# ENVIRONMENT AND DAILY LIFE IN LONDON

1800-2000

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Two thousand years ago Rome housed close to a million inhabitants. This fact—if fact, it be—has generated an extraordinarily wide range of questions about ancient housing conditions, the provisioning of food and drink, disease patterns, the impact of the city on the rest of the empire, and vice versa, and environmental conditions in a massive city that would only be equaled in size nearly two millennia later.¹ Demographically, nineteenth-century London, or what countless proud Victorians called the "new Rome," first equaled, then superseded its ancient ancestor.² Already by the mid-eighteenth century the British capital had developed into a global city. Sustained by its enormous empire, between 1800 and the First World War London ballooned in population and land area. Nothing so vast had previously existed anywhere, yet the urban and economic changes that transformed London during these years were soon replicated in cities throughout many parts of Europe and North America. Then, toward the end of the twentieth century, a second revolution, shaped by globalization, made the urbanization of the entire planet seem virtually imminent.³

Over time the definition of London changed repeatedly as the built-up area and administrative structures expanded far beyond the boundaries of the "Square



Fig. I.i. Map of Inner and Outer London, by Peter Fitzgerald, 2009. Courtesy of https://commons.wikimedia.org/wiki/File:Outer\_Inner\_London\_Boroughs.png

Mile" situated at the center of Figure I.1. Inner London comprises the areas overseen by the London County Council (LCC) (1889–1965). With the creation of the Greater London Council (1965–1986), the boroughs shaded in dark gray in this map joined the territory governed by the former LCC to form Greater London. A Conservative Parliament abolished the Greater London Council in 1986, but following the Labour landslide of 1997, MPs voted to reestablish local control in the form of a new structure, the Greater London Authority (2000 to present).

Many of these themes provide rich fare for urban-environmental historians, practitioners of a discipline that came into being about forty years ago. In terms of origins, it is of course dangerous to trace the growth of a distinctive way of looking at the past exclusively in terms of its most significant practitioners. In the case of urban-environmental history, however, the picture is quite clear. Joel Tarr has been a seminal figure: his publications between the 1970s and the present have been central to the growth and topical diversity of the discipline. Other trailblazers have included Martin Melosi, author of an important work on the development of the American "sanitary city" and numerous histories of waste disposal, water, and recycling. A third pioneer, William Cronon, has probed in depth interactions between town and country. In his best-known study, Cronon

illuminates the ways in which Chicago's demand for raw materials and agricultural produce transformed the city itself, its regional hinterland, and distant urban and rural communities.<sup>6</sup>

These historians and others have made a distinction between their way of looking at the past and longer established styles of history concerned with non-urbanized parts of the world and what remains of wilderness—or what is sometimes and somewhat problematically known as "first nature." In the words of Ian Douglas, urban-environmental analysis is primarily concerned with the "impacts [of primary] nature on people in cities and the way urban people modify natural systems and change the biogeochemistry of the urban habitat." Joel Tarr has filled out this definition: the discipline, he says, is "primarily [concerned with] the story of how human-built, anthropogenic structures ('built environment') and technologies shape and alter the natural environment of the urban site with consequent feedback to the city itself and its populations."

Between the early 1970s and the 1990s, urban-environmental history predominantly concerned itself with structures and infrastructures, systems and ecologies. Since then its range has widened; indeed, it sometimes seems that practitioners engage with just about every aspect of cities and city life. Over the last couple of decades, the discipline has been in creative flux, and new ideas have developed at a bewildering rate. The complexities of metropolitan space and movement, and their relation to governmentality, are now much higher on the agenda. So are the meanings and ramifications of nineteenth- and twentieth-century metropolitan nature and *rus in urbe*. Urban green space is another growth area, as are the ideologically robust regulations that governed the ways in which urban residents were allowed to access and use parklands in cities and their hinterlands. Urban-environmental scholars now also engage with historical interactions between nonhuman species and *Homo sapiens*. 13

We can readily see that these "new" areas are directly or indirectly linked to topics first explored in the case of London between the 1960s and the 1980s. For many years historians have focused on the problems Londoners faced in obtaining a steady supply of water. This has been complemented by research into the condition of the Thames and Lea and the ways in which each river generated troubling environmental dilemmas. Much is now known about the so-called Great Stink of 1858 and how this disturbing episode persuaded Parliament to fund the construction of a metropolitan main drainage system. Until the recent past, historians paid far more attention to contaminated water than impure air. Recent research has done much to correct this oversight. Pollution is of course intimately related to disease patterns in modern London: epidemiological and environmental history are inseparable. As early as the 1970s scholars probed the complexities of king cholera. Dightly later, what the Victorians called "everyday"

diseases" came under scholarly scrutiny, with changing levels of infant and child-hood mortality very much to the fore.  $^{18}$ 

Today historians are taking a fresh look at the myriad urban-environmental transformations that reshaped cities and their hinterlands between 1800 and 2000, contemporary observers' attempts to understand and cope with these changes, and the ways in which the distribution of political, social, and ideological power influenced both. Finally, the discipline of urban-environmental history is engaging with problems that are not merely local or even national, but global in character.<sup>19</sup>

## STRUCTURES, CHRONOLOGIES, ANXIETIES

Historians once refused to consider London a manufacturing city. This was wrong. In 1850 about one in every three metropolitan adults worked in that sector. <sup>20</sup> Of course the capital had little in common with new industrial cities in the Midlands and North, many of which depended on a single type of productive activity. London had a more diverse portfolio. Woolwich Arsenal, which had its origins in the seventeenth century, played a central role in maintaining the nation's military might. <sup>21</sup> Large-scale brewing had been imbedded in the capital since the 1730s, and firms like Charrington and Bass produced huge quantities of beer. <sup>22</sup> Founded as two separate companies in the 1860s, Tate and Lyle later joined forces and developed into a sugar-refining giant. <sup>23</sup> Bryant and May, established at Bow in the East End in the mid-nineteenth century, developed into the largest match manufacturer in the world. <sup>24</sup>

Industry and manufacturing lived on into the twentieth century. By the 1950s, however, a different kind of London was beginning to emerge. Manufacturing jobs began to decline, in absolute and relative terms, as service industries gradually surpassed them. In the 1970s the process picked up speed, and by 2000 only about one in ten of the capital's adults was making a living in an industrial or manufacturing occupation. Replicating the pace of change that had transformed the city between the 1830s and the Edwardian period, from an economic perspective London had suddenly become a quite different kind of place.

In the nineteenth century a sense of perpetual rush and change fascinated writers like Dickens and Trollope. The capital dominated every aspect of national life: it was a place you "went up to" from even the most northerly parts of the country. Population growth was abnormally high; by the mid-eighteenth century London's population had risen to seven hundred thousand. Fifty years later the capital housed a million citizens and was home to 10 percent of the population of mainland Britain. <sup>26</sup> By 1900 London contained six million inhabitants, a figure which grew to about eight million by 1950. The next thirty years saw a demographic pause, followed by a slight decline, and then a renewal of growth in the

new millennium. The population may reach eleven million by 2050.<sup>27</sup> London's largest suburbs expanded in an astonishing manner after the Second World War. Districts like Battersea, Clapham, and Lewisham became as populous as cities like Birmingham, Leeds, and Liverpool. Many of them housed as many as three hundred thousand people. In the 1970s the world began to enter a wholly new demographic era. Massive conurbations like Mexico City, Tokyo, and Nairobi created a new global super-league. Nevertheless, the "greatest city the world had ever known" still retained much of its political, financial, and global power.<sup>28</sup>

Throughout most of its history many Londoners have experienced extremely high levels of overcrowding.<sup>29</sup> In the nineteenth century working-class and poverty-stricken inhabitants of regions such as the East End and squalid districts immediately to the south of the river endured catastrophically poor housing conditions. Contemporaries described the external environment transmuting into a ghastly sheet of filth, lodging houses tumbling to the ground as a result of the miserliness of landlords, and individual rooms—sometimes holding as many as ten people—spilling their meager belongings out onto stairs and landings.

The dominant ideology at this time insisted that if a working man—even a pauper—lived a moral life and resisted the temptations of drink, he might one day attain the status of lower middle-class "respectability."<sup>30</sup> Such expectations flew in the face of the day-to-day realities of being poor or poverty-stricken in the nineteenth- and early twentieth-century capital. In the 1840s Edwin Chadwick, briefly London's sanitary "dictator," declared that the capital must establish a new form of centralized metropolitan government that would eventually abolish the laissez-faire localism that had prevailed for longer than anyone could remember.<sup>31</sup> Chadwick believed that a new and more rational style of administration might make it possible, among other things, to shift ever-larger volumes of human waste away from the capital and out to rural areas where it would be sold (at a small profit) as fertilizer.<sup>32</sup> The scheme collapsed.

From the 1860s onward metropolitan reformers shifted their attention to what would now be called London's energy problem. In 1865, on the eve of the city's final cholera epidemic, the economist William Stanley Jevons published *The Coal Question*, a manifesto that presented an image of a capital that might soon revert to a deadly climatological regime.<sup>33</sup> In this terrifying new (or old) world, Londoners would either freeze to death or slip back toward a desperately primitive way of life.<sup>34</sup> Many believed that the only way of preventing such a disaster was to rebuild a low-energy regime in the countryside. Huge numbers of working men and their families must be persuaded—forced, some said—to migrate to rural England, thereby escaping the immorality, intemperance, and diseases of the capital, while at the same time regenerating half-forgotten pre-urban customs and trades.<sup>35</sup>

The malady—or multiple maladies—that threatened the capital were closely linked to the idea of pollution and a conviction that both London's civilization and rus in urbe might soon collapse in the face of urban-industrialism. In the medieval era the word pollution was synonymous with masturbation; however, by the late eighteenth and early nineteenth centuries, meanings had become less stable. Pollution still carried the connotation of what was often termed "self-abuse," but the term was also used to identify a nature and urban ecology that might imminently be befouled and perhaps destroyed by *Homo sapiens* acting in nonsexual ways.<sup>36</sup>

In 1834 John Martin, the eccentric early nineteenth-century artist of the sublime, attempted to organize a London-based campaign that would save the capital from destruction. In that year Martin told a parliamentary select committee that the government must sanction and fund the construction of two intercepting "grand receptacles" on the Regent's and Grand Surrey Canals. From these locations, what he insistently called "polluted matter" would be transported to nonurban environments. "Martin's scheme," as it was called, predated Chadwick's proposed panacea by a decade, and it revealed a more assured understanding of multiple urban and extra-urban ecological variables.<sup>37</sup>

For the remainder of the nineteenth century and into the Edwardian era, "pollution" continued to be used in several different though related ways, usually in the ancient context of sexual misbehavior. By the 1860s the word and idea had become institutionalized. In 1863 the government established an official body, the Alkali Inspectorate, tasked to reduce acid rain. In 1866 a standing Commission on Rivers set about finding ways in which Britain's sewer-like waterways might be returned to a degree of purity.

Fear of dirt spiraled during the cholera years. 40 A new breed of water scientists gradually committed themselves to a kind of bacterial theory of disease transmission. Laypeople stuck to a much simpler way of thinking about and categorizing the fetid world in which they lived. If water were visibly dirty, it would almost certainly give you a bad stomachache and sometimes lead to serious illness or death. 41 Foul supplies, "infested with insects," were *contra natura*. Debates raged around "matter out of place." Ideas of purity and impurity lay at the heart of the so-called Great Stink on the Thames in 1858. This anxiety-riven series of events disgusted and fascinated Londoners and constituted a moral as well as an environmental crisis. 42 A dithering Parliament eventually decided to construct a mighty intercepting sewage system, a project that reached completion in the early 1870s. Many Londoners (and some historians) assumed that this would transform the capital. In reality it was more like a promising beginning than an end. Severe and minor water crises recurred. In 1878 the steamboat *Princess Alice* 

sank on the lower Thames, with great loss of life. Horrified Londoners learned that some of the corpses had been covered in thick and disgusting sewage.<sup>43</sup>

How filthy was the nineteenth-century Thames? The era between 1800 and 1850 saw the river converted into a sewer-like sump. As early as the 1820s salmon fishermen were forced to find alternative employment. The second half of the century saw progress in some respects. Sewage pollution became less extreme, but the volume of untreated manufacturing waste likely increased. Two preventive agencies—the Metropolitan Board of Works (MBW) and the Thames Conservancy—seemed to prefer arguing with one another to getting on with the overwhelmingly complex job in hand.

In the years after 1950 the Thames began to look more like a watercourse that had attained a minimal degree of genuine purity. Salmon returned, and the river was no longer officially biologically dead.<sup>47</sup> But this was only part of the story. As London moved through the 1990s and into the new millennium, increasingly sophisticated environmental tests pointed to the possibility of renewed regression. Thames Water, the company responsible for a privatized metropolitan supply since 1983, issued warnings about the future of the river. It claimed that nothing less than the construction of an exceptionally controversial (and expensive) Thames Tideway could protect the river from regular and dangerous episodes of sewage pollution associated with sudden outpourings of polluted storm water.<sup>48</sup>

What of the Lea, the capital's "second river"? In the 1860s the River Commissioners wrote a damning treatise on dangerous levels of pollution, vulnerability to manufacturing waste flowing down from the north, and the fact that waterway management was random and underfinanced.<sup>49</sup> Scientists and reformers kept a watchful eye on the state of the river and repeatedly warned that the Lea would soon trigger a large-scale outbreak of enteric infection.<sup>50</sup> In the hundred years between 1850 and 1950 the condition of this river, like that of the Thames, appeared to improve. But population growth in extra-metropolitan towns and outer suburbs posed a seemingly insoluble problem, and cooperation between these ever-larger communities rarely took place. The Local Government Board intervened, but to little effect. In the here and now, the media regularly report that the Lea is a national disgrace, as dead fish mix with ever-increasing volumes of manufacturing waste.<sup>51</sup>

We now know quite a bit about the history of atmospheric pollution in London.<sup>52</sup> In the seventeenth and eighteenth centuries its inhabitants sometimes witnessed sudden, anxiety-inducing darkening of the skies.<sup>53</sup> In the mid- and late nineteenth century many observers—increasing numbers of whom were versed in the science of meteorology—became convinced that the capital was about to enter a new climatological era. These fears were confirmed by recurrent smoke

crises, events that triggered London "close-downs" and deprived the city's desperately poor casual laborers of work and income.

It was now widely acknowledged that death rates spiraled upward not only during dense black fogs, but also during "ordinary" ones. Between the 1870s and the Edwardian era, the passionately committed "fog expert" Francis (Rollo) Russell, Bertrand's eccentric uncle, argued that atmospheric pollution might kill as many people as a cholera epidemic.54 Russell also stated that only a massive reduction in the numbers of people living in smoky towns would bring an end to recurrent atmospheric crises.<sup>55</sup> Pea-soupers, as bad episodes were called, were painted by the impressionists, written about by visitors to the capital. and editorialized (mainly by the London Times). The Edwardian period saw a sudden reduction in the capital's eerie black fogs. Was this because there had been a slow switch from coal to gas, or was it associated with autonomous meteorological change?56 One thing was certain: effective metropolitan and national anti-smoke legislation was weak, contradictory and, most of the time, unenforceable. A pioneering historian of the issue noted that "Parliament passed laws giving local authorities the power to act: the local authorities, forced to confront the polluters at close quarters in the councils and courts, wavered and passed the responsibility back to the central government."57 In 1952, when a catastrophic smoke crisis struck London, it seemed to confirm every prediction dolefully listed by Rollo Russell and his co-reformers.58 The Clean Air Act, which came onto the statute books in 1956, was a step in the right direction. But new contaminants now threatened London's skies and health. The pressing contemporary intellectual task is to chart the development of the capital's car culture, interrogate the ambiguities of vehicular pollution data, and explore policy successes and failures between the 1960s and today.<sup>59</sup>

What, finally, of garbage disposal? The flawed hypothesis that there may have been a "refuse revolution" between 1870 and the early 1920s has spurred research, which has revealed that each metropolitan community followed its own hit-ormiss route toward ridding streets and houses of rubbish. Depending on time and place, each area experimented with dumping outside the capital, employing "dust destructors," producing electricity from waste, tipping and burying waste on selected rural sites, and implementing weekly collection from individual homes. More efficient production processes and increases in take-home pay led to a wider range of consumer goods becoming available to the working classes; this played a central role in the expansion and changing makeup of metropolitan waste. In 1929 a report by the London County Council painted a picture of chaotic disorganization. Today the capital continues to lag behind the rest of the country.

The urban-environmental history of London needs to be linked to the ways in which the capital, and its component parts, were governed in the period between the early 1800s and the beginning of the new millennium. What was the "London government system"? How did it change over time? Did it possess the kinds of powers that were capable of making the capital into a better and safer place in which to live?<sup>64</sup> From the beginning of the nineteenth century to the 1850s, governing processes remained largely unchanged.<sup>65</sup> Ancient ecclesiastical parishes carried the main administrative burden and—as might be predicted—the capital avoided the kind of local governmental reform introduced in new cities in the Midlands and North by the Municipal Corporations Act in 1834. Only in the aftermath of the multiple environmental crises of the 1840s and early 1850s was London subjected to a modicum of administrative reorganization. In 1855 a Metropolis Management Act divided the capital into thirty-nine vestries or district boards and made them responsible for local sanitary management. In addition to removing nuisances and refuse, each vestry or district board had to appoint a medical officer of health and a team of sanitary inspectors, all of whom were expected to reduce the mortality rate. The measure also established a Metropolitan Board of Works, to undertake citywide improvement policies. This was a promising dimension of the act, but in 1888 the MBW collapsed amid accusations and counteraccusations of rigged building contracts.<sup>66</sup>

The Metropolitan Board of Works was replaced by the London County Council, a body comprising 118 directly elected councilors and 19 aldermen. The new body inherited the responsibilities—and limitations—of its predecessor and possessed London-wide powers for slum clearance, infectious disease control, main drainage, lodging houses, and animal health.<sup>67</sup> At the end of the century, vestries were abolished and replaced by boroughs, some of which contained as many people as large cities elsewhere in the kingdom. These administrative bodies retained the fierce independence that had characterized every part of the London government system since 1800. In outer suburban London individual district populations soared to between three and four hundred thousand, and they were even less likely than their predecessors to be dictated to by the London County Council. In addition, the council failed to gain powers to protect water quality and the purity of metropolitan air. It was also largely excluded from working with numerous long-established independent bodies charged with the reduction of infectious disease. For example, the council lacked the legal authority to collaborate with the Metropolitan Asylums Board, a capital-wide organization established in 1867 for the treatment of London's sick poor.<sup>68</sup> In addition, the LCC played only a minor role in the affairs of the Poor Law, the ancient voluntary hospitals, the Thames and Lea Conservancy Boards, and the Port of London Authority.



Fig. I.2. Greater London, 2000 to the present. Courtesy of https://upload.wikimedia.org /wikipedia/commons/thumb/c/ca/Greater\_London%2C\_administrative\_divisions \_ \_de \_ \_monochrome.svg/1425px-Greater\_London%2C\_administrative\_divisions \_ \_de \_ \_monochrome.svg.png

Throughout the twentieth century and right up to the present time, the bodies that succeeded the council lacked the kind of executive powers that were needed to make London a less polluted and unhealthy place. Successive would-be "governments"—the Greater London Council between 1965 and 1985, a Whitehall-dominated "residuary" body between 1985 and 1996, and the mayoral Greater London Authority since 2000—also found it exceptionally difficult to frame and operationalize strategies to work toward higher levels of sustainability. The capital had been too administratively complex at too early a date to be subjected to what anti-centralizers throughout our period interpreted as a wanton act of constitutional and national destruction. But did the survival of localism necessarily militate against reform? We now have electronic access to the annual reports of London's medical officers of health between the 1840s and the 1970s. This material provides extraordinarily detailed accounts of how each part of the capital dealt with its day-to-day environmental problems. What emerges is

a mixed picture. Although some areas of London ventured where no provincial urban centers of comparable size had dared to go, others—mainly smaller innercore areas—lagged behind their neighbors and centers of comparable size outside the capital. By the 1870s Londoners had reason to feel optimistic that their city's most egregious environmental ills were gradually being addressed.

But there is an urgent need for more historians to go down to the grassroots level and report on the social and ecological dynamics of the nineteenth- and twentieth-century capital. Sometimes dismissed as antiquarianism, research of this kind can take us much closer to the "real London" and possibly to the conclusion that anti-centralizing reform played an important—perhaps decisive—role in the development of a less polluted and healthier environment. Many of these local bodies worked extraordinarily hard to improve what is now known as the environment. Often they did the right thing for the wrong reasons. On other occasions they lacked the theoretical know-how and trained personnel to deal with even a tiny proportion of the nuisances they were tasked to root out. Our knowledge of this area is rapidly increasing, but we still know too little about how London's eccentrically organized local bureaucracies often went about their work.

### LINES OF INQUIRY

In our first essay Jim Clifford provides a cartographically-based survey of the capital and its countless micro-localities. Clifford analyzes the growth of a capital that was once walkable, but which now occupies a staggering 1,600 square kilometers, a figure that excludes suburban development outside the boundaries of what is now defined as the greater metropolitan region. Clifford also implicitly throws light on a much-discussed nineteenth-century issue: fear on the part of reformers and planners that London would one day reach so deeply into the countryside that southern rural England would be threatened with extinction. Clifford's use of cartographic and visual evidence allows him to provide a detailed account of the ways in which the capital's forests, commons, and marshes went into gradual and then increasingly rapid decline. He links this to the issue of the ways in which the metropolitan hinterland came to be converted into inner and outer suburbs. Making powerful connections between past and present, Clifford shows how a radical reordering of metropolitan space, involving heavily built-up areas, waste, and brownfields, has given rise in our own times to "low-level" environmental risk. The current position is worryingly multifaceted. Too many impenetrable surfaces now increase the long-term possibility of serious flooding, a danger increased by the fact that global warming has given rise to a wetter climate. It goes without saying that action is urgently needed.<sup>72</sup> As we have seen, however, the capital's twenty-first century "constitution" makes it exceptionally

difficult to translate recommendations into reality. Borough power can still stand in the way of concerted action. Too often local preoccupations obscure the larger metropolitan picture.

Where Jim Clifford focuses on the spatial complexities of the capital, Christopher Hamlin presents a cluster of interacting representations of the world's first global city, a range of different and revealing ways of seeing.<sup>73</sup> Beginning with a juxtaposition of Wordsworth's vision of a tranquil London and William Blake's desperate evocation of alienation and despair in his classic poem "London," Hamlin points out that the nineteenth-century capital was less "a metropolis" than simply the Metropolis. He touches on the extent to which the city has never been subjected to fully centralizing power and the ways in which individual boroughs continued to hold nearly absolute control until the twentieth century. Hamlin introduces a cluster of approaches to an understanding of what made London what it was (and in many respects, still is). He begins with the "experiential" city, "filled with physical and biological impedimenta," thereby providing the reader with a powerful reminder of just how profoundly "green" and "natural" so many parts of the capital continue to be—a theme developed later in the volume by Peter Thorsheim. Hamlin's second perspective is "inspectorial," a topic which, as we have seen, has now belatedly begun to be subjected to increasingly rigorous historical scrutiny.<sup>74</sup> Here Hamlin moves through a narrative stretching from the second decade of the nineteenth century to the 1890s, arguing that by the latter date informal and "benevolent" policing had given way to a more rigorous and punitive approach. Having probed "systemic" London, the capital as a hub of national and international science, and the extent to which it was once deemed possible to "save" the capital through analysis of large amounts of detailed data, Hamlin turns his attention to an "Anthropocene" capital. This term denotes a city that over the last sixty years or so has reached a point of absolute crisis—a phase of history driven like no other before it by human failure to reduce the rate at which Homo sapiens exploits and destroys first and second nature. "The Anthropocene" is a relatively novel term, but numerous late nineteenth-century commentators feared that the spatial expansion and (in their eyes) ever more polluted state of the capital might lead to nothing less than long-term global crisis.<sup>75</sup>

The kinds of problems with which Jim Clifford and Christopher Hamlin are concerned are explored in a demographic and epidemiological setting by Anne Hardy. Following a classically Hippocratic line of investigation, Hardy engages with maladies and causes of premature death associated with various and varying environments. Citing pioneering eighteenth-century investigations by Leonard Schwarz and John Landers, Hardy emphasizes the extent to which, even during the early Victorian period, the capital was a much healthier place than in the 1750s. The eighteenth-century city was characterized by incomprehensible lev-

els of overcrowding; the ancient core may have been as overcrowded as it had been in the late Middle Ages. In the 1730s the annual death rate was approximately fifty per one thousand population. A hundred years later, that figure had been halved. Despite recurrent epidemics of cholera, typhus, typhoid, smallpox, influenza, and the everyday but nevertheless deadly toll from what the Victorians called "the infections of childhood," the capital "survived" in a manner that astonished pessimistic contemporaries who were convinced that the greatest urban center the world had ever seen had reached a point of no return. Following the "cholera years" between the 1830s and the mid-1860s, metropolitan disease experts, like William Farr at the General Register Office, came to believe that the worst might already be over and that there would be no return to "plague-like" conditions in the capital.<sup>77</sup> Despite this optimism, cholera continued to appear with disturbing regularity in London through the middle decades of the century.

Hardy shows that infant mortality rates went into gradual decline, albeit with variations between and within different districts. This meant that, contrary to the belief of many contemporary experts, London fared relatively well compared to other major cities. Capital-wide infant mortality rates declined from 159 per thousand live births in 1901, to 81 in 1921, 25 in 1950, 21.5 in 1960, and 5.5 in 2000. Hardy argues that from the 1850s onward, public-health committees and their inspectorial employees gained an increasingly comprehensive understanding of the health problems of the capital. Construction of citywide infrastructure, combined with local sanitary enforcement, led to "improvements achieved against the odds" and cast doubt on the veracity of nineteenth- and early twentieth-century urban observers who assumed the capital to be the poorest, filthiest, and least salubrious city in the kingdom. It was only one step from this belief to a conviction that there was something perniciously wrong with the urban condition in all its guises and that a return to the countryside was the only solution.

Hardy's comparison of death rates in the period between the early nineteenth and the beginning of the twenty-first century is complemented by Christopher Ferguson's delineation of how what would now be called environmental specialists viewed the world in which they lived and worked between the 1770s and the 1870s. Ferguson's medical men, meteorologists, and proto-epidemiologists condemned towns and cities for the adverse impact they had on human health and resilience. Well-to-do members of the metropolitan population were warned that it was imperative either to move to the countryside or make regular visits to non-urban locations to recharge their batteries, an idea that long remained influential in a society which had industrialized and urbanized before any other, thereby losing liberating connections with a rural Eden.<sup>78</sup>

Obviously this therapeutic advice could be followed only by the middle and upper classes and had little meaning for the poor, who most urgently needed an

escape from appalling living conditions in hugely overcrowded courts and alleys. Ferguson provides a detailed analysis of the ways in which medical experts and others viewed the urban society in which they lived and why it is unwise to project onto them bodies of thought now routinely designated "environmental." He defines "early environmentalism" as a way of making sense of discrete human and spatial subcategories, "climates, regions or cities . . . conceived of in explicitly compartmentalized terms, what contemporaries referred to as 'circumstances.'" Many experts held the optimistic position that either an individual or his or her immediate community was capable of responding to and overcoming adverse conditions. Ferguson argues that although it would be anachronistic to project our own ideas about "the environment" and "environmentalism" onto the past, people's efforts to understand the connections between themselves and their surroundings are an important aspect of every period's history.

There are strong links between Christopher Ferguson's survey and Bill Luckin and Andrea Tanner's analysis of the relationship between sanitary and "modern" environmental modes of thought and action between the 1860s and the interwar period. The authors focus on a single district (later borough)—the inner suburb of Hackney—which was transformed from a semirural community at the beginning of the nineteenth century into one of the largest districts in London, with a population that outnumbered those of all but a handful of provincial cities. Hackney had just one medical officer of public health, John Tripe, between 1856 and 1892; his voluminous reports allow us to trace the way in which typical Victorian sanitary experts conceptualized the growing range of problems that came under the purview of Hackney's Sanitary (later Public Health) Committee.

Tripe was a conservative who believed, like several of the individuals discussed by Christopher Ferguson, that even the poorest of the poor possessed the "moral" wherewithal to drag themselves out of misery and, abstaining from vice and committing themselves to temperance, find a way out of the vile conditions in which they lived. This shouldn't be interpreted as implying that Tripe lacked sympathy for the impoverished people among whom he worked. Rather, he was bound by ideas that characterized and legitimated a nearly universal and heavily class-inflected ideology emphasizing what would later come to be known as upward social mobility—an insistence that even the poverty-stricken could draw on moral means to transform the way in which they lived. In Tripe's view, there were areas in Hackney that would never attain the degree of social "decency and respectability" that prevailed in the "old town," that part of the district which had been the environmentally desirable and country-like home of merchants and bankers in the eighteenth and early nineteenth centuries and which continued to pride itself on its respectability and domestic cleanliness.

The authors unearth material that brings the reader close to the miserable

day-to-day life of the unemployed and underemployed in deeply deprived subdistricts like marshy Hackney Wick. Compared with the old town, this area was characterized by appalling housing, recurrent outbreaks of disease, and one of the highest rates of infant mortality in the capital. Luckin and Tanner suggest that toward the end of their period quantitative analysis of social and epidemiological conditions contributed to the emergence of what are now considered to be "environmental" modes of thought. Yet traditional sanitary values continued to play an important role, and they would continue to do so for another couple of decades. In Hackney the discourse associated with the identification and removal of Victorian nuisances had a long and influential afterlife.

In his contribution Peter Thorsheim shows how analysis of the uses and alleged misuses of London's countryside takes the environmental historian deep into complex interactions between nature, class, gender, space, and power. At the beginning of the nineteenth century the capital's upper and middle classes claimed a near-monopoly over what should and should not be done in green places like Hyde Park, Green Park, and Kensington Gardens in the West End, and Parliament Hill Fields, Primrose Hill, and Hampstead Heath in the privileged north. Guardians of elitist values were convinced that only a tiny minority of the metropolitan working-class population knew how to behave correctly in parks and woods and benefit from socially disciplined physical and mental regeneration. They worried that countless numbers of the lower orders were far more likely to carouse themselves into oblivion and search out secret places for illicit sex. The "privatization" of magnificent squares reinforced the point: only the wealthy and privileged knew how to appreciate domesticated urban nature. Throughout the nineteenth century, however, small groups of reformers argued that working men and women, no less than members of the middle and upper classes, deserved access to green places in and immediately outside the capital. These natural oases constituted the "lungs" of the city, but they also served to reconnect urban residents with the natural world in a way that many hoped would promote social cohesion. A key proponent of this ideology, Lord Meath, the founder of the Metropolitan Public Gardens Association, insisted that if the working classes were excluded from rus in urbe, they would gradually degenerate both physically and morally.<sup>79</sup> Gradually green London opened its doors to the public, even though milder variants of what might be called "green moralism" lived on.

The early twentieth century witnessed the emergence of an idealistic commitment to opening nature for working people so that they could explore and enjoy parks and woods in or outside the capital. Fresh air came to be accepted as beneficial for everyone—hence the rise of the garden city movement and, following an astonishingly rapid green reconstruction of the capital in the aftermath of savage assault by German bombs, the consolidation of universal (but

still orderly) access to London's green spaces. At the same time a controversial Green Belt now protected the capital and its suburbs from random development. Londoners could use the Underground—particularly the Central Line—to walk and relax in a now legislatively protected hinterland. Thorsheim, like Jim Clifford, ends his contribution with a succinct summary of early twenty-first-century threats to metropolitan sustainability.

Each of our remaining contributions is wholly or partly concerned with the nature, extent, and multiple impacts of pollution. As we have seen, economic historians once believed that in its nineteenth-century heyday the capital was a massive sink of consumption and a prolific producer of services associated with banking and finance, insurance, and the law. This made it possible to juxtapose the metropolitan economy against the supposedly quite different socioeconomic character of urban structures in the Midlands and North.

Contesting this position, Leslie Tomory surveys metropolitan industrial pollution problems between the early nineteenth century and the immediate aftermath of the First World War. He shows that, according to the census of 1851, one in three of the adult male metropolitan labor force worked in manufacturing, most notably in construction, metal production, furniture making, and woodworking. Tomory argues that the severity of the human waste problem, which peaked in the 1840s and 1850s, together with fears of diseases associated with impure water, diverted public and scientific attention away from dilemmas connected with industrial smoke. During the second half of the nineteenth century, increasing numbers of the "dirty" trades moved eastward into under-inspected areas that did next to nothing to police pollution.

From 1889 onward the London County Council and the vestries (soon to be boroughs) gained more extensive powers to combat industrial smoke nuisances. A major and lasting difficulty was that many scientists and medical men differed radically over what came to be called the "best practicable means" of reducing the smoke problem. There was a vexing legislative problem: most laws governing pollution in England and Wales did not apply to London, which had its own regulatory framework. Lawmakers tried on occasion to correct this, but with limited success. In terms of punishments that could be handed down from the end of the nineteenth century, the London County Council failed to find ways of limiting the damage committed by multiple offenders. As a final resort, a citizen or corporate body could take civil action against a gross polluter. But this route toward the improvement of the environment invariably took a long time. Suspects often employed lawyers who were adept at finding ways around the law. Judges refused to grant orders that might increase unemployment. Hearings were frequently reduced to semantic debate about the meanings of "smoke," degrees of smokiness, and the cost of rendering a chimney "less dirty."

In the early twentieth century smoke—or "smog" as it came to be called—remained a largely unsolved problem, and more research would need to be undertaken before scientific findings could be translated into preventive legislation. As Tomory shows, the problem was made more complex because of the staggering post-1850 increase in the number of domestic fires in the capital: these belched smoke into the atmosphere, where it intermixed with industrial vapors and became associated by a minority of health officials with bronchial and pneumonic disease, notably among elderly members of the metropolitan community. Decisive and meaningful action would only begin to be taken in the mid-twentieth century.

What of impure water, central to Vanessa Taylor's discussion of the nineteenth- and early twentieth-century meanings of this most crucial of utilities? Taylor's contribution is divided into three sections. The first focuses on debates surrounding the provision of a domestic supply and a primary Chadwickian obsession: the role that water should occupy in the great Victorian task of constructing a "sanitary city." Next, Taylor provides an account of relationships between water and changing conceptions of public health. Finally, she turns her attention to the "changing forms" of domestic supply in the nineteenth and early twentieth centuries and the role that they played in everyday life. Already in the 1850s and 1860s the pioneering research of John Snow and William Budd (an expert on typhoid) suggested that deadly enteric diseases were primarily transmitted by impure public water supplies. Gradually this knowledge came to the attention of metropolitan medical officers; by the mid-1860s, an increasing number of them had been converted to a kind of germ theory at least partly predicated on the "water factor." A key event was the East London Company's blatant decision in 1866 to draw on dangerous sources, leading to the deaths of more than five thousand inhabitants in eastern and northeastern parts of the capital.

In one or another form, as Taylor notes, London's "water problem" reached back to the early nineteenth century. Until the replacement in 1902 of the eight all-powerful private companies by a publicly administered Metropolitan Water Board, disputes about water supply and quality repeatedly engaged large numbers of metropolitan inhabitants. Citizens' groups adopted a position that appeared and reappeared for the rest of the century, and in a particularly intense form between the 1870s and 1900. During these years the water question became intimately intertwined with ferocious debates over the "London government problem"—a demand, as we have seen, on the part of reformers that an ancient and allegedly amateurishly administered city should finally be restructured to introduce elements of the semi-democratically elected committee systems that were believed to flourish in centers like Birmingham, Manchester, and Leeds. Taylor emphasizes that reformers repeatedly made the point that adequately

treated water should be free at the point of delivery and that the poor must receive a supply under the same kind of terms as the wealthy and well-to-do. She argues that during the nineteenth and early twentieth centuries Londoners gradually became witness to the wholesale industrialization and commodification of a genuinely public supply.

In their comparison of London and New York water in the long period between the beginning of the nineteenth century and the near-present, Bill Luckin and Joel Tarr engage, like Vanessa Taylor, with the issue of the public good in relation to supply. They probe the extent to which the Empire City and the British capital have defined and served the interests of their respective populations, and they address the question of whether predominantly public or private control has more efficiently delivered an adequate per capita supply to evergrowing populations.

The authors emphasize that as early as the 1830s New York developed a much better water service than London. Instead of relying, as did London, on an adjacent river, the Empire City shifted from the pollution-prone Hudson River to a much purer source located far from the city. At times this decision gave rise to problems; intermittently throughout our period conflicts occurred with watershed communities, which complained that the urban giant had failed to acknowledge the severity of the problems that its policies had generated. Upstate villages were radically affected by waterworks developments. So too were farmers and hunters.

In the mid-twentieth century New York water and planning authorities set about finally resolving these difficulties, with the result that cumulative waves of environment- and employment-related compensation minimized mistrust between the Empire City and its water-rich hinterland. Finally, in 1995 a Water-shed Memorandum of Agreement was signed between New York City and upstate communal, farming, and sporting interests. In addition, creative steps have been taken to convince city-dwellers that it is imperative to save water and acclimatize themselves to significantly lower per capita levels of consumption in an increasingly water-stressed world.

The story of nineteenth-century London water revolved around the dangers associated with inner city supplies, pollution crises, and interactions between the London government problem and the way in which water should be delivered by the capital's intensely unpopular private companies. In 1902 the latter were finally and belatedly taken over by a publicly administered Metropolitan Water Board. The MWB improved the outreach and purity of metropolitan supply. In 1973 it was replaced by the Thames Water Authority, with basin-wide responsibility for water quality, supply, and sewerage. Sixteen years later, in the full flush of Thatcher's privatization drive, the authority was handed over to an internation-

ally owned corporation, Thames Water. Very few customers could be convinced that the new body had a genuine commitment to the public good. Consumers disliked the fact that Thames Water seemed to be repeatedly involved in business and operational deals with invisible investors. Prices rose, and the company failed to reduce its scandalously high leakage rate. As in the nineteenth century, the capital now finds itself in a position in which water supply is only distantly related to most inhabitants' conception of the public good.

The essays in this volume suggest a provisional framework for future forays into the modern urban-environmental history of the British capital. In doing so, each acknowledges the complexities of successive London government systems and the ways in which mainstream political and social history can be linked to and enriched by detailed knowledge of the development of infrastructure and public utilities. The essays also demonstrate that urban-environmental analysis can add depth to the study of epidemiological, medical, and urban history, and the histories of housing and overcrowding. Of course, each of these areas has a rich historiography of its own, but each would nevertheless be strengthened through closer scrutiny of ecological variables and systems. In addition, several of our contributions seek to reconstruct environmental conditions and experiences at the micro level. This is an exceptionally demanding task, but it is nearly impossible for a historian to understand the essence of London as a totality without having a grasp of its component parts. As the Victorians well knew, the capital consisted of a cluster of urban villages, gradually linked together by the sense that they formed part of London, a place that countless observers have described as the world's first global city. Putting the bits back together again will be a demanding historical task, but London's history can only be enriched by nuanced local and regional accounts of water and water supply, waste and waste disposal, housing, the construction of infrastructure, and fevered debates about issues that we now see as environmental.

As several of the chapters in this volume make clear, the British capital constituted a gigantic experimental laboratory in which the ideas of urban nature, pollution, and environment were defined and debated by individuals operating within scientific, medical, meteorological, and epidemiological communities. Collectively these essays indicate the multiplicity of ways in which urbanenvironmental history has changed over the last thirty years. Classic topics such as the dynamics of water supply and the construction of a main drainage system have been joined by complex debates about nature and rus in urbe, the construction and control of metropolitan space, the numerous meanings of pollution, and the many and seemingly contradictory ways in which London has been represented and decoded over the past two centuries.