A VOLCANO'S VOICE AT ETON

A VOLCANO'S VOICE AT ETON: PERCY SHELLEY, JAMES LIND MD, AND GLOBAL CLIMATOLOGY

by Christopher Goulding

In his seminal essay *A Volcano's Voice in Shelley*, Geoffrey Matthews highlighted Percy Shelley's poetic use of volcanic and seismic imagery as a metaphor for revolution and radical politics. Matthews also noted how Sir William Hamilton had described to the Royal Society in 1768 how 'artificial night' could be the result of volcanic ash being hurled into the daylight air.¹ More recently, Alan Bewell's reading of *Mont Blanc* has reset Shelley's poem within the context of 1816 as 'the year of no summer', and the global atmospheric effects caused by the eruption of the Indonesian volcano Tambora in April 1815.²

Neither Matthews nor Bewell suppose that Percy Shelley knew anything of Tamora's eruption, or that it was the cause of the abnormal climatic phenomena observed throughout Europe during those two years. However, there is evidence to suggest that the poet may have had more of an inkling of what was going on with the weather than has hitherto been recognised. The person who could have awakened his interest in such matters whilst he was a schoolboy at Eton was his mentor and friend living in nearby Windsor, James Lind MD, FRS, a retired Scots physician who maintained a keen interest in volcanoes and their effects.

In the late eighteenth century, Benjamin Franklin (an acquaintance of Lind's) had suggested the Icelandic volcano Hekla as the source of a 'universal fog' that had pervaded Europe during the summer of 1783.³ Lind had personal experience of Iceland and its volcanoes, having been a member of an expedition to the island in 1772 with Sir Joseph Banks of the Royal

¹ G. M. Matthews, 'A Volcano's Voice in Shelley', *Journal of English Literary History*, 24 (1957), 193–94 and 218.

² Alan Bewell, *Romanticism and Colonial Disease* (Baltimore: Johns Hopkins University Press, 1999), pp. 221–27. Bewell interprets Shelley's 'revolutionary climatology' in the poem as a critique of imperial expansion and decay.

³ Benjamin Franklin, 'The Meteorological Imaginations and Conceptions', *Memorial of the Literary and Philosophical Society*, III (Manchester, 1784), 373–77.

Society.⁴ But whereas Franklin stopped short of hypothesising a definite link between the weather and volcanic eruptions, there seems to have been little doubt in this matter as far as Lind was concerned. In 1787 (a year of worldwide volcanic activity, including major eruptions in Italy, Japan, the Indian Ocean, and South America) Lind noted in a letter to Sir Joseph Banks, President of the Royal Society;

I shall be glad to know if the Stinking Haze of Tuesday and Wednesday has now been taken notice of. I paid particular attention to it, having been but a little time before collecting some things regarding that of 1783 occasioned by the Volcanos in Iceland, and was fortunate enough to be travelling over the country the day and night during the whole time this last horse farted.⁵

Lind was no amateur in field of meteorology. In May 1775, he had presented a paper to the Royal Society describing a portable wind-gauge of his own design.⁶ Until the end of his life in retirement at Windsor, he still actively exchanged correspondence on the subject with his friend the Italian physicist Tiberio Cavallo, who wrote to him on 29 June 1809 about his current experiments to 'explore atmospheric electricity'.7 Other aspects of Lind's interest in meteorology included experiments to take the internal temperature of clouds by means of thermometers attached to kites. Lind had discussed such matters, along with the work and theories of other meteorologists such as Beccaria and Benjamin Franklin, in correspondence with Alexander Wilson, Professor of Astronomy at Glasgow University.⁸ When the nature of thunder was being researched by James Watt and Matthew Boulton of the Lunar Society, Watt had written to Lind on 26 December 1784 describing their experiments that month to simulate thunder by using a 'fire balloon', which was filled with a 'mixture of one part common air, and two parts inflammable air', and ignited once airborne and at a suitable altitude by means of a delayed-action fuse.9 The idea was that when a single balloon exploded (or a number of them were in quick succession), the sound heard from such controlled detonations cold be used in comparison to determine

⁴ Uno von Troil, Letters on Iceland: containing observations made ... during a voyage undertaken in the year 1772 by Joseph Banks PRS, assisted by Dr Solander FRS, Dr J. Lind FRS, Dr Uno von Troil, and several other literary and ingenious gentlemen (London: J. Robson, 1780).

⁵ Perceval Collection, Fitzwilliam Museum, Cambridge: H131 (17 June 1787).

⁶ Phil. Trans. Of the Royal Soc. XXXIV (1775), 353-65.

⁷ Letters of T. Cavallo FRS, 2 vols, British Library Add. MS 22897 & 8, Vol. II.

⁸ James Watt Papers, JWP W/1, Birmingham Central Library, letters dated 7 May 1771 and 7 February 1774.

⁹ Tiberio Cavallo, The History and Practice of Aerostation (London, 1785), pp. 152-54.

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'whether the growling of thunder is owing to echoes, or to successive explosions'.

In 1815–16, the aerosol effect of Tambora's ash, which lingered in the stratosphere over much of the Earth for nearly two years, had serious global consequences. Loss of life in the far East was exacerbated by total crop failures and famine. In Europe, the harvests in England and France were a month late, and the poorest for decades, whilst in southern Germany the crop failed altogether resulting in widespread poverty, and civil disturbances. The meteorological effects were no less startling; a two-day blizzard in Hungary during January 1816 comprised entirely of brown or flesh-coloured snow, blue and pink snow fell in the Eastern United States in May, and yellow snow fell in southern Italy in places where any snow at all was unusual.¹⁰

Mary Shelley noted the abnormal weather conditions in France and Switzerland that year in her journal: 'The spring, the inhabitants informed us, was unusually late, and indeed the cold was excessive.'¹¹ Later in the summer, one of Percy Shelley's letters to Thomas Love Peacock dated 12 July 1816 conveyed a sense of realisation that there was something unusual in the air;

The morning was cold and wet; then an easterly wind, and the clouds hard and high; then thunder showers, and wind shifting to every quarter; then a war blast from the south, and summer clouds hanging over the peaks, with bright blue sky between. About half an hour after we had arrived at Evian, a few flashes of lightning came from a dark cloud, directly overhead, and continued after the cloud had dispersed.¹²

The following morning, he noted highly unseasonal conditions whilst attempting to sail on the lake: '...with a wind of such violence as to permit but one sail to be carried. The waves also were exceedingly high', and later in the day 'the wind gradually increased in violence, until it blew tremendously' producing 'waves of a frightful height'. Shelley's companions in Switzerland also felt moved to note the unusual conditions. In his correspondence, Byron

¹² Roger Ingpen, ed., *The Letters of Percy Bysshe Shelley*, 2 vols (London: Pitman, 1912) II, 490 et seq.

had noted the weather in a letter to Samuel Rogers dated 29 July from the Villa Diodati:

...but really we have had lately such stupid mists — fogs — rains — and perpetual density — that one would think Castlereagh had the foreign affairs of the kingdom of Heaven also — upon his hands.¹³

Jonathan Bate has recognised the meteorological allusions in Byron's poetry of this period, such as in these lines from *Darkness*:¹⁴

The bright sun was extinguish'd, and the stars (2) Did wander darkling in the eternal space, Rayless, and pathless, and the icy earth Swung blind and blackening in the moonless air; Mom came and went — and came, and brought no day

Within this context, we might now suspect that certain lines in *Mont Blanc* carry some new significance. The opening reference to a world where the day is described as 'Now dark, now glittering; now reflecting gloom/ Now lending splendour . . .' (II. 3–4), is followed by the observation;

... I look on high: Has some unknown omnipotence unfurled The veil of life and death? Or do I lie In dream, and does the mightier world of sleep Spread far around, and inaccessibly Its circles? — for the very spirit fails Driven like a homeless cloud from steep to steep That vanishes among the viewless gales. —

Might this imagery subconsciously have been inspired by the atmospheric 'veil' creating the unusual weather conditions, arising from the 'unknown omnipotence' of the far distant eruption? Such an interpretation tends to be supported by the later association of 'the torpor of the year' with 'Earthquake, and lava flood and hurricane' (ll. 88–89).

Shelley's *Hymn to Intellectual Beauty* was also penned during the Alpine summer. Re-read in the context of the gloomy climate of 1816, certain lines perhaps now carry significance that has hitherto gone unnoticed;

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¹⁰ Brian Fagan, *The Little Ice Age: How Climate Made History 1300–1850* (London: Basic Books, 2000), p. 170. The effects of Tambora exacerbated what had already been a series of particularly cold winters that had started in 1810, and would continue until 1822. This, in turn, was within the wider context of a fall in average global temperatures during 'The Little Ice Age' of 1300 to *c.* 1850.

¹¹ Jeanne Moskal and others, eds, *The Novels and Selected Works of Mary Shelley*, 8 vols (London: William Pickering, 1996), vol. 8, 42.

¹³ Leslie A. Marchand, ed., *Byron's Letters and Journals*, 12 vols (London: John Murray, 1976), v, 86.

¹⁴ Jonathan Bate, 'Living with the Weather' Studies in Romanticism, 35 (1996), 431-47.

The awful shadow of some unseen Power Floats though unseen amongst us — visiting This various world with as inconstant wing As summer winds... (1)

As has been noted, the general sense of the poem is an expression of Shelley's 'feelings which agitated me even to tears', as the poet had written to Leigh Hunt on 8 December.¹⁵ However, the imagery used to express those feelings might now be regarded as arising from the striking atmospheric conditions. The 'awful shadow' is a phrase redolent of both the veil of volcanic ash in the stratosphere, and the curious light and cloud conditions resulting from it.¹⁶ Such a reading might be supported by the later reference to the 'inconstant .../. .. hues and harmonies of evening' (ll. 6–8). The 'unseen Power', whilst not necessarily referring directly to a distant volcano, could signify an awareness of some cause for the unusual conditions;

Ask why the sunlight not forever (18) Weaves rainbows o'er yon mountain river, Why aught should fail and fade that once is shown, Why fear and dream and death and birth Cast on the daylight of this earth Such gloom . . .

Other poems of 1816 that might now be read with new significance in some of their lines include *The Sunset*, written in England in the spring of that year. The entire poem conveys a sense of misty gloom pervading what should be a bright sunlit world in telling its story of a dying, sickly youth whose sole line of direct speech reads 'Is it not strange. . / I never saw the sun' (II. 21–22).¹⁷ Throughout the rest of the poem, phrases including 'lines of gold [sunlight]/ Hung on the ashen clouds' (I. 12), a reference to a 'broad and burning moon' (I. 18), and 'Day's ruddy light' (I. 42), all echo contemporary factual reports of the abnormal meteorological conditions, and contribute to a general feeling of some overhanging heavy atmosphere in the climatic sense as well as the emotional one. Another short work in his Swiss notebook, *Lines to Leigh Hunt*, evokes a mood suggestive of the oppressive Alpine atmosphere: 'The

¹⁵ a) Geoffrey Matthews and Kelvin Everest, eds, *The Poems of Shelley*, 2 vols (London: Longman, 1989), 1, 523. b) *Letters*, 1, 529.

¹⁶ 'lovely shadow' in the A-text (*Poems*, 1, 525) might equally express the unusually colourful weather and vivid atmosphere, as it might be viewed from a more cheerful perspective.

¹⁷ Matthews and Everest gloss this line as meaning 'I missed seeing the sunset' — *Poems*, 1, 511*n*.

darkest gloom of pride, whose shadow clips/ The Universe in its eclipse' (11, 2-3).

In considering these lines, we might look in some further detail at evidence for the level of Shelley's awareness of long-term climate change. In late 1815 or early 1816, he had started to re-write a fragment of Oueen Mab. V.1-15 which explores the theme of death and renewal within the context of the seasonal changes evident in autumn.¹⁸ A comparison of this new version with the original lines of 1811/12 reveals several alterations to the phrasing of this passage, suggestive of a changed perception of the weather's character. In the earlier version, the annual return of autumn is considered within the setting of a single year, hence, 'the keen frost-wind of the waning year' (1.5). In the later version, the chronological setting has been expanded into 'many waning years' (1.7). This expansion of scope from a single year to a squence of years is accompanied in the later version by a much greater sense of harshness in the weather, leading to an increased level of devastation, with new references to 'countless autumn storms' (1, 5) and a 'tangled wilderness' (1, 6). These changes may well reflect an awareness of the changes in climate that would have become all too noticeable throughout Europe by 1815/16, after six harsh winters during the cold period of 1810–22.¹⁹ The beginning of the cold spell could have been, in 1811–12, shrugged off as an unfortunately harsh pair of consecutive winters. Things would have looked very different by the sixth bitter winter of 1815/16, which was even further exacerbated by the emerging effects of Tambora. Thus, the phrase 'change of seasons' (1. 16) in the later version may well bear more significance than merely being a reference to the usual periodic changes within a normal year.

Shelley might well have had an early inkling of long-term climate change and its causes from Lind, who had been involved in what was probably some of the earliest research into the effects of climate variation. A combination of variations in solar radiation and the effects of an exceptional period of volcanic activity throughout the 1780s had serious meteorological effects throughout Europe, badly affecting harvests, with severe economic and social consequences.²⁰ During 1790–91, Lind was in correspondence with Sir Joseph Banks, assisting him in gathering data on wheat prices over the past thirty years. In a letter dated 25 June 1790, Lind sent Banks details of wheat prices at Windsor market over the previous twenty years, also mentioning his

¹⁸ Poems, 1, 509.

¹⁹ Fagan, The Little Ice Age, p. 170.

²⁰ H. H. Lamb, *Climate, History, and the Modern World* (London: Routledge, 1995), pp. 246–49.

personal atmospheric temperature records, which supported his opinion that the heat of the previous Tuesday had been 'the greatest I ever felt in England'.²¹ Lind also mentioned an unusually 'great deal' of lightning that month. Banks requested further data, and the following February Lind sent information on what prices from 1767, the earliest he could obtain.²² In view of Lind's undoubted awareness of the connection between volcanic eruptions and abnormal weather, a subject upon which he had already corresponded with Banks in 1787 (see above), this would suggest that they were involved in some attempt to prove a link by means of seeking corresponding fluctuations in crop prices as indicators of harvest yields.

A decade later, Lind's neighbour and friend in Windsor, William Herschel, was also gathering such data. As an astronomer, Herschel suspected sunspot activity of having effects on the climate, and he too then resorted to the method of trawling backwards through records of corn prices.²³ Neither Herschel nor Banks succeeded in proving any link, as the amount of accurate data necessary and the means of assessing it were simply not available at the time. Nevertheless, their attempts are strong indicators that an awareness of long-term climate change, and suspicions as to its causes, existed long before it has generally been thought.

The long-term effects on harvests of the weather during the 'Little Ice-Age' were further compounded in 1816 by the climatic effects of the Tambora eruption. The mean summer temperature in Geneva that year was the lowest since 1753. Any thoughts of revolution that may have occurred to Byron and his radical house guests at the Villa Deodati would have been well founded that summer. Civil unrest arising from food shortages occurred throughout England and Europe, and was particularly violent in Switzerland. The regional government of Zurich had attempted to import grain from Lombardy and Venice, but these precious cargoes were being intercepted in the mountain passes by bandits. The situation was to become so bad, that within another year the normal death rate had risen by 56 per cent, and the countryside was filled with roaming bands of vagrants, so that 1817 was to follow 'the year of no summer' as 'the year of beggars'.²⁴

Shelley also noted here that '... the appearance of the inhabitants ... is more wretched, diseased, and poor, than I ever recollect to have seen'. He

²¹ Perceval Collection, Fitzwilliam Museum, Cambridge, Doc. H144.

²² Perceval Collection, Fitzwilliam Museum, Cambridge, Doc. H145 (17 February 1791).

²³ Agnes M. Clerke, *The Herschels and Modern Astronomy* (London: Cassell & Co., 1895), pp. 82–89.

²⁴ Fagan, The Little Ice Age, pp. 171-74.

cites this as being 'a powerful illustration of the blighting mischiefs of despotism', which might be taken as a criticism of the inability of the local authorities to cope with the economic situation, rather than a naïve political generalisation on Shelley's part.²⁵

On a final note, comparisons between geological and political activity could occasionally be unintentionally ironic. Sir William Hamilton had exchanged correspondence on the subject of volcanoes with Lind's friend Sir Joseph Banks since the Vesuvius eruptions of 1787, and throughout the revolutionary period in France. During the eruption of August 1794, during which Paris was again in turmoil, Banks had written to Hamilton noting that such 'Jacobin fire' were better extinguished than that of the volcanoes.²⁶ With hindsight, one cannot help but reflect upon the all too real associations between volcanoes and the scarcity of cheap bread in the Paris of 1789 that led to Marie Antoinette's infamous statement: 'Let them eat cake'.

²⁵ Letters, II, 492.

²⁶ David Constantine, *Fields of Fire: A Life of Sir William Hamilton* (London: Weidenfeld & Nicolson, 2001), pp. 160–61 and 197.