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Bill Luckin

‘The heart and home of horror’: the great London fogs of the late nineteenth century

The last twenty-five years have witnessed profound changes in the histories of medicine and public health. In a British context, the late Roy Porter pioneered the reconstruction of patient experiences, deliberately downplaying a venerable academic obsession with the lives and careers of ‘great’ surgeons and physicians.¹ Over the same period Anthony Wohl, Anne Hardy, Nancy Tomes and Michael Worboys have interrogated Whiggish interpretations which had assumed a non-problematic transition from ‘primitive’ miasmatism to universal acceptance of a modern and ‘scientific’ bacteriological world-view.² Integrating the histories of science, culture and ideology, Christopher Hamlin has demonstrated that prominent public health reformers – Chadwick, Frankland, Farr, Simon – referred to the sanitary sphere in a style which drew on discourses as heavily influenced by religious and moral as by environmental values.³ Finally, historical demography and epidemiology, simultaneously located within and reacting against a dominant McKeownite paradigm, have undergone conceptual and methodological transformation.⁴ However, progress in the neighbouring subdiscipline of environmental history has been less impressive. In the United States Joel Tarr, William Cronon, Martin Melosi and others have championed a city-oriented variant of a subdiscipline long dominated by a deep

¹ See in particular Roy Porter and Dorothy Porter, *In Sickness and In Health: The British Experience* (London, 1988); Roy Porter ‘Laymen, doctors and medical knowledge in the eighteenth century: the evidence of the *Gentleman’s Magazine*’ in Porter (ed.), *Patients and Practitioners: Lay Perceptions of Medicine in Pre-Industrial Society* (Cambridge, 1985), 281–314; and *idem*, *Mind-Forg’d Manacles: Madness and Psychiatry in England from the Restoration to the Regency* (London, 1985).

² A. S. Wohl, *Endangered Lives: Public Health in Victorian Britain* (London, 1983); Anne Hardy, *The Epidemic Streets: Infectious Disease and the Rise of Preventive Medicine 1856–1900* (Oxford, 1993); Nancy Tomes, *The Gospel of Germs: Men, Women and the Microbe in American Life* (Cambridge, Mass., 1998); and Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain*

1865–1900 (Cambridge, 2000).

³ Christopher Hamlin, *A Science of Impurity: Water Analysis in Nineteenth Century Britain* (Berkeley and Bristol, 1990) and *Public Health and Social Justice in the Age of Chadwick: Britain 1800–54* (Cambridge, 1998).

⁴ Thomas McKeown, *The Modern Rise of Population* (London, 1976). For an overview of the current consensus see Simon Szreter and Anne Hardy, ‘Urban fertility and mortality patterns’ in Martin Daunton (ed.), *The Cambridge Urban History of Britain. Volume 3: 1750–1840* (Cambridge, 2000), 629–73. Robert Woods and Nicola Shelton, *An Atlas of Victorian Mortality* (Liverpool, 1997) and R. Woods, *The Demography of Victorian England and Wales* (Cambridge, 2000) pinpoint major technical and interpretative innovation.

preoccupation with wilderness.⁵ In Britain, by contrast, powerfully established traditions in economic and social history have militated against the academic autonomy of a subject, which, languishing as a minority interest, remains wedded to predominantly scientific rather than unequivocally historical objectives. Outline surveys of environmental change in Britain between the eighteenth and twentieth centuries have now finally begun to appear.⁶ But at the time of writing there is only one city-specific case-study of atmospheric pollution during the peak period of industrialization and hardly anything at all on communal response to the Victorian and Edwardian 'water problem'.⁷ As a consequence, very little is yet known about why at a specific historical juncture a situation long deemed acceptable came finally to be categorized as an unendurable 'pollution problem'. Nor have researchers yet probed the ways in which non-environmental factors – for example, pre-existing tensions between parties and/or influential interest groups – fed back into and galvanized environmental debate and action. Only a handful of writers have yet examined responses to pollution problems in order to reveal the nature and differences between different municipal and metropolitan regimes.⁸

This article links environmental history to the socio-medical approaches outlined in this introduction. The central focus is on the great smoke fogs which periodically paralysed the capital between the 1870s and the outbreak of the First World War. We begin with a brief sketch of the nineteenth-century metropolitan meteorological regime. This is followed by an examination of growing mid-nineteenth-century preoccupation with the calculation of the social costs of atmospheric pollution – a quintessentially 'Chadwickian' approach to the

⁵ Joel A. Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, 1995); William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York, 1991); Martin V. Melosi, *Effluent America: Cities, Industry, Energy and the Environment* (Pittsburgh, 2001). The 'anti-urban' position has been authoritatively articulated by Donald Worster, 'Transformations of the earth: toward an agroecological perspective in history', *Journal of American History*, LXXVII, 4 (March 1990), 1087–1106. For recent and distinctive European developments see P. Brimblecombe and C. Pfister (eds), *Silent Countdown: Essays in European Environmental History* (London and Berlin, 1990) and Christoph Bernhardt and Genevieve Massard-Guilbaud (eds), *The Modern Demon: Pollution in Urban and Industrial European Societies* (Clermont-Ferrand, 2002).

⁶ B. W. Clapp, *An Environmental History of Britain since the Industrial Revolution* (London, 1994) and John Sheail, *An Environmental History of Twentieth Century Britain* (London, 2002). But see also Wohl, *Endangered Lives*, *op. cit.*, 205–56.

⁷ Stephen Mosley, *The Chimney of the World: A History of Smoke Pollution in Victorian and Edwardian Manchester* (Cambridge, 2001). See, for a comprehensive transatlantic overview, David Stradling, *Smokestacks and Progressives: Environmentalists, Engineers, and Air Quality 1881–1951* (Baltimore, 1999) and for a rare venture into comparative environ-

mental history, David Stradling and Peter Thorshiem, 'The smoke of great cities: British and American efforts to control air pollution', *Environmental History*, IV (January 1999), 6–31. For a general *longue durée* account of London, see Peter Brimblecombe, *The Big Smoke: A History of Air Pollution in London since Medieval Times* (London, 1988). For a rare account of community conflict over water see R. K. J. Grant, 'Merthyr Tydfil in the mid-nineteenth century: the struggle for public health', *Welsh History Review*, XIV, 4 (December 1989), 574–94. An overview of the development of the supply industry is provided in J. A. Hassan, *A History of Water in Modern England and Wales* (Manchester, 1998).

⁸ But see Christopher Hamlin, 'Environmental sensibility in Edinburgh, 1839–40: the fetid irrigation controversy', *Journal of Urban History*, XX, 3 (May 1994), 311–39 and Bill Luckin, 'Pollution in the city' in Daunton (ed.), *Cambridge Urban History*, *op. cit.*, 207–28. For a suggestive framework of analysis for these issues see Mary Douglas, *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo* (London, 1966); Mary Douglas, 'Environments at risk' in her *Implicit Meanings: Essays in Anthropology* (London, 1975), 230–48 and Mary Douglas and Aaron Wildavsky, *Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers* (Berkeley and London, 1982).

problem of environmental degradation, influentially developed in late Victorian London by the meteorologist-cum-social reformer, F. A. R. (Rollo) Russell. This brief venture into the origins of environmental economics prepares the way for an account of changes in medical attitudes towards the impact of fog on respiratory disease and the highly moralized degenerationist framework within which the health of the people and life-threatening atmospheric pollution came to be located. The intensity of this discourse is highlighted through textual interpretation of William Delisle Hay's popular science fiction shocker *Doom of the Great City*, which was published at the height of the metropolitan fog crisis in 1882. Perceived as a totality, these bodies of thought – economic, epidemiological and social Darwinistic – can be seen to have legitimated a catastrophist view of relationships between endemic fog and the crisis of the inner city. At an extreme, those who articulated this anti-urban ideology proposed nothing less than a real or imagined pastoralization of the greatest capital in the world.

Late nineteenth-century Londoners – and particularly metropolitan professional and scientific elites – believed themselves to be threatened by an unprecedentedly severe atmospheric threat, even more potentially dangerous than the water problem that had triggered catastrophic mid-century cholera.⁹ But whereas technical procedures which would eventually deliver safer supplies of public water had been understood since the 1850s, and were refined over the ensuing generation, measures to reduce the severity of the domestic smoke problem continued to be considered technically – and politically – inoperative.¹⁰ For this and other reasons, it is contended here, terrifying images of 'strangling' smoke fog and biological or racial decline interacted with and reinforced one another, generating an astonishingly powerful set of deeply pessimistic environmental discourses. As a consequence, incipient activism gave way to perversely self-fulfilling – and as Hay's fantasy narrative indicates – luridly sentimental *fin-de-siècle* despair. In the longer term, partial substitution of gas for coal coalesced with autonomous meteorological factors to reduce the severity of the fog problem in Edwardian London. However, during the interwar era, and even more traumatically as a result of the notorious smog episode of 1952, the age-old spectre, which had first afflicted the capital in the medieval period, returned to haunt and kill vulnerable members of the metropolitan community.

I

Mid-eighteenth-century meteorologists were convinced that the great fog of 1755, which coincided with the devastating Lisbon earthquake of that year, ushered in a new and less stable climatic cycle, characterized by increasing numbers of dense smoke fogs.¹¹ In the early winter of 1796 William Bent, a Strand-based chronicler of the London weather, recorded that his part

⁹ S. E. Finer, *The Life and Times of Sir Edwin Chadwick* (London, 1952), 333–54; R. A. Lewis, *Edwin Chadwick and the Public Health Movement 1832–1854* (London, 1952), chap. 9 and 353 *passim*; and Royston Lambert, *Sir John Simon 1816–1904 and English Social Administration* (London, 1963), 123–31 and 202–8.

¹⁰ Bill Luckin, *Pollution and Control: A Social History of the Thames in the Nineteenth Century* (Bristol and Boston, 1986), 35–51.

¹¹ *Gentleman's Magazine*, CXV (1814), 87. On the

Lisbon earthquake, see E. L. Jones, *The European Miracle: Environments, Economies and Geopolitics in the History of Europe and Asia* (Cambridge, 1981), 26–7 and 139–40. The incidence of fog in the later eighteenth-century capital is briefly documented in Clapp, *Environmental History*, *op. cit.*, 43 and R. C. Mossman, 'The non-instrumental meteorology of London, 1713–1896', *Quarterly Journal of the Royal Meteorological Society of London*, XXIII (October 1897), 287–98.

of the city had been shrouded in a 'thick and dark fog [for] most of the morning'.¹² In the winter and spring of 1813–14, the distinguished medical man, Thomas Bateman, noted that 'all objects at a few feet distant from the eye [were] invisible: houses, railings, streets and trees, and even the cobwebs hanging over them, became thickly spangled with . . . freezing humidity'.¹³ As pea-soupers increased in early nineteenth-century London, accident-rates soared. Coaches overturned; a girl 'missed the rising path leading to the Surrey Canal . . . and fell in and was drowned'; a watchman 'in the parish of Marylebone fell down [in the fog] while crying the hour and was found the next morning with his neck broken'.¹⁴ The pioneering Tottenham-based meteorologist, Luke Howard, confirmed that the capital experienced several severe episodes during the late 1820s.¹⁵ In 1827 he recorded that 'between nine o'clock and midnight all movement in the city became exceptionally dangerous: flambeaux and link-boys were equally in requisition: the most brilliant gas-light could scarcely penetrate the gloom'.¹⁶ The incidence of fog increased during the 1830s, but blanket episodes became less frequent.¹⁷ In the 1840s, however, conditions again deteriorated and in February 1843 the weather was so bad that 'it was almost impossible to see from one side of the street to the other'.¹⁸ Eighteen months later street and river traffic were massively disrupted and within a decade smoke fog would be 'prevalent' on no fewer than twenty occasions during the course of a single winter or spring month.¹⁹ In 1859 *The Builder* complained that the inhabitants of the capital were now forced to endure the 'fog season' in conditions akin to semi-darkness.²⁰ By the late 1850s, also, journalistic benchmarking had confirmed that midday close-downs had become more frequent, costly and dangerous. In the early 1860s dirty white was beginning to be replaced by sulphurous yellow, with extended periods of foggy weather seriously disrupting the casual labour market in the eastern and inner-city core districts.²¹

Despite due warning, meteorologists, epidemiologists and urban reformers were genuinely shocked by the severity of the great crises of December 1873, January 1882, winter and spring 1886–7, December 1891, December 1892 and November 1901.²² If conditions were bad between 1871 and 1875, they were even worse between 1886 and 1890, with nearly twice as many severe episodes recorded in the later 1880s than the early 1870s.²³ In winter and early

¹² William Bent, *Remarks on the State of the Air, Vegetation etc. November, 1796* (London, 1794–1801), 25.

¹³ Thomas Bateman, *Reports on the Diseases of London and the State of the Weather from 1804 to 1816* (London, 1819), 185. For additional contextual information on the fog crisis of 1813–14 see *Gentleman's Magazine*, CXIV (1813), *Supplement*, 695; 'Extraordinary fog', *Annals of Philosophy*, III (1814), 154–5; and Luke Howard, *The Climate of London: Volume 3*, 2nd edn (London, 1833), 224.

¹⁴ *The Times*, 5 January 1814.

¹⁵ Howard, *Climate of London: Volume 2*, 207–8.

¹⁶ Howard, *Climate of London: Volume 3*, 341.

¹⁷ J. H. Brazell, *London Weather* (London, HMSO, 1968), 102. However, there was unusually foggy weather in 1837. See *The Times*, 4 December 1837.

¹⁸ BPP, *Select Committee on Smoke Nuisance*, 1843

(583), vii, q. 2083. Evidence of A. Ure. See also *The Times*, 22 February 1843.

¹⁹ James Glaisher, 'On weather during the quarter ending December 31st, 1853', *Sixteenth Annual Report of the Registrar-General* (London, HMSO, 1856), cv.

²⁰ *The Builder*, XI (1853), 613.

²¹ *The Globe*, 24 January 1865; see also *The Times*, 11 January 1861 and 'Fog in a metropolitan light', *The Builder*, XXIII (1865), 537–8.

²² W. P. D. Logan, 'Mortality in the London fog incident, 1952', *The Lancet*, I (1953), 338.

²³ F. J. Brodie, 'On the prevalence of fog in London during the 20 years 1871 to 1890', *Quarterly Journal of the Royal Meteorological Society*, XVIII (January 1892), 403 and R. H. Scott, 'Fifteen years' fogs in the British islands', *Quarterly Journal of the Royal Meteorological Society*, XIX (October 1893), 232.

spring during this period the capital found itself intermittently under siege – there were 55 serious occurrences a year between 1871 and 1881, and 69 between 1882 and 1892, with peaks of 86 and 83 in 1886 and 1887.²⁴ In the great fog of December 1873, pedestrians in the central districts were unable to see from one side of the street to the other; ‘fat cattle slumped to the ground and expired’ at the Islington Great Show; breathing was ‘painful and constricted’; and progressive medical men became convinced that metropolitan mortality had exceeded the normal weekly average by more than seven hundred.²⁵ Between November 1879 and February 1880 deaths attributed to asthma ‘mounted to an unprecedented degree’ and on several days ‘lamp-post[s] four and a half yards distant [were] invisible at 10 a.m.’²⁶ The ‘severe and protracted fog [which] visited London at Christmas, 1891 . . . lasted without intermission from Monday evening until Friday night, or close upon a hundred hours’.²⁷ ‘No one’, an observer wrote, ‘who has once experienced a bad fog in town is likely to forget the dense, heavy, oppressive feeling of the air, and the unnatural darkness at midday that can almost be felt.’²⁸ Looking back from the vantage-point of 1953, the year after London experienced its most traumatic twentieth-century smog episode, the veteran meteorologist L. C. W. Bonacina reminisced about similar events in the capital during the late nineteenth century. ‘A really bad fog’, he wrote:

appeared early in the morning as a thick white mist, like country fog, only dirtier. With the lighting of the fires it would soon become yellow and pungent, irritating the throat and eyes, till by midday the continued outpouring of chimney products would have turned the fog a sooty brownish black causing the darkness of night. During the afternoon there might be a partial improvement to the lighter yellow phase, but following the early sunset with renewed condensation through radiation the density of the fog would be such as to bring the street traffic to a standstill.²⁹

Revisiting the sense of chaos generated by metropolitan ‘darkness at noon’, Bonacina went on to evoke ‘hansom cabs and other vehicles [finding] themselves on the footways’ and the tortuous route followed by a bemused ‘pedestrian [who] could easily spend the evening looking for his house round the corner’. Analysing youthful feelings of isolation, he remembered ‘[slinking away] to one or other of the great railway termini with no more practical purpose than to see the hansoms lined up for the arrival of a long-distance express and so reassure myself that there really were limits to the be-sooted city, beyond which lay the fair rural shires and all the beauty of the woods and fields! How utterly gruesome it was’, Bonacina concluded, ‘on such days of Stygian gloom to see the Victorian funerals, with their black steeds and craped mutes, stalking through the dismal streets.’³⁰ When he compared the metropolitan smoke fogs of the late nineteenth century with the infamous smog of 1952, he was unable to

²⁴ F. J. Brodie, ‘Decrease of fog in London during recent years’, *Symons Monthly Meteorological Magazine*, xxxix (December 1904), 213.

²⁵ F. A. R. (Rollo) Russell, *London Fogs* (London, 1880), 22–4.

²⁶ F. A. R. (Rollo) Russell, *Smoke in Relation to Fogs in London* (London, 1889), 9.

²⁷ Sir James Crichton-Browne, ‘The dust problem’, *Transactions of the Sanitary Institute of Great Britain*, xxiii (1902), 217.

²⁸ D. J. Russell Duncan, ‘On smoke abatement’, *Transactions of the Sanitary Institute of Great Britain*, ix (1887–8), 317.

²⁹ L. C. W. Bonacina, ‘London fogs – then and now’, *Weather*, v (March 1950), 91. See also the same author’s ‘An estimation of the Great London Fog of 5–8 December, 1952’, *Weather*, viii (November 1953), 333–4.

³⁰ Bonacina, ‘London fogs’, *op. cit.*, 92.

convince himself that the latter had been more intense or psychologically debilitating than intimidating episodes in the late Victorian period.

II

In his famous *Sanitary Report* of 1842, Edwin Chadwick castigated local authorities for failing to introduce by-laws to punish habitual smoke polluters who had, in his view, simultaneously defiled the atmosphere and squandered scarce energy.³¹ A major task was to find ways of applying established demographic cost-accounting procedures to the 'wilful' waste of domestic coal. Hints were provided in the fifth chapter of the *Sanitary Report* in which a Revd G. Lewis noted that, in his native Dundee, 'fully one-half of the cases of fever occur in the prime of life when men are most useful either to their families or society'. Lewis went on to state that, over a period of seven years, 5000 adults in the city had fallen ill with fever. Working on the assumption that an attack of the disease forced a typical labourer to stay off work for six weeks and that the average wage was 8s a week, Lewis estimated the monetary loss attributable to fever at just over £12,500. Dispensary treatment – calculated at a pound a head – meant that an additional £5000 should be added to the direct loss in wages. Attempting to estimate social costs associated with a further 5000 cases among juvenile and adolescent dependants or semi-dependants, Lewis commented that 'as fever rarely attacks mere children, but chiefly those either in manhood or approaching manhood, we may estimate the loss of their labour at one-half of that of the adults . . . and the expense of attendance and recovery as one half also'.³² As for the 'cost of death', this was a complex as well as a highly loaded matter. But, undaunted, Lewis concluded that:

it seems a strange thing to set about estimating the money value of that which money did not give, and cannot restore when taken away: yet as there are those who understand better a profit and loss account than the arguments of religion and humanity, we shall attempt to estimate the [costs of] deaths by fever.³³

Two years after the publication of the *Sanitary Report* the influential Commission into the State of Large Towns and Populous Districts concluded that 'solar light' was vital to the well-being of the urban working class and that any depletion of so essential an element would lead to a deterioration in levels of vitality, health and income. As a result of reduced resistance, fever would flourish and prevent ever larger numbers of working people from following their 'ordinary occupations'. Family income would be eroded as a result of substantial amounts expended on 'procuring the assistance of those who have to attend [the sick] in illness'. 'Solar deficit' would also make heavy demands on funds that the 'benevolent subscribe to fever hospitals and other institutions'.³⁴ Precipitating enervation and depression, adverse atmospheric conditions could be expected to compromise national labour power. Atmospheric deterioration might even prove as pernicious as fever. When questioned by the Commission, Thomas Cubitt noted that working people were 'less willing to have expensive paper-hanging, and nice

³¹ M. W. Flinn (ed.), *Report on the Sanitary Condition of the Labouring Population of Great Britain by Edwin Chadwick 1842* (Edinburgh, 1965), 356–7.

³² *ibid.*, 273.

³³ *ibid.*, 274.

³⁴ BPP, *First Report of the Commissioners for Inquiring into the State of Large Towns and Populous Districts*, 1844 (572), xvii, 42–3.

painting, and nice upholstery, because everything gets so black in London'.³⁵ William Guy estimated that, in London as a whole, an extra half a million pounds a year would need to be spent to undo the damage inflicted by atmospheric pollution.³⁶ The Marquess of Landsdowne claimed that metropolitan 'smoke so affected the clothing of the working classes that it was computed that every mechanic paid at least five times the amount of the original cost of his shirt for the number of washings rendered necessary'.³⁷

In the early 1850s Chadwick's personal physician, Neil Arnott, the patentee of a 'smoke-consuming and fuel-saving fire-place', developed a 'weak calculus' which suggested that smoke fogs added to the 'cost of washing the clothes of inhabitants of London . . . by two millions and a half sterling a year'. Voicing proto-entropic anxiety, Arnott insisted that to 'consume coal wastefully and unnecessarily . . . is not merely improvidence but . . . a serious crime committed against future generations'.³⁸ These comments were made in a cultural environment in which it was widely believed that heat and energy, on which every advanced urban civilization depended, were being immorally squandered: within a decade, the publication of W. S. Jevons's *The Coal Question* would trigger a national debate about how to cut back on the consumption of domestic coal and avoid regression to arctic and primitive conditions of life.³⁹ Glossing Arnott's estimates, Chadwick calculated that the annual metropolitan 'washing bill' had soared, by the mid-1850s, to the indefensible figure of £5 million. Reshaping a discourse that had thus far been almost wholly directed at the putatively improvident and intemperate working class, Chadwick concluded that the metropolitan middle classes – his natural constituency – were now forced to spend between a twelfth and a thirteenth of their annual *per capita* income on the washing and repeated rewashing of clothes.⁴⁰ When atmospheric conditions deteriorated yet further, in the early 1870s, a group of meteorologists and social reformers – the most influential of whom was F. A. R. (Rollo) Russell – set out to estimate the social costs of metropolitan smoke fog. The son of the great Lord John and co-guardian of the young Bertrand Russell and his brother Frank at Pembroke Lodge in Richmond Park, Russell was educated at Christ Church, Oxford. He joined the Foreign Office but as a result of extreme timidity and exceptionally poor eyesight rapidly withdrew from public employment. Back at Pembroke Lodge, Russell devoted himself to a wide range of meteorological and atmospheric studies. A passionate believer in the socially and morally reviving potential of rural life, he became increasingly disturbed by the impact of smoke fog on the health of the capital.

In 1880 Russell published the first and most controversial of a series of books and pamphlets on atmospheric pollution. A best-seller, his *London Fogs* mirrored increasingly pessimistic metropolitan attitudes towards the recurring fog phenomenon; stimulated a wide-ranging newspaper debate; and played a crucial role in establishing the capital's first anti-smoke pressure group, the National Smoke Abatement Institution. During the next twenty-five years Russell

³⁵ *ibid.*, q. 251. Evidence of Thomas Cubitt.

³⁶ William Guy, 'Effect of smoke on buildings', *The Builder*, v (1847), 498.

³⁷ *Hansard's Parliamentary Debates (HL)*, 3rd series, cxxix, 16 August 1853, c. 1753.

³⁸ Neil Arnott, 'On a new smoke-consuming and fuel saving fire-place', *Journal of the Society of Arts*, 1–II (1852–4), 428–35. Arnott's interest in these issues reached back more than twenty years. He was the author of the influential *On Warming*

and Ventilating (London, 1838) and *On the Smokeless Fireplace* (London, 1855).

³⁹ W. S. Jevons, *The Coal Question: An Enquiry Concerning the Progress of the Nation* (London, 1865). See also, on this issue, A. Briggs, *Victorian Things* (London, 1988), 298–308 and P. Brantlinger (ed.), *Energy and Entropy: Science and Culture in Victorian Britain* (Bloomington, 1988).

⁴⁰ Edwin Chadwick's spoken comments on Arnott, 'Smoke-consuming fireplace', *op. cit.*, 435.

wrote extensively on a wide range of topics – the atmospheric determinants of epidemic disease, rural regeneration and the history of the Liberal Party – but remained deeply committed to cataloguing and publicizing the socially, economically and medically deleterious impact of London fog.⁴¹ In terms of epidemiological effects, Russell worked on the assumption that every case of atmospherically related illness involved:

a loss of ten days' work [and that this gave] 70,000,000 days' work lost which might have been preserved. If half the number of cases are in adults earning 2s a day, it appears that the loss to the nation in work and work alone that might be saved amounts to £3,500,000 a year.⁴²

He enumerated no fewer than twenty-five variables, including the (now mandatory) 'extra washing', 'destruction of mortar', 'extra chimney sweeping', 'fuel burnt owing to want of sunshine caused by smoke', 'children kept from school' and 'damage to plants and natural life'. Drawing on sources and methodologies similar to those developed by Chadwick and Arnott, he arrived at a final estimate – £5 million a year – which confirmed Chadwick's earlier and probably at that time overstated figure. This rapidly attained quasi-official status.⁴³ That each selected variable repeatedly suggested others, logically and sequentially inseparable from it, demonstrated the extent to which late nineteenth-century London fog had insinuated itself into every cranny of social, economic and cultural life.

Russell's approach had inspired other attempts to calculate the costs of recurrent atmospheric pollution in the capital. In 1885 W. T. Makins, governor of the Gas, Light and Coke Company, argued that a recent spell of foggy weather had cost the public an extra £5250 for gas, a sum that they could ill afford.⁴⁴ Making the case for legislative control before a select committee in 1887, Ernest Hart, editor of the *British Medical Journal* and pioneering anti-smoke activist, argued that his proposed measure would lead to:

a saving to the person in not having his furniture and curtains spoilt: in not having his books destroyed: and in not having the front of his house destroyed. If you come to put cost against saving there is no doubt the expenditure is as nothing compared to the economy.⁴⁵

The 'actual cost in pounds, shillings and pence', Hart continued, 'can be shown to be at least £4 or £5 million a year in the metropolis'.⁴⁶ Two years later a popular meteorological

⁴¹ F. A. R. (Rollo) Russell remains an elusive and under-documented figure. But for glimpses of his character and moral preoccupations – and oddities – see Ray Monk, *Bertrand Russell. Volume 1: The Spirit of Solitude* (London, 1996), 15–19. On Russell as environmental activist and anti-fog propagandist, see E. Ashby and M. Anderson, *The Politics of Clean Air* (Oxford, 1981), 55–6.

⁴² F. A. R. (Rollo) Russell, *National Strategy Against Infection* (London, 1888), 13.

⁴³ Russell, *Smoke in Relation to Fogs*, *op. cit.*, 24–6.

⁴⁴ *Nature*, xxxi (1884–5), 348.

⁴⁵ BPP, *Select Committee (HL) Smoke Nuisance*

Abatement, 1887 (321), xii, q. 433. Evidence of Ernest Hart. For biographical information on this important mid- and late nineteenth-century public health reformer and publicist see Peter Bartrip, 'The *British Medical Journal*: a retrospect' in W. F. Bynum and R. S. Porter (eds), *Medical Journals and Medical Knowledge* (London, 1992), 126–45 and Bill Luckin, 'The shaping of a public environmental sphere in late nineteenth-century London' in S. Sturdy (ed.), *Medicine, Health and the Public Sphere* (London, 2002), 224–40.

⁴⁶ BPP, *Smoke Nuisance Abatement*, *op. cit.*, q. 400 *passim*. Evidence of Ernest Hart.

periodical attempted to compute the costs of a typical smoke fog in the capital. Having noted extra payments of £3000 that had been paid to the Gas, Light and Coke Company, the journal claimed that it was also necessary to incorporate:

payments to other companies: extra electric lighting, lamps etc., the cost of damaged goods, damaged vehicles, damaged health, and surely for London alone we may put the cost of one day's fog at from £6000 to £10,000. And though that were the worst, we have had quite twenty bad ones – take each of these as only half as bad, and we get the total damage of from £60,000 to £100,000, irrespective of the enormous amount of money taken out of the country by those who do not come to visit us during our foggy season.⁴⁷

These cost-accounting exercises focused intensively on the needs of the middle and 'respectable' working classes and paid little attention to the daily lives of the London poor, a point well illustrated by Viscount Midleton in 1891 when he told the House of Lords that:

many of the working classes are prevented from following their daily occupations when a dense fog comes on: many more of them have to carry on their work under circumstances which are not only difficult but absolutely dangerous to themselves: and many more, again, who have not the advantage of medical treatment and proper nourishment, suffer terribly from the after effects of being exposed for days and weeks together during such weather as we have had lately to a tainted atmosphere which undermines their health and prevents them altogether from earning their living.⁴⁸

But the great majority of reformers continued to be preoccupied with the health and well-being of the metropolitan professional, governmental and scientific elites and the environmental, residential and 'imperial' integrity of the areas in which they lived. This was particularly well demonstrated by prevailing attitudes towards London's parks and gardens. In 1892 the director of the Royal Botanical Gardens lamented that fog deposits were destroying shrubs and trees.⁴⁹ Throughout the capital the plane tree had become 'the past's theme, poor fellow! He cannot find any other trees in London to sing about. The freshest of flowers in the parks are jaded in a day; the very grass cannot grow green; it is in perpetual mourning.'⁵⁰ The gardens of the 'better class' had become no more than 'eyesores of limp grass, smutty paths and enfeebled privets and acubas'.⁵¹ According to commentators like Ernest Hart, the lead would now have to be taken by the upper-middle classes, who should be encouraged to persuade artisans to reduce consumption of the domestic fuel which constituted the principal cause of intolerable levels of atmospheric pollution during winter and early spring. Such an example would gradually wean the working classes away from the attractions of the domestic grate and stimulate increased consumption of gas.⁵²

⁴⁷ 'The fog and gas consumption', *Symons Monthly Meteorological Magazine*, xxiv (February 1889), 8.

⁴⁸ *Hansard's Parliamentary Debates (HL)*, 4th series, ix, 2 March 1891, c. 1916.

⁴⁹ 'Town fogs', *Symons Monthly Meteorological Magazine*, xxvii (February 1892), 1.

⁵⁰ A. Moresby White, 'The coal smoke nuisance', *Journal of State Medicine*, ix (October 1901), 652.

⁵¹ M. Agar, 'The effect of smoke on plant life', *Journal of the Royal Sanitary Institute*, xxvii (February 1906), 175.

⁵² BPP, *Smoke Nuisance Abatement*, *op. cit.*, q. 403. Evidence of Ernest Hart. On the cultural significance of the domestic grate see R. L. Patten, "A surprising transformation": Dickens and the hearth' in C. Knopflmacher and G. B. Tennyson (eds), *Nature and the Victorian Imagination* (Berkeley, 1977), 153–70.

III

Lacking access to reliable information on city-wide patterns of cause-specific mortality, medical men in early nineteenth-century London were nevertheless convinced that there were strong connections between cold and foggy weather and an increase in the incidence of debilitating and potentially fatal respiratory disease. Reviewing his case-book for January 1794, William Bent recorded that air in the capital had been 'very unfit for respiration': large numbers of his patients had complained of pain in the chest which had frequently been 'accompanied with a dry cough . . . with children in particular this degenerated into [w]hooping cough, which became very universal'.⁵³ Describing similar conditions in the autumn of 1796, Robert Willan noted the prevalence of 'coughs and consumption' but argued that such illnesses were produced 'independently of the variations in temperature, or of the smoky, clogged atmosphere of London'.⁵⁴ Thomas Bateman, by contrast, remained convinced that the 'influence of fogs' could be decisive. Writing about exceptionally polluted conditions in the capital during the winter of 1809–10, he stated that 'the occurrence of frost invariably multiplies the number of pulmonary disorders; but when it is conjoined with thick fogs, it is doubly pernicious, from the greater rapidity with which the atmosphere, thus loaded, abstracts the heat of the body'.⁵⁵

Until the middle of the nineteenth century there was a consensus that those susceptible to respiratory problems – and particularly asthma – would deteriorate, and might even have their health irreparably damaged, if they spent too much time out of doors during severe smoke fogs.⁵⁶ A pessimistic minority went further and argued that 'the presence of soot particles' led to 'black mucus [being] expectorated from the lungs during a November fog . . . peculiar to London'.⁵⁷ In general, however, medical men and public health activists agreed with Andrew Ure when he informed a select committee investigating legislative means of reducing levels of metropolitan pollution that fog 'oppresses people of weak lungs. Robust people may resist those impressions longer, but the weakly are very sensible to it, particularly when the smoke will not rise, in cold weather'.⁵⁸

By mid-century public health specialists and environmental reformers were lending their support to a different and more generalized set of arguments. According to this view, numerous yellow smoke fogs had already created an environment in which working-class members of the metropolitan population were becoming stunted and incapable of reproducing a strong and healthy 'stock'. According to this interpretation, the inhabitants of the eastern and central districts had for too long been:

shut up within close apartments, removed from the direct rays of the sun, hidden from the sight of the blue sky and the white clouds, and immersed beneath a canopy of smoke and lofty buildings . . . how [would it be] possible for the functions of life to develop themselves at large, with their natural energy, and in their due proportions? It is evidently impossible; intra- and extra-uterine vitality are equally arrested and deformed; the blood

⁵³ Bent, *Observations*, *op. cit.*, 5.

⁵⁴ Robert Willan, *Reports on the Diseases in London* (London, 1801), 300.

⁵⁵ Bateman, *Reports*, *op. cit.*, 134.

⁵⁶ BPP, *Select Committee on Steam Engines and Furnaces*, 1819 (574), viii, 280–1. Evidence of George Tuthill; BPP, *Smoke Nuisance*, *op. cit.*, qs,

1927–31. Evidence of William Brande. 'The smoke nuisance', *The Builder*, 1 (1843), 346.

⁵⁷ 'Smoke consumption', *The Builder*, x (1852), 616 and Russell Duncan, 'On smoke abatement', 317.

⁵⁸ BPP, *Smoke Nuisance*, *op. cit.*, q. 2080. Evidence of Andrew Ure.

loses its full measure of oxygen, and is deprived of the ruby tint, so characteristic of health and vigour; the limbs are small, the joints large, the chest narrow, the forehead hydrocephalic, the teeth irregular, the hair lank, the mind morbidly keen, and the passions perverted or depraved.⁵⁹

Not only had working-class Londoners been deprived of 'natural solar health' during the fog season: tainted air seeping into their houses and tenements had compelled them to keep their windows shut. As a consequence, 'the close smell of food, and dress, and human exhalation, and, above all, the gases which rush into the warmed home from every drain and dustheap upon the premises' either led to outbreaks of fever or – 'quite literally' – to 'suffocation'.⁶⁰ Such representations were influenced by venerable stereotypes of the urban primitive or savage, a category that had developed out of mid-eighteenth-century conceptions of racial hierarchies within and between cultures, the stages of development postulated by classical economic theory and the new proto-anthropology of the early nineteenth century. These images rapidly gained currency among the first generation of metropolitan sanitary reformers and, following the revolution in evolutionary thinking, re-emerged in scientific social Darwinistic form as a means of comprehending, interpreting and castigating the behaviour of the urban poor.⁶¹ Racialized conceptions of this kind were intimately linked to the idea that a depleted internal economy of air within the individual dwelling might precipitate a wide range of potentially fatal conditions, ranging from a low count of red corpuscles to debility or fully fledged fever. When combined with high levels of external pollution, lack of internal ventilation would prove deadly. As, from the early 1870s onwards, atmospheric conditions deteriorated, meteorologists, sanitary reformers and cultural critics embraced overtly class-inflected variants of degenerationist discourses which diverted attention away from explicitly causal connexions between high levels of smoke fog and an increase in mortality from respiratory disease. Viewed from this catastrophist perspective, the capital – as well as urban life as a whole – might already be atmospherically doomed.

Between the 1840s and the early Edwardian period, then, sanitarian, racialized, degenerationist and anti-urban discourses dominated debate in relation to the severity of London's smoke fog problem. But from the early 1870s changes in procedures at the General Registry Office began to produce findings which demonstrated that age- and cause-specific death-rates associated with atmospheric pollution in the capital might be even higher than the 'excess mortality' experienced during the metropolitan cholera epidemics of 1848–9, 1853–4 and 1866.

⁵⁹ J. A. Hingeston, 'The atmosphere in relation to disease', *Journal of Public Health and Sanitary Review*, I (1855), 354–5. See also Anon, 'Air and ventilation', *Journal of Public Health and Sanitary Review*, II (1856), 193–220 and the comments of Dr Gibbon, medical officer of health for Holborn in 'The smoke nuisance', *The Builder*, XX (1862), 284.

⁶⁰ E. Ray Lancaster, 'Fresh air', *Popular Science Review*, III (1864), 7.

⁶¹ See, on these issues, J. W. Burrow, *Evolution and Society: A Study in Victorian Social Theory* (Cambridge, 1966); Gay Weber, 'Science and

society in nineteenth century anthropology', *History of Science*, XII, 4 (December 1974), 260–83; Wohl, *Endangered Lives*, *op. cit.*, 260 and 283, and the same author's *The Eternal Slum: Housing and Social Policy in Victorian London* (London, 1977), 45–72; Gertrude Himmelfarb, *The Idea of Poverty: England in the Early Industrial Age* (London, 1984), 323–32; and Eileen Yeo, 'Mayhew as social investigator' in E. P. Thompson and E. Yeo (eds), *The Unknown Mayhew: Selections from the Morning Chronicle 1849–50* (Harmondsworth, 1973), 99–100.

These innovations served to reinforce intensely pessimistic perceptions of the depth and intensity of the fog crisis.

During the two generations between the 1840s and the early Edwardian period atmospheric and ventilationist theories of this kind were ever more heavily influenced by anti-urbanism. Cities, it was argued, could not be demographically self-sufficient: ever larger numbers of rural immigrants were therefore needed – and were in fact being successfully recruited – to make good the deficit attributable to ‘residual’ elements who, as a result of inherited weakness and morally disreputable lifestyle, were failing to sustain their genealogical ‘line’ for more than three generations.⁶² Both in the case of native city-dwellers and recent arrivals from the countryside, metropolitan fog was said to accelerate this process. Dragging down vitality, making depressing housing and living conditions more enervating, a dark and murky climate tempted the working class – even more so the residuum – to seek out apparently spirit-reviving but in fact libidinally immoral relief. Whenever there was incessant fog, it was much easier to lose sense of self and social responsibility, with the result, again, that alcohol might become more tempting than during more favourable climatic conditions.⁶³ Finally, fog, through the visual and aural isolation of individuals and groups, separated and segregated the classes at precisely that moment at which urban moral fragmentation and decline demanded ever more intensive intermingling, so that example might be transmitted to those who might otherwise be morally lost.⁶⁴

Young female immigrants, born and bred in supposedly idyllic village communities, had long been believed to be more vulnerable to the temptations of urban ‘sin’ than men. Alleged to be disillusioned by endless and futile rounds of washdays forced on them by London murk, such individuals were said to become indifferent to domestic and personal hygiene and then to descend into inertia and depression. The next – inevitable – step would be to seek out the moralist’s ‘bright and cheerful light’ which would eventually lure them into irresponsibility, intemperance and vice.⁶⁵ In terms of escape, sick or debilitated members of the social elite were, of course, free to leave the capital whenever they wished; and many did, heading either

⁶² The context for this strand of thought in relation to the capital has been authoritatively established by Gareth Stedman Jones, *Outcast London: A Study in the Relationship between Classes in Victorian Society* (Oxford, 1971). See also G. E. Searle, *Eugenics and Politics in Britain 1900–1914* (Leyden, 1976); Greta Jones, *Social Darwinism in English Thought: The Interaction between Biological and Social Theory* (Brighton, 1980); Daniel Pick, *Faces of Degeneration: A European Disorder c. 1848–1918* (Cambridge, 1989); Dorothy Porter, “‘Enemies of the race’: biologism, environmentalism and public health in Edwardian Britain”, *Victorian Studies*, xxxiv, 2 (Winter 1991), 159–78; and Jose Harris, *Private Lives, Public Spirit, Britain 1870–1914* (Oxford, 1993), 241–5.

⁶³ See H. D. Rawnsley, ‘Sunlight or smoke?’, *Contemporary Review*, lvii (April 1891), 871 and

F. A. R. (Rollo) Russell, *The Atmosphere in Relation to Human Life and Health* (Washington, 1896, Smithsonian Miscellaneous Collections, xxxix), 90.

⁶⁴ Isolation and physical disorientation attributable to metropolitan fog were well established themes. See *The Times*, 1 November 1861; A. E. Fletcher, ‘Pollution of the atmosphere by coal smoke’, *Journal of State Medicine*, v (January 1900), 2; W. Mercat, ‘On fogs’, *Quarterly Journal of the Royal Meteorological Society*, xv (April 1889), 64; and Bonacina, ‘London fogs’, *op. cit.*, 91–3.

⁶⁵ This moral journey – or purported retrogression – is elaborated in Russell, *London Fogs*, *op. cit.*, 30–2 and *idem*, *Smoke in Relation to Fogs*, *op. cit.*, 21–2. See also Edward Carpenter, ‘The smoke plague and its remedy’, *Macmillan’s Magazine*, lxii (July 1890), 206.

for the countryside or for southern Europe.⁶⁶ Working people, however, had no option but to stay where they were, as near-total darkness and atmospheric impurity intermittently lowered spirits, undermined constitutions and fostered inbred and hereditarily communicable debility. It was only a short step from a formulation of this kind to the gloomy prognostication that the London fog was both cause and frightening symbol of full-scale urban decline.

By the time that the capital had become engulfed in its late nineteenth-century atmospheric crisis, explicitly medical modes of analysis had been largely superseded by post-sanitarian, degenerationist interpretation. Surveying St Giles, Douglas Galton doubted whether it would ever be possible for fully formed human beings to emerge from such 'foul, gloomy dwellings, in to which it is impossible that a ray of sunshine or pure air can ever penetrate'.⁶⁷ Adopting the obsessively anti-urban perspective that would dominate his later writings, Rollo Russell hypothesized that the origins of metropolitan moral evil could be traced back to the moment at which contact had been lost with the 'clear azure above'.⁶⁸ In the eyes of the metropolitan middle class and professional and scientific elites, social, biological, meteorological and medical processes had become inextricably intertwined.⁶⁹

Ernest Hart lamented that 'when you have, as we have in London now, the rays of light continuously obstructed, you have all the processes of life continually lowered'.⁷⁰ At an extreme – in William Delisle Hay's sensationalist *Doom of the Great City* – the London smoke fog came to symbolize the intense social, economic and political insecurities of the late Victorian city. Converting the real fog of February 1880 into a suffocating and 'strangling' 'killer smog', Hay chronicled a saga of misapplied wealth, moral and social perversion, and sexual excess. Even more obsessively and mysogynistically than most other contemporaries, he projected the squalor of the capital on to the 'garish' and 'painted' wives, mistresses and courtesans of the 'top ten thousand'. 'London', Hay's narrator ruminates, 'was foul and rotten to the very base, and steeped in sin of every imaginable variety': it was impossible to 'contemplate the Londoners of those days without a feeling of disgust and loathing springing up from within you'.⁷¹ No less pernicious had been the 'dictatorship of fashion' whereby 'aestheticism' had served as a 'cloak for the higher flights of sin'. Little wonder that, in this ethical climate, 'prostitution [had] flourished so abundantly in London as scarcely to be looked upon as a vice at all, except by the most rigorous'; or that, under cover of darkness and fog, 'garotters, burglars, and all the guilds of open crime revelled in contented impurity'.⁷²

The day before Hay's 'normal' metropolitan fog is transformed into a smog that will 'kill

⁶⁶ On this issue see the comments of Lord Stratheden and Campbell in *Hansard's Parliamentary Debates (HL)*, 3rd series, cclxxxviii, 26 May 1884, c. 1276–8 and Lord Middleton, *ibid.*, 4th series, i, 12 February 1892, c. 301–7. Note also the comments of W. Ewart, 'Medicated air: a suggestion', *Nineteenth Century and After*, LVI (1904), 99. For the context of 'escape' on the part of the social elite see John Premble, *The Mediterranean Passion: Victorians and Edwardians in the South* (Oxford, 1988).

⁶⁷ Douglas Galton, 'On some preventible causes of impurity in London air', Anniversary Address to the Sanitary Institute, 8 July 1880. See the same author's 'Inaugural address', *Transactions of the*

Sanitary Institute of Great Britain, iv (1882–3), 35.

⁶⁸ Russell, *London Fogs*, *op. cit.*, 30–1.

⁶⁹ Stedman Jones, *Outcast London*, *op. cit.*, *passim*.

⁷⁰ BPP, *Smoke Nuisance Abatement*, *op. cit.*, q. 427. Evidence of Ernest Hart.

⁷¹ W. D. Hay, *The Doom of the Great City: Being the Narrative of a Survivor Written A.D. 1942* (London, 1882), 10. Biographical information on Hay is scarce but see the comments by Rosalind Williams in *Notes on the Underground: An Essay on Technology, Society and the Imagination* (Cambridge, Mass., 1990), 198 and I. F. Clarke, *The Pattern of Expectation 1644–2001* (London, 1979), 158.

⁷² Hay, *Doom*, *op. cit.*, 23.

thousands', the narrator visits the home of an elite professional family living in the semi-rural comfort of Dulwich. This is the privileged social and topographical vantage-point from which, early the next morning, he glimpses the deadly 'killer cloud' lower itself over the central city districts. As half-stifled commuters stumble back from the railway station, Hay, following the dictates of a pre-determined narrative, thrusts his protagonist once more back into the centre of the 'doomed city' in an attempt to save a beloved mother and sister. 'I must', he says, 'go back to the very heart and home of Horror itself.'⁷³ All this prepares the way for the mounting of a series of quasi-cinematic *natures mortes*, detailing, in luridly melodramatic tonality, the suffocation of the London elite. Resplendently groomed horses sprawl, half-asphyxiated, across Mayfair's 'streets of pleasure'; coachmen, seemingly alive, wait, stiff-backed and lifeless, outside great West End houses; at Buckingham Palace *rigor mortis* holds a guardsman to attention in a caricature of ceremonialism. A theatre audience waits, 'strangled', in gorgeous evening finery, for a curtain that will never rise, while 'behind [it] stretch[ed] the "pit" filled with its crowd of commoner folk, mingled and inextricably involved in a chaos of heads and limbs and bodies, writhed and knotted together into one great mass of dead men, dead women, and dead children, too'.⁷⁴ The destruction of a ruling class, which had knowingly reneged on its ordained duty towards its social inferiors, is ghoulishly catalogued. Diamonds glitter in the gutter: the bejewelled hand of an aristocratic pleasure-seeker reaches out across a table in a crowded restaurant as her companion slides, half-dead, to the floor.

The fate of the working class, by contrast, is assumed rather than narrated or cumulatively visualized: in this sense, Hay implies, the everyday, chronic, 'non-strangling' fog has already inexorably eroded both communal vitality and the biological will to survive. A kind of pity there certainly is, but it is expressed in the moralized and tragi-sentimental tone that characterized nearly all late Victorian debate of decline and putative demographic collapse. We need hardly add that the narrator's mother and sister do indeed perish, 'strangled' in the sitting-room of their 'modest' cottage. A similar fate awaits 'miserable [children] in the gutter, two poor little ragged urchins, barefooted, filthy, half-naked outcasts of the streets, their meagre limbs cuddled round each other in a last embrace, their poor parched faces pressed together and upturned to heaven. To them, perhaps, death had been but release from life.'⁷⁵

Like Dickens before them, novelists and poets from every level of the literary hierarchy appropriated the London fog as a potent symbol of rediscovered metropolitan poverty and environmental deprivation. In so doing, they probed an even more sombre darkness at the heart of the metropolitan and imperial projects.⁷⁶ Gissing and Conrad worked this seam.⁷⁷ So,

⁷³ *ibid.*, 46.

⁷⁴ *ibid.*, 49–50.

⁷⁵ *ibid.*, 43. The theme of the 'doomed child' loomed large in late nineteenth-century degenerationist discourse. See, for example, R. C. Ellison, 'On the influence of the purity and impurity of the external air on the health and moral tendencies of a dense population', *Journal of State Medicine*, VIII (February 1900), 11.

⁷⁶ See Raymond Williams, *The Country and the City* (London, 1971), chap. 19 and Krishan Kumar,

'Versions of the pastoral: poverty and the poor in English fiction from the 1840s to the 1950s', *Journal of Historical Sociology*, VIII, 1 (March 1995), 1–35.

⁷⁷ On Gissing see Williams, *Country and City*, *op. cit.*, 222–5. On Conrad's *Heart of Darkness* (London, 1902) see B. Parry, *Conrad and Imperialism: Boundaries and Visionary Fantasies* (London, 1983) and Edward Said, *Culture and Imperialism* (London, 1993). The latter comments on an 'all-pervading darkness, which by the end of the tale is shown to be the same in London and Africa' (33).

also, did Richard Jefferies, James Thomson and Conan Doyle.⁷⁸ Jefferies's *After London* depicts a cityscape which, in the aftermath of an obscure but devastating natural (or man-made?) calamity, is returned to a state of nature. This narrative precisely mirrored the preoccupations and proposed panaceas of urban and social reformers convinced that the capital must now make a final attempt to escape from its atmospheric fate. By the early 1890s, then, potential solutions to the objective environmental problem itself – the incidence and intensity of the London smoke fogs – had been submerged beneath a babble of degenerationist voices obsessed, like Hay's, with something akin to global despair. Many of those involved in the debate now proposed radical rural and agrarian solutions. At an extreme, these constituted nothing less than an attempt to wish the capital – and all its works – out of existence. Rollo Russell, who had first alerted influential sectors of public opinion to the necessity of confronting atmospheric pollution in the aftermath of the crises of 1873 and 1880, now championed the creation of a new moral order in which the sun would renovate human health and itself become a symbol of God's immanence. Restored communal vitality would be underwritten by scientific innovation, with the latter being placed in the service of divine purpose.⁷⁹ By 1905, with metropolitan fog smoke less menacing, Rollo Russell was still insisting that the 'populations of the central parts of our big towns [will] decline and perish unless continually recruited from the country. And thousands are ever flocking from country to town. Only by a return to the country, or by great improvements in the conditions of urban life, can the nation maintain its prosperity.'⁸⁰

Although sanitarian, ventilationist and degenerationist discourses decisively shaped the cultural framing of London's smoke fogs between the 1840s and the early twentieth century, changes in demographic and epidemiological perspectives also played an important role. During the 1870s official attention continued to be predominantly focused on environmentally transmitted infections – the so-called 'zymotic' group. Nevertheless, a growing body of writing now focused on the etiology and possible interactions between tuberculosis, pneumonia, bronchitis, whooping-cough and general respiratory disease.⁸¹ As we have seen, following the great fog of 1873, the General Registry Office confirmed the existence of a similar kind of excess mortality to that which had been experienced in the capital during each of the mid-century cholera epidemics.⁸² But this additional death-toll might be no more than the tip of an iceberg. As the ever-vigilant Rollo Russell had speculated in 1880:

⁷⁸ R. Jefferies, *After London or Wild England* (London, 1885) and particularly Part 1, 'The relapse into barbarism'. The seminal poems by James Thomson are to be found in *City of Dreadful Night* (London, 1873), but see also the same author's *Doom of a City* (London, 1857). (Was William Delisle Hay's title borrowed from this source?) In *City of Dreadful Delight: Narratives of Sexual Danger in Late Victorian Britain* (London, 1992), Judith Walkowitz reconstructs the ambience surrounding Doyle's gloomy metropolitan scenarios, as well incidentally as the visual milieux of two generations of British films set in an ominously fog-ridden East End.

⁷⁹ F. A. R. (Rollo) Russell, 'The reduction of

towns', *Nineteenth Century and After*, LI (1902), 131–42.

⁸⁰ F. A. R. (Rollo) Russell, *Fog and Smoke* (London, 1905), 29.

⁸¹ G. B. Longstaff, 'Phthisis, bronchitis and pneumonia: are they epidemic diseases?', *Transactions of the Epidemiological Society of London*, new series, II (1882–3), 119–28. See also Hardy, *Epidemic Streets*, *op. cit.*, chaps 1 and 8.

⁸² *Medical Times and Gazette*, II (1873), 696; *The Lancet*, I (1874), 27–8; *British Medical Journal*, I (1880), 254; and A. Parker, 'Air pollution research and control in Britain', *American Journal of Public Health*, XLVII (May 1957), 563.

the death-rate during a few days of dense fog palpably mounts to an extraordinary degree, but every year we have a large number of ordinary London fogs of less density which, lasting as they commonly do only one or two days . . . fail to affect the death-rate sufficiently to be noted.⁸³

Despite this weakness, statistical analysis had nevertheless finally confirmed what medical opinion and common sense had long assumed – that the elderly and the very young were greatly more vulnerable to illness or death during densely foggy weather than all other age groups. But the precise scale of mortality and morbidity from specific forms of respiratory disease, and the extent to which their incidence was directly or indirectly related to metropolitan smoke fog, would remain an elusive field of enquiry.⁸⁴

IV

Between 1873 and the early 1890s London was repeatedly afflicted by severe episodes of fog which paralysed social and economic life, precipitated high levels of excess mortality and gave rise to deeply pessimistic attitudes towards urban and ‘cosmic’ existence. Between 1893 and 1903, however, the annual number of episodes significantly declined.⁸⁵ By the end of the century *The Lancet* was reporting that ‘though there was gloom, artificial light was not resorted to on anything like the scale of old when day was night. The air of London has been clearer lately and the densely smoking chimney appears to be the exception rather than the rule among the myriad that abound.’⁸⁶ Causal processes were unclear but, in 1901, a veteran anti-fog campaigner commented that a ‘great difference has taken place in the atmosphere . . . we had more than the normal number of misty days, but not one of those black fogs with which we are annually plagued during the winter’.⁸⁷ In 1906 the Registrar-General reported that in ‘Westminster there were only 16 days on which fog was recorded, less than one third of the normal frequency, the smallest numbers in previous years being 13 in 1900 and 26 in 1903’.⁸⁸ In 1908 ‘one of the marked features of the year was the almost entire absence of any great fogs over the land’, a pattern which was repeated in 1910.⁸⁹ By the beginning of the First World War, the *British Medical Journal* was confidently reporting that ‘the present generation happily knows little of the “London particulars” which used to afflict the dwellers in the metropolis thirty years ago’.⁹⁰ But the fogs returned. Conditions were periodically severe during the interwar years. Then in 1948, and even more ferociously in 1952, London found itself assailed

⁸³ Russell, *London Fogs*, *op. cit.*, 22.

⁸⁴ See in this respect W. T. Russell, ‘The influence of fog on mortality from respiratory diseases’, *The Lancet*, II (1924), 335–9 and the same author’s ‘The relative influence of fog and low temperature in the mortality from respiratory disease’, *The Lancet*, II (1926), 1128–30.

⁸⁵ F. J. Brodie, ‘Decrease of fog in London during recent years’, *Symons Monthly Meteorological Magazine*, XXXIX (October 1904), 213.

⁸⁶ ‘An encouraging feature of the recent fog’, *The Lancet*, II (1899), 183.

⁸⁷ Sir C. A. Cookson, ‘A smokeless London’,

Journal of State Medicine, IX (November 1901), 692. See also Brodie, ‘Decrease of fog’, *op. cit.*: Louis C. Parkes, ‘The smoke problem in large towns’, *Transactions of the Royal Sanitary Institute*, XXVIII (1907), 489 and H. T. Bernstein, ‘The mysterious disappearance of the Edwardian fog’, *The London Journal*, I (February 1978), 189–206.

⁸⁸ *Sixty Ninth Report of the Registrar-General* (London, HMSO, 1906), cxxxviii.

⁸⁹ *Seventy First Annual Report of the Registrar-General* (London, HMSO, 1910), cv.

⁹⁰ *British Medical Journal*, I (1914), 500.

by death-dealing smog.⁹¹ Once again newspapers and periodicals – abetted by radio, newsreels and embryonic television – relayed images of cosmic doom. Yet now, increasingly sophisticated analysis at the level of cause- and age-specific mortality more accurately pinpointed the numbers of elderly inhabitants who had perished from respiratory and heart disease.

Eighty years earlier, according to Simon Szreter, ‘social Darwinism [had] swept through English bourgeois society and conquered, at least temporarily, many of its most influential social commentators, social scientists and important figures in the biomedical sciences’. Moreover, ‘a simplistically socialized Darwinism, with its maxim of survival of the fittest’:

[had undermined] the rationale for a public health policy by implying that resources invested in . . . measures were a misguided waste, merely prolonging the lives of nature’s weaklings. It could be argued that measures to reduce the infant and child mortality of the ‘residuum’ . . . would merely be cancelled-out in greater morbidity and mortality rates at higher ages, as these unviable individuals hopelessly struggled to survive, clogging up the nation’s labour market with enfeebled and inefficient ‘stocks’.⁹²

This article has pointed to significant continuities between sanitarian and ventilationist responses to the increasing severity of smoke fog in the capital in the 1840s and 1850s and predominantly social Darwinistic and degenerationist interpretations during the final thirty years of the century. Drawing on cost-accounting approaches which had attempted to place a monetary value on mortality and morbidity from fever, mid-century reformers became convinced that depleted solar resources had already heightened the probability that environmentally impoverished Londoners would experience a deterioration in health and produce large numbers of debilitated offspring. Importing elements of miasmatic theory into this proto-degenerationist scenario, they contended that atmospheric deprivation precipitated by smoke fog would be further exacerbated by counter-productive internal ventilatory arrangements that might in the longer term ‘strangle’ all those compelled to live in close and airless conditions. This florid and seemingly indefinitely flexible discourse survived fundamentally unchanged until the Edwardian period – in 1902 it could still be claimed that:

a curious conglomeration of sand, salt, soot, cotton fibres, vegetable debris, bacteria and their spores, diatoms, monads, infusoria, pollen of flower and grasses, pulverized straw, and epithelial scales from the skin, when inspissated, as it is in towns, assists in the production of a low state of health and constitutional debility, especially amongst children, and [when combined with fog] . . . conduces to a wide spread mortality.⁹³

When, between the 1870s and the mid-1890s, the patina of the London fog ominously changed from dirty yellow to gritty black, elite reactions became even more pessimistic. Miasmatically based sanitarianism continued to be espoused by a minority of medical men and environmental reformers, but could no longer command the support that it had possessed between the mid-1840s and the 1860s. Now, however, a novel and even more adaptable resource – social Darwinism – made itself available. Manipulated literally and metaphorically,

⁹¹ H. Heimann, ‘Effects of air pollution on human health’ in *Air Pollution* (Geneva, World Health Monograph series, xlvii, 1961), 176.

⁹² Simon Szreter, ‘The GRO and the public

health movement in Britain, 1837–1914’, *Social History of Medicine*, III, 3 (December 1991), 457–8.

⁹³ Crichton Browne, ‘The dust problem’, *op. cit.*, 217.

this most persuasive of ideologies rhetorically completed a narrative initiated in the 1840s. Unremitting fog in late nineteenth-century London would 'suffocate' the population of the inner districts, while at the same time serving as a symbol of irremediable urban, biological and national decline. The opportunity for a solution – whether technological, legislative, economic or social – had been squandered. Only a genuinely radical programme, advocating rural regeneration and a strengthening of metropolitan charitable and religious bonds, would be capable of dragging the doomed city back from the brink.

In the early Edwardian period, when anti-metropolitan discourses of this kind reached their zenith, London's smoke fog suddenly became less threatening. The respite was widely welcomed. But there would be no return to the white and 'country-like' episodes experienced during 'normal' years in the late eighteenth and early nineteenth centuries. Climatically, epidemiologically and ideologically, the great London fogs had done their work.

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