>80</sup> Naylor, Nationalising provincial weather (note 63).

<sup>81</sup> Marriott, The helm wind (note 77), 6.

<sup>82</sup> Marriott, The helm wind (note 77), 7.

(an idea that does not appear to have been implemented). Meanwhile, George Symons noted that an unnamed gentleman had proposed, ‘that pipes should be laid up the side of Cross Fell, and when the Helm Cloud was forming quantities of steam should be let off at the top of the Fell by means of these pipes, and so cause the accumulated vapour to disperse’.<sup>83</sup>

On 20 February 1889 Marriott again spoke at the RMetS meeting, where he reported on the results of the Helm Wind inquiry. Special forms had been prepared and sent to a number of people in the district. The completed forms indicated 41 appearances of the Helm Bar in 1885, 63 in 1886 and 19 in 1887. In order to show that the phenomenon was not restricted to any particular season, Marriott included observers’ notes on five Helms occurring between November 1885 and April 1888 within the appendix of his paper. Accounts from 13 different observers were included, R.W. Crosby providing an account for all of the selected events. Members of the clergy and staff from the region’s mines (often high up on the fells) also made contributions.<sup>84</sup>

The RMetS conducted no further activity relating to the Helm Wind and it was not until the 1930s that it was once again the subject of organised investigation, when the English climatologist and geographer Gordon Valentine Manley (1902–1980) established a meteorological station on Great Dun Fell (the peak adjacent to Cross Fell). It is to his contributions that we now turn.

### Science made popular: Gordon Manley and twentieth-century studies of the Helm Wind

The turn of the twentieth century saw meteorology struggling to form its own disciplinary identity.<sup>85</sup> This was an era of ‘big science’, and like allied disciplines such as physics, meteorological science became dominated by the search for universal, deterministic laws at continental and global scales, galvanised by the need for accurate weather forecasting for pilots in the First World War and facilitated by pioneering developments in modern mathematical techniques and computation.<sup>86</sup> At the same time there was a ‘downscaling’ of weather science amid a revival in public engagement with local natural environments.<sup>87</sup> In the interwar years there was a general impulse towards regional survey, the capturing and sharing of local natural and social knowledge, and the promotion of citizenship.<sup>88</sup> To some extent, this movement brought together the coming of age of the ‘new’ science of ecology, and the institutionalisation of field study and nature conservation in a society looking toward a

peaceful future.<sup>89</sup> Despite the scientific ‘appropriation’ of meteorology and the forging of a predominantly global perspective on meteorology, diverse weather cultures continued to exist, revealing what Janković and Barboza have described as ‘an enduring fascination with the aleatory and elusive quality of atmospheric phenomenology’.<sup>90</sup>

It was in this context that Gordon Manley worked, both as a field scientist and natural historian. He regarded the countryside as a ‘laboratory’ in which to investigate the interrelationships between culture, climate and place.<sup>91</sup> Illustrating the distinctive ‘personalities of regions’ and demonstrating how ‘regions acquired an identity through their weather and local weather acquired the identity of its regions’, Manley’s work also resonated with an earlier chorographic tradition.<sup>92</sup> His 1952 book, *Climate and the British Scene*, illustrated the significant role that climate played in shaping British landscapes, national identity and character. The publication was the twenty-second book in Collins’ *The New Naturalist* series, an influential set of volumes on British natural history, and Manley’s popular, non-academic style reflected the series’ aim to promote new ways of observing and understanding nature and to provide ‘a new survey of Britain’s natural history... popular in price, presentation and appeal’.<sup>93</sup> Manley sought to emphasise the significance of the climate as a factor in shaping the landscape and also in ‘moulding the British mind’.<sup>94</sup> He did this by studying the British climate as ‘an expression of our integrated experiences of “weather”’.<sup>95</sup>

Manley had started collecting meteorological data in the Pennines at Moor House in 1932, while employed at the University of Durham, with a focus on expanding knowledge of upland weather and climate.<sup>96</sup> He later described how he had been ‘attracted by the Northern Pennines, in particular around Cross-fell, as the most extensive area of bleak uncompromising upland that England possesses’.<sup>97</sup> Mr Armstrong, the resident gamekeeper at Moor House, as well as his wife and daughter, helped to keep the instruments running, regularly changed the charts, read the rain gauge, took further notes, and posted the observations to Manley. Correspondence from the Armstrongs included observations of the Helm Wind. A letter from November 1940 stated, ‘the Helm wind was on a fortnight ago. We do so hope we do not get such a severe storm as last winter, things are bad enough without the weather being at its worst’.<sup>98</sup> This correspondence may well have played a role in sparking Manley’s interest in the Helm.

<sup>83</sup> Marriott, The helm wind (note 77), 8. George Symons was the founder of the British Rainfall Organisation and honorary secretary of the RMetS. It is not clear from whom the ‘pipes’ proposal came nor whether any further action was taken.

<sup>84</sup> Marriott, Report on the Helm (note 76).

<sup>85</sup> J. Fleming, V. Janković and D. Coen (Eds), *Intimate Universality: Local and Global Themes in the History of Weather and Climate*, Sagamore Beach, 2006.

<sup>86</sup> F. Nebeker, *Calculating the Weather: Meteorology in the Twentieth Century*, London, 1995; R. Friedman, *Appropriating the Weather: Vilhelm Bjerknes and the Construction of a Modern Meteorology*, Ithaca, 1989.

<sup>87</sup> D. Coen, Scaling down: the ‘Austrian’ climate between Empire and Republic, in: Fleming, et al. (Eds), *Intimate Universality* (note 85), 115–140.

<sup>88</sup> D. Matless, Regional surveys and local knowledges: the geographical imagination in Britain, 1918–1939, *Transactions of the Institute of British Geographers* 17 (1992) 464–480.

<sup>89</sup> P. Marren, *The New Naturalists: Half a Century of British Natural History*, London, 1995, 13.

<sup>90</sup> Janković and Barboza, *Weather, Local Knowledge and Everyday Life* (note 9), 16.

<sup>91</sup> M. Tooley and G. Sheail, The life and work, in: M. Tooley, G. Sheail (Eds), *The Climatic Scene: Essays in Honour of Gordon Manley*, London, 1985, 1–16, 5. On Manley’s life and work see: G. Manley, The geographer’s contribution to meteorology, *Quarterly Journal of the Royal Meteorological Society* 73 (1947) 1–10. See also H. Lamb, The life and work of professor Gordon Manley (1902–1980), *Weather* 36 (1981) 220–231; R. Ratcliffe, Pen portraits of presidents – professor Gordon Manley, MA, DSc., *Weather* 48 (1993) 267–268; G. Sheail, The papers of professor Gordon Manley, *Weather* 40 (1985) 22–23; and M. Tooley, Further papers of Gordon Manley, *Weather* 49 (1993) 428–429.

<sup>92</sup> E.W. Gilbert, The idea of the region, *Geography* 45 (1960) 157–175, 158.

<sup>93</sup> Quote from Billy Collins, founder of The New Naturalist Series, cited in Marren, *The New Naturalists* (note 89), 15.

<sup>94</sup> G. Manley, cited in A. Perry, Classics in physical geography revisited, *Progress in Physical Geography* 25 (2001) 541–543, 542.

<sup>95</sup> G. Manley, *Climate and the British Scene*, London, 1962 [originally published 1952], 1.

<sup>96</sup> While his observations concentrated on the climate of upland Britain, Manley also began to analyse long-term meteorological records throughout the country, which he would later develop as the Central England Temperature Series (CET).

<sup>97</sup> G. Manley, The northern Pennines revisited: Moor House, 1932–78, *The Meteorological Magazine* 109 (1980) 281–292, 282.

<sup>98</sup> Correspondence between Manley and the Armstrong family, Box 2, Gordon Manley Papers, GBR/0012/MS Add.8386, Cambridge University Manuscripts.



Fig. 5. *The Northern Echo*, 10 July 1937. Cutting from GB 033 MAN 6/1, Durham University Library, Archives and Special Collections.

In 1937 Manley was awarded a grant from the Leverhulme Trust that provided funds to establish his own weather recording station close to the summit of Great Dun Fell (Fig. 5). Manley's aim in running the weather station was to discover under what circumstances the Helm Wind blew and to add some measure of the strength of the wind to the existing accounts.<sup>99</sup> He was, more generally, keen to develop a set of continuous meteorological mountain records and the observations at Great Dun Fell still constitute the longest unbroken set of mountain temperature records in the UK. Constructed in the autumn of 1937, the station consisted of a small wooden hut, erected in a small hollow so as to ensure that the hut would not blow over, and, '...on the score of ease of access, remoteness and freedom from disturbance by passers-by, and the use which might be made of the writer's older station at Moor House'.<sup>100</sup> The hut was placed at the highest point

of the escarpment where, according to the available evidence, the Helm was most frequent. Temperature and wind force were Manley's first consideration and a Stevenson screen was erected, first on a stand attached to the north end of the hut, but quickly moved to the roof after problems with drifting snow and the accumulation of rime, and finally moved again to a position on the east side of the hut after it was found that on the roof, 'Rime-deposit and sometimes glaze were even more troublesome... extensive operations with an ice-axe were needed before it could be opened'.<sup>101</sup> The station was equipped with two thermographs, thermometers, a barograph, and a portable cup anemometer, as well as instruments and tools for cooking and clearing snow (Figs. 6–8).<sup>102</sup>

During the first winter, Manley visited the hut weekly and then fortnightly after discovering that the instrument clock would run for 14 days. Reflecting on the first year of observations, Manley found occurrences of the Helm Wind were tantalizingly few.<sup>103</sup> In 1939 when Manley returned to Cambridge as a university demonstrator in geography, he relied on the efforts of Mr Somerville Pattinson of Kirkby Thore to maintain his record – 'in a season when changing the chart meant on occasion fifteen miles walking in deep snow'.<sup>104</sup> Manley consulted historical materials to expand his knowledge of the Helm, and referenced the writings of Brunskill, Marriott and Watson. He also drew on material from personal conversations with members of the local community. As Endfield has previously noted, 'reflecting his combined interests in meteorological science, cultural history, and vernacular law, Manley also recognized the importance of proverbs, narratives and "weather wisdom."'<sup>105</sup>

Manley regularly discussed his work on the Helm Wind through the mass media as well as in academic journals, including his regular articles in the *Manchester Guardian* and on BBC radio, as this BBC radio transcript demonstrates:

Thursday 16<sup>th</sup> February 1939, 7:50pm

ANNOUNCER: This is the Northern programme from Newcastle. A little over a year ago listeners heard from Gordon Manley of the University of Durham an account of a hut he had built for him near the top of Cross Fell at a height of over 2700 feet, so that he might observe the weather there, and also to observe that interesting phenomenon the Helm Wind.

And here he is again to tell listeners something of what he's learned. Mr Manley.

MANLEY: [...]

To walk up the fellside against it is an unforgettable experience, and, while I don't object to wind, I don't recommend going up in a 'helm' for pleasure. One stoops against it with everything buttoned up as tight as it can be, and slogs wearily up the hill with this steady roaring torrent of air pressing against one, sometimes at fifty or sixty miles per hour, even on a 'fine day'. It is very tiring, and if there is snow about it causes severe drifting. Further, east winds being what they are, it is bitterly cold. On the morning of the First of

<sup>99</sup> G. Manley, The helm wind of Cross Fell 1937–1938, *Quarterly Journal of the Royal Meteorological Society* 71 (1945) 197–215, 200. Manley later offered the hut for the benefit of walkers to the soon-to-be-formed Pennine Way Association. See A. Bibby, *Backbone of England: Life and Landscape on the Pennine Watershed*, London, 2011.

<sup>100</sup> Manley, The helm wind (note 99), 200.

<sup>101</sup> G. Manley, Meteorological observations on Dun Fell, a mountain station in northern England, *Quarterly Journal of the Royal Meteorological Society* 68 (1942) 151–166, 153.

<sup>102</sup> The invoices for a number of the instruments and for the construction of the hut can be found within Box 2/4, Gordon Manley Papers, GBR/0012/MS Add.8386, Cambridge University Manuscripts.

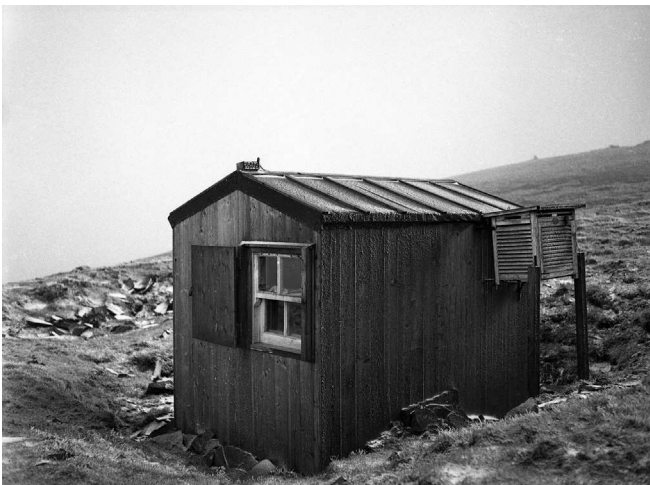
<sup>103</sup> Manley, The helm wind (note 99).

<sup>104</sup> Manley, Meteorological observations (note 101), 161. More on Manley's wartime work can be found in: C. Green, Manley, Gordon (1902–1980), *Oxford Dictionary of National Biography*, Oxford, 2004.

<sup>105</sup> G. Endfield, Reculturing and particularizing climate discourses: weather, identity, and the work of Gordon Manley, *Osiris* 26 (2011) 142–162, 153.



**Fig. 6.** Manley's hut at noon on 5 January 1939, Manley's skis can be seen to the right of the hut whilst the Lake District is visible in the background, GB 033 MAN 8/139, Durham University Library, Archives and Special Collections.



**Fig. 7.** Photograph of hut, n.d., Gordon Manley Papers, Box 24/16, GBR/0012/MS Add.8386, Cambridge University Manuscripts.

May, on the summit, it blew a gale from North-East with a temperature of only twenty-nine degrees at my hut.<sup>106</sup>

From direct observation and analysis of his tabulated data relating to temperature, wind speed and atmospheric pressure, as well as comparison with synoptic charts and data from other stations, Manley concluded that for a Helm to occur, the general direction of the surface wind had to be between E. and N.N.E., the strength of the wind at the summit greater than force 4, and at Tynemouth no less than force 3, suggesting that the speed of 15 miles per hour represented a critical value.<sup>107</sup> The presence of



**Fig. 8.** Stevenson screen full of snow and ice, n.d., GB 033 MAN 8/135, Durham University Library, Archives and Special Collections.

the Helm cloud lying on or slightly above the crest of the range was judged to be essential for the distinctive strong wind to blow (Fig. 9). He reinforced the local nature of the phenomenon, writing that 'It seems preferable to restrict the term to this region east of the Eden, where indeed the desiccating and shrivelling effect of the strong surface current on vegetation in spring time is to be feared'.<sup>108</sup> He also acknowledged that 'The exceptional fall of the Cross Fell escarpment cannot... be matched elsewhere in these islands. The combined result of topography and freedom from

<sup>106</sup> BBC script for the *Northern Programme*, Box 2/4, Gordon Manley Papers, GBR/0012/MS Add.8386, Cambridge University Manuscripts, emphasis in original.

<sup>107</sup> Manley, *Climate and the British Scene* (note 95), 149.

<sup>108</sup> Manley, *The helm wind* (note 99), 213.



**Fig. 9.** Helm cloud settled down on the Pennines nearly to bottom – showing ‘Helm Bar’ breaking up. Photograph taken by Manley and then made into a lantern slide he used in teaching, GB 033 MAN 8/154, Durham University Library, Archives and Special Collections.

obstacles is, that a surface wind of strength similar to that which normally prevails in the free air is felt inland over a narrow belt of country; and this development is sufficiently frequent and well-defined to have been given its local name.<sup>109</sup>

Manley employed an engaging, visually evocative writing style to describe people’s responses to the Helm Wind, alongside his discussion of instrumental data. For instance: ‘the farmer’s wife shivers in the brilliant sun and finds her heavy blankets stretched horizontally from the wire on which they are hung to dry, or flapping and tearing at their edges when the wind in its retreat becomes gusty. The farmer looks gloomily at the roofs of his Dutch barns, at the dusty ploughland, the cowering sheep and shrivelled pasture and the snowy slopes above’.<sup>110</sup> Manley was comfortable mixing instrumental records of the Helm Wind with vernacular testimony and folkloric storytelling. In the preface to *Climate and the British Scene*, he suggested that climate should be ‘apprehended as a whole and through several senses. Let the reader therefore try to recall not merely the meteorological situation, but all the feelings and associations of the landscapes at various seasons’.<sup>111</sup> Manley thus at once promoted the study of the weather and the climate’s place in history, culture and local beliefs, while also engaging with and praising those who helped to introduce instrumental recording and a ‘network of standardised meteorological observations’ in Britain.<sup>112</sup>

## Conclusion

Winds connect the earth with the atmosphere, yet they are often highly unpredictable, and capable of overwhelming the senses. For these reasons, winds are challenging to investigate but the historical geography of their study reveals valuable insights into people’s

relations to their local environment, and the environment’s place in knowledge regimes. In this paper we have used the Helm Wind as an example of a particular weather phenomenon – the product of a place-specific interaction of landscape topography and atmosphere – that has been understood and articulated through different narrative forms and produced as a result of different knowledge cultures. We have shown how individuals, social groups and organisations attempted to observe, measure, understand and explain the Helm Wind over a 200-year period. We have highlighted a number of ways that the Helm was experienced and understood – aesthetically, sensually and somatically – and also represented, all of which were determined by ‘very particular temporal moments in very specific venues’.<sup>113</sup> These forms of understanding, or ways of knowing, included the meteoric tradition of eighteenth-century county history, the journalistic approach of regional reportage, the instrumental outlook of Victorian meteorology and the combination of a national meteorological outlook with a cultural climatological perspective in the work of Gordon Manley. Across these periods, scales of analysis widened, from studies of the Helm Wind as practices ‘inextricably linked with the notion of locale’, to a growing general appreciation that locality was ‘part of a larger entity, not a domain of its own’.<sup>114</sup> The Helm itself was not only considered to be an active agency that inhabited its region as a public meteor and shaped the lives and health of its population, but also began to be understood as physical force that was at once a product of local topography and global atmospheric processes.

We have demonstrated that these different forms of knowledge relied on particular types of observers, from the local clergyman, to the lay observer, representatives of scientific institutions and professional climatologists, not to mention instruments, farmers and the mute testimony of plants, buildings and other material culture. Indeed, who reported on the Helm and who could witness, or experience, its effects also changed over the period in question. In the eighteenth and early nineteenth centuries, ‘meteorological writers were predominantly provincial men of letters’.<sup>115</sup> Their reports on the Helm as a public meteor drew on the accounts of a multitude of interested parties, who were qualified to talk about the weather because they lived or worked in its ambit. The RMetS attempted to marginalise many of these voices from accounts of the Helm, arguing that observations could only be trusted if they followed a systematic plan and could be corroborated. While Gordon Manley was committed to documenting the effects of the weather in place, his investigations of the causes of the Helm similarly focussed on instrumental data collected at Great Dun Fell and at other weather stations.

Shifts from one way of knowing to another were by no means cleanly made – as demonstrated with the RMetS investigation, for instance, the local witness was not entirely banished from accounts of the Helm. The increasing institutionalisation of meteorological science towards the end of the nineteenth century did not so much supersede or replace, but rather coexisted with a more popular, residential or experiential knowledge of and interest in the Helm Wind.<sup>116</sup> In part of course this was a product of necessity and the challenges of covering thinly populated and relatively remote areas of the country. That said there remained a commitment –

<sup>109</sup> Manley, *The helm wind* (note 99), 214.

<sup>110</sup> Manley, *The helm wind* (note 99), 213.

<sup>111</sup> Manley, *Climate and the British Scene* (note 95), xvi.

<sup>112</sup> Manley, *Climate and the British Scene* (note 95), 11.

<sup>113</sup> Livingstone, *Reflections on the cultural spaces of climate* (note 2), 92.

<sup>114</sup> Janković, *Reading the Skies* (note 27), 166–167.

<sup>115</sup> Janković, *Reading the Skies* (note 27), 34.

<sup>116</sup> Vetter, *Introduction* (note 8).

particularly exemplified in the work of Manley – to promoting and understanding the relations that people formed with the weather in place. Indeed, in as much as Manley was interested in the mechanics of the cause of the Helm, he was just as keen to draw upon local experiences of the Helm to document its socio-cultural implications. This qualified inclusivity was extended to the value of historic accounts of weather events and climatic changes, even if the end of such study was an engagement with the physical rather than the human environment.

### **Acknowledgements**

This research was conducted as part of a project entitled 'Weather walks, weather talks: exploring popular climate histories and futures'. Funding for the research was provided by the AHRC through

the call 'Enhancing the Role of Arts and Humanities Perspectives on Environmental Values and Change' (AH/K502777/1 and AH/L503502/1). The authors would like to thank the other members of the 'Weather Walks, Weather Talks' project team Dr Gary Priestnall and Sam Meek (University of Nottingham), and project partner organisations the Royal Geographical Society (with IBG) and Royal Meteorological Society. The authors would also like to thank Professor Felix Driver and three anonymous reviewers for their constructive comments on the manuscript, Professor Stephen Daniels for his advice on Crosby's watercolour paintings, and Elaine Watts, at the School of Geography, University of Nottingham for cartographic assistance. Finally, the authors wish to thank staff at the National Meteorological Archive in Exeter, the Royal Society Library and Archives, Cambridge University Manuscripts, and Durham University Archives and Special Collections.