

# *The Great Stink of London*

Sir Joseph Bazalgette and  
the Cleansing of the Victorian Capital

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# A Government for London

*There is no such place as London at all . . . {it is} rent into an infinity of divisions, districts and areas . . . Within the Metropolitan limits the local administration is carried on by no fewer than three hundred different bodies, deriving powers from about two hundred and fifty local Acts.*

*(The Times, 1885)<sup>1</sup>*

## *What is London?*

Before an effective sanitary regime could be introduced to the metropolis to deal with the problems described in the previous chapter, it was first necessary to set in place an organisation with the wide-ranging powers and the substantial financial resources required to execute the work. The six sewers commissions which struggled with the problem between 1848 and 1855 were wanting in both authority and money. The creation of the Metropolitan Board of Works, which eventually completed the project, was attended by fierce arguments over the wisdom of creating a body that was seen by some commentators as too powerful and by others as weak and ineffective. The debate engaged some of the most influential polemicists of the period including Edwin Chadwick, Benjamin Hall and a professional campaigner called Toulmin Smith. They based their arguments upon such concepts as economy, liberty and utilitarian philosophy. The issues had to be resolved before London could be given the organisation it needed to attend to its pressing need for better sanitation.

Some critics questioned what the word 'London' meant, if it meant anything at all. Cobbett's 'Great Wen' had been described in unflattering terms in the 1820s as if it were a recognised entity and in 1829 the establishment of the Metropolitan Police recognised the existence of a 'metropolis', with defined boundaries (and excluding the City) as a coherent unit for the purpose of policing. By 1830 the word metropolis began to appear in map titles. Yet as the Metropolis



Sir Benjamin Hall, whose removal from office in 1858 cleared the way for Bazalgette to begin work. (*Illustrated Times*)

## BENJAMIN HALL, 1802–67

**A**n early campaigner for the Welsh language, the Welshman Benjamin Hall sat as MP first for Monmouth and later for Marylebone. In 1838 he became a baronet and in 1859 Baron Llanover. A vigorous Parliamentary campaigner, he directed his energies against the abuse of election expenses in Parliamentary elections and against sinecures in the Church of England. An opponent of Edwin Chadwick's authoritarian methods, he ousted Chadwick from the Board of Health in 1854 and effectively excluded him from further public office.

In 1855 he became Chief Commissioner of Works, in which capacity he was responsible for improvements to the royal parks and for the final stages of the rebuilding of the Houses of Parliament after the conflagration of 1834 (see page 73). Hall was a tall, imposing man, and 'Big Ben', the principal bell in the new Parliamentary clock in St Stephen's Tower, was named after him.

Local Management Bill made its way through Parliament *The Times* could comment, in the words that open this chapter: 'there is no such place as London at all. [it is] rent into an infinity of divisions, districts and areas . . . Within the Metropolitan limits the local administration is carried on by no fewer than three hundred different bodies, deriving powers from about two hundred and fifty local Acts'.<sup>2</sup>

Sir Benjamin Hall described the situation to Parliament in 1855 when he introduced the Metropolis Local Management Act. Outside the boundaries of the City itself, about two million people were governed by the vestries of more than ninety parishes, precincts and liberties, ranging in size from the Liberty of the Old Artillery Ground, Bishopsgate, with fifteen hundred inhabitants, to the parish of St George's, Hanover Square, with sixty thousand. Some of these vestries were 'open' and elected by ratepayers, while others were 'close' or 'select' vestries. In these the vestrymen were put forward by thirty or more 'principal inhabitants' whose forebears had been nominated for this purpose in the Act of Parliament which set up the vestry.

St George's, Hanover Square, and St Marylebone, two of the largest parishes, were select vestries. One of the largest and most chaotic areas, St Pancras, had reconstituted its vestry from an open to a close form by a local Act of 1819. Of the 122 vestrymen created, seven were noblemen, two-thirds were parishioners with parish

property valued at £150 or more and the remainder were parishioners with parish property valued at £56 or more.<sup>3</sup> Overlaying this fragmented apparatus was a system of about three hundred different boards responsible for paving, lighting, drainage and other amenities which had been established by over two hundred and fifty Acts of Parliament, creating some ten thousand commissioners for the purpose. The rector of Christchurch, Regent's Park, wrote to the General Board of Health to enquire what steps he could take to improve sanitation in his parish and had been told:

In the parish of St Pancras, where you reside, there are no fewer than sixteen separate paving boards, acting under twenty-nine Acts of Parliament, all of which would require to be consulted before an opinion could be pronounced as to what might be practicable to do for the effectual cleansing of your parish as a whole.<sup>4</sup>

Sir Benjamin Hall claimed, in his speech to Parliament when he introduced the Metropolis Local Management Bill, that St Pancras had nineteen separate boards. In the Strand alone, nine different paving boards served three-quarters of a mile of road.<sup>5</sup> *The Times*, commenting upon the need for the reform of London's government in the period leading up to the introduction of the Bill, observed that London had 'a greater number and variety of governments than even Aristotle might have studied with advantage' and commented that, within St Pancras, the seventeen paving districts 'have no more to do with each other than the pavement of our St Paul's with that of St Peter at Rome'.<sup>6</sup> It is significant that the General Board of Health, Sir Benjamin Hall and *The Times* could not even agree how many paving boards served the beleaguered inhabitants of St Pancras. Some commentators wished to preserve such distinctions and privileges, basing their arguments on such well-defended grounds as civil liberties, the rights of property and the need for rigid economy in public expenditure. Others opposed them, citing public health, the philosophical principles of Bentham and J.S. Mill and, again, the need for economy in public expenditure.

Evidence that state intervention would be necessary before any reforms could occur became available from a survey carried out by the Health of Towns Association in 1848. Towns were sent a questionnaire which asked 'Have the authorities of the town given any indication of their knowledge of the kind and degree of influence which the condition of suburban districts exercises over the health of the town?' The reply from Canterbury was:

A few of the town council are quite aware of the influence which defective drainage has upon the public health but a large number will

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*State intervention  
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not acknowledge it and the greater number are so much opposed to public expenditure for any purpose that there is no hope of effectual means being resorted to by them for the public good.<sup>7</sup>

A question to Oxford about its plans for obtaining a clean and economical supply of water drew the answer 'never, and not likely to until compelled by Parliamentary interposition'. Dr John Snow, who hypothesised that cholera epidemics were water-borne, drew attention to the problems which arose from such attitudes while addressing the Social Science Congress in Bristol in 1849. He stated that 'our present machinery must be greatly enlarged, radically altered and endowed with new powers', above all with the power of 'doing away with that form of liberty to which some communities cling, the sacred power to poison to death not only themselves but their neighbours'.<sup>8</sup>

Chadwick and many other advocates of strong central administration (and accompanying public expenditure) based their arguments on economic grounds: the effects of poor sanitation upon the Poor Rates. His views on the relative importance of the various elements that could promote or obstruct the cause of better sanitation are expressed in a letter that he wrote in 1842:

The chief remedies consist in applications of the science of engineering, of which the medical men know nothing; and to gain powers for their applications, and to deal with local rights which stand in the way of practical improvements, some jurisprudence is necessary, of which the engineers know nothing.<sup>9</sup>

Local rights, in Chadwick's opinion, were something to 'deal with'.

### *Vested Interests*

Such a comprehensive prescription was certain to bring Chadwick and his supporters into conflict with every kind of vested interest: commissioners of sewers, vestries, local paving boards, private water companies, each with its own agenda and means of influence. The contrary beliefs that such measures would be ineffective, or would require burdensome taxes, or would require an unacceptable degree of interference with personal liberty, found many eloquent advocates. In 1848, *The Economist* criticised attempts to improve public sanitation in the following terms:

Suffering and evil are nature's admonitions; they cannot be got rid of; and the impatient attempts of benevolence to banish them from the world by legislation, before benevolence has learned their object and their end, have always been more productive of evil than good.<sup>10</sup>

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*'The sacred power to poison to death not only themselves but their neighbours'*

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Other commentators viewed the processes of sanitary reform as an interference with personal freedom and, particularly, with property. Following a public meeting in 1850, presided over by Charles Blomfield, Bishop of London, the bishop, Lord Ashley and others went as a deputation to the Prime Minister, Lord John Russell, to press for reform. Russell told them that 'In this city there is very naturally and properly great jealousy of any interference either with local rights or individual will and freedom from control'. Russell may have been complacent but he was not unrepresentative. He probably knew that he was reflecting the views of voters like the one who signed himself 'A. Ratepayer' in a letter to the *Morning Chronicle* about the 'centralising' tendencies of the Public Health Act: 'Even in Constantinople or Grand Cairo where plague and cholera are decimating the population, it is doubtful whether such a Bill would be desirable'.<sup>11</sup>

The most ardent critic of centralisation, for sanitary reform or for any other purpose, was a barrister of Lincoln's Inn, J. Toulmin Smith, who wrote a series of pamphlets criticising all legislative measures which he regarded as directed to that purpose. In 1849, in a turgid document of 380 pages entitled 'Government by Commissions Illegal and Pernicious' he invoked Magna Carta, Sir Edward Coke and the Common Law in attacking the centralising tendencies of commissions, referring to the Metropolitan Commission as 'one of the best illustrations of the vices of the system'.<sup>12</sup> He founded a journal, *The Eclectic Review*, to publicise his 'Anti-Centralisation Union' which called on Anglo-Saxon traditions 'to take its stand on our historical constitution, not on any novel theories' and which declared itself opposed to 'that sweeping experimental legislation to which there is now so great a disposition'.<sup>13</sup> At a meeting of the Institution of Civil Engineers in 1852 he argued that nature should be left to carry away rainfall, sewers being an unnecessary expense for this purpose, and he attacked both the engineering profession and the General Board of Health for suggesting otherwise.<sup>14</sup>

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*'Even in Constantinople or Grand Cairo where plague and cholera are decimating the population, it is doubtful whether such a Bill would be desirable'*

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### *The Creation of the Metropolitan Board of Works*

In 1853 the Royal Commission on the Corporation of the City of London considered the matter of London's government. The Royal Commission, in its final report, gave twenty-seven recommendations concerning the internal organisation of the City, followed by two recommendations suggesting a government for London outside the City based on the seven Parliamentary Boroughs of Tower Hamlets, Westminster, Finsbury, Lambeth, Southwark, Marylebone and Greenwich. Each of these, except Greenwich, contained more inhabitants than the City itself. A further recommendation was:

'We further suggest the creation of a Metropolitan Board of Works composed of members deputed to it from the Council of each metropolitan municipal body including the Common Council of the City. The public works in which all have a common interest should be conducted by this body'.<sup>15</sup>

When Sir Benjamin Hall introduced the Metropolis Local Management Bill to Parliament on 16 March 1855 he briefly considered the Royal Commission's proposals to base London's administration on the seven Parliamentary Boroughs but dismissed the idea on the grounds that they were too large and, conversely, that he did not wish to burden them with the expenses of mayors and their retinues. He turned instead to his own proposal which was that the metropolis be divided into administrative areas based upon existing parish boundaries, without creating corporations. The Bill, as presented to Parliament, represents an attempt to balance the need for a powerful metropolis-wide body with enough authority to execute the drainage and other works of common interest with the competing claims of vestry interests. Some of the resulting tensions were expressed in the course of the Parliamentary discussion of the measure.

The Bill is a long one, running to 112 pages, but the critical provisions as they affected the drainage works may be briefly summarised. For the purposes of the Act the metropolis would be defined as the area covered by the Registrar-General's thirty-six metropolitan registration districts, as used in the 1851 census so that 'London as a governmental unit began as a statistical area'.<sup>16</sup> Within this area the local government of London would continue to be based upon vestries, as in the past, but henceforward all vestries would be 'open': that is, elected by all ratepayers whose properties were rated at £40 or more in most areas, though a lower figure of £25 was substituted in certain poorer areas. Vestries would then elect members of a central Metropolitan Board of Works according to a formula which allocated more members to vestries with larger populations, giving a total of forty-six members, of whom one-third would retire annually. The chairman of the Board would be elected by the other members and would receive a salary of between £1500 and £2000. No other member would receive payment for his services.

Vestries and District Boards would be responsible for the construction and repair of local sewers, subject to the approval of their plans by the Metropolitan Board which was given the power to raise rates for the construction of the intercepting sewers, for which it alone was responsible. Its rating power extended to the City despite protestations on the matter from that quarter. Clause 135, concerned with the powers and duties of the Board, instructed that: 'The Metropolitan Board of Works shall make such sewers and works

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*His own proposal was that the metropolis be divided into administrative areas based upon existing parish boundaries*

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as they may think necessary for preventing all and any part of the sewage of the Metropolis from flowing into the River Thames in or near the Metropolis.' But it was the following clause, 136, that was to dominate the first three years of the Board's existence and prevent it from taking any active steps to carry out this instruction:

Before the Metropolitan Board of Works commence any sewers and works for preventing the sewage from passing into the Thames as aforesaid, the plan of the intended sewers and works . . . shall be submitted by such Board to the Commissioners of Her Majesty's Works and Public Buildings; and *no such plan shall be carried into effect until the same has been approved by such Commissioners.* [Author's italics]

It seems that, having created a body in which local vestry interests would be strongly represented, Parliament was still unwilling to confer upon the Board the powers necessary to design and execute the system of intercepting sewers. A power of veto was retained. Further constraints upon the Board were inserted in Clause 144, which stated that expenditure upon improvement works of over £50,000 had to be approved in advance by the Commissioners of Works and Public Buildings while expenditure in excess of £100,000 had to be approved by Parliament. Further clauses allowed ratepayers to appeal to the Quarter Sessions if they felt that the amount the Board spent on works in their area was inadequate in relation to the rates they were paying. This additional constraint on the Board's powers was to cause endless litigation and delay until it was repealed.

The debates on the Bill were poorly attended. Only five members spoke in the debate on the first reading, one of them being Lord Ebrington who reflected the anxieties of MPs that 'there was a danger that the proposed local Parliament . . . would discuss politics instead of sewerage questions, and threaten to overshadow the authority of the Speaker and that of the Imperial Parliament'.<sup>17</sup> Outside Parliament the debate was conducted with more vigour. On 14 August, following the passage of the Act, *The Times* published a leader welcoming the new body and, commenting on its powers over the City, wrote that 'a very large handful of feathers has been plucked from the civic bird'. Prominent among the opposition to the measure was the redoubtable Toulmin Smith who in 1857 published a clause-by-clause commentary on the Act in which he placed it in a long and dishonourable line of authoritarian measures that 'sought to extend the system of Functionarism and to destroy the traces of every principle which characterises English institutions and responsible government'.

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*Ratepayers could appeal to the Quarter Sessions if they felt that the amount the Board spent on works in their area was inadequate*

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## John Thwaites: Chairman of the Metropolitan Board of Works

Hall's careful judgement in creating a body over whose plans he had, in effect, a power of veto in his capacity as Chief Commissioner of Works, was put to the test as the Board began what the Hackney Medical Officer in 1860 characterised as 'a war of the community against individuals for the public good',<sup>18</sup> a phrase which effectively summarises the debates between centralisers and de-centralisers which had preceded the creation of the Board. The Board took office on 1 January 1856. Instead of forty-six members it had forty-five since John Thwaites, soon to be elected chairman, had been returned as representative for two vestries, Southwark and Greenwich. Born at Meaburn, Westmorland, in 1815 and educated at a school in Reagill, in the same county, Thwaites left Westmorland for London in 1832, and became a partner in a draper's business in Southwark after first serving an apprenticeship. Thwaites was knighted on 18 May 1865 for his work as chairman of the Board and died at Meaburn House, Upper Richmond Road, Putney, on 8 August, 1870.<sup>19</sup> An account of him which appeared in the *Illustrated London News* in July 1858 revealed that his experience of local administration included the role of Poor Law Guardian in the parish of St Paul, Deptford, where he resided. He had also been chairman of a gas consumers' committee which had been instrumental in exerting control over gas prices in the area. He had represented Southwark on the former Metropolitan Sewers Commission. *The Elector*<sup>20</sup> described him in flattering terms:

Mr. Thwaites is a type of the time we live in. He is the natural product of London matter-of-factism . . . In the celebrated Guildhall of the most important city on earth you may see, enthroned in the highest Metropolitan authority a man who, a short time ago, was the vendor of broadcloth.

Referring to his role as chairman of a Board whose discussions were often acrimonious *The Elector* wrote:

The frequent use of his hammer proves how active his mind must be in balancing the merits of every statement, and the amount of disorder he has to check . . . He bears with great calmness the odium of actions he has done all he could to prevent, and the charge of inaction he has made every effort to avoid.

Other members of the Metropolitan Board were of similar character. Poor Law guardians, magistrates, mayors, lawyers, MPs, lecturers and businessmen were all well represented in its membership.

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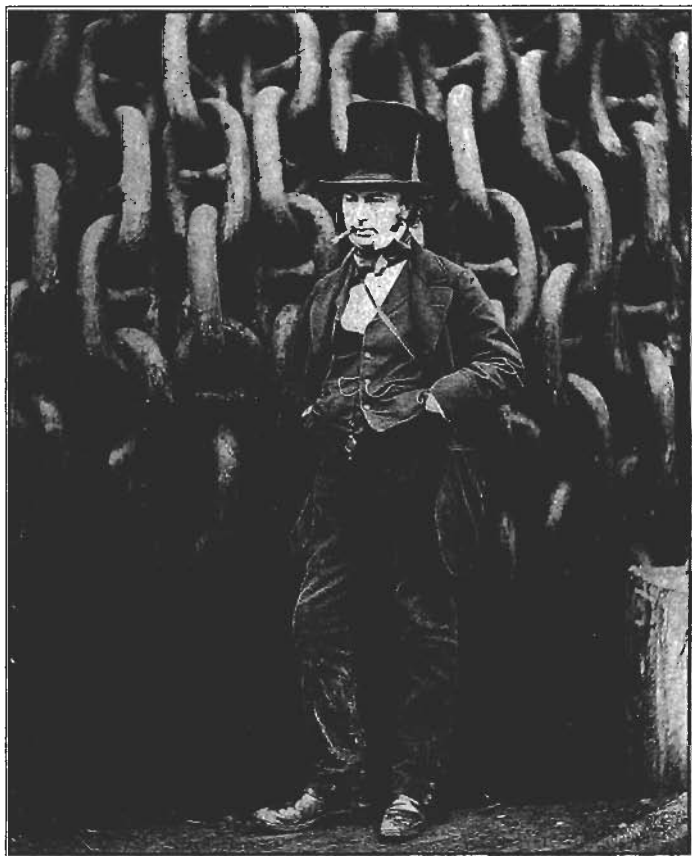
'A war of the community against individuals for the public good'

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## *A False Start*

The Board, from its earliest days, was in doubt about its priorities. Although it had responsibility for streets and many other activities besides sewers, it moved swiftly to the problem of drainage. The members elected Thwaites as chairman on 22 December 1855, and on 1 January 1856 asked Bazalgette to continue to act as Chief Engineer,<sup>21</sup> thus extending his former responsibilities as Chief Engineer to the Metropolitan Sewers Commission. The Board swiftly passed the resolution on 18 February 1856 'that this Board, impressed with the necessity of at once proceeding with the works necessary for the complete interception of the sewage of this Metropolis, request the Chief Engineer to report to the Board at the earliest possible period as to the plans necessary for the accomplishment of such object'.<sup>22</sup>

Bazalgette was appointed as Chief Engineer to the Board on 25 January 1856, in competition with eight other candidates, his application for the post being supported by testimonials from numerous eminent engineers including I.K. Brunel, Robert Stephenson and William Cubitt. Some contemporary commentators forecast that Thwaites and Bazalgette would soon be at odds with each other and *The Observer* went so far as to suggest that Bazalgette's appointment had been backed by City interests in order to control Thwaites because 'they calculate that it will place Mr Thwaites in an unpleasant position if the Chief Officer holds views diametrically opposed to the chairman'.<sup>23</sup> There is no evidence that this was so, but the story arose from an incident some years earlier which did Bazalgette no credit. Edwin Chadwick, through one of the numerous public bodies on which he served, had attempted to force the Fifth Metropolitan Sewers Commission to make their sewers from earthenware pipes, rather than from bricks.<sup>24</sup> The Sewers Commissioners did not like being given instructions by Chadwick and had asked their engineer, Bazalgette, to produce a report on the relative merits of the two systems by checking their effectiveness in the metropolis and five other towns. Bazalgette had come down strongly in favour of brick. Subsequent enquiries suggested that Bazalgette's inspections had been hurried, biased and sometimes surreptitious, at least one of them being conducted at



Isambard Kingdom Brunel, who in 1856 provided a flattering testimonial in support of Bazalgette's successful application to become Chief Engineer to the Metropolitan Board of Works. (By courtesy of the National Portrait Gallery, London)

night without the knowledge of the local engineer. Thwaites, in a contemporary account of the affair, criticised Bazalgette's methods and implied that his task had been to assemble evidence to support the prejudices of his masters rather than to carry out an objective appraisal. The controversy also brought Bazalgette into conflict with another engineer, John Grant, who was so critical of Bazalgette over the matter that Bazalgette threatened to sue him. The episode was an embarrassment to Bazalgette but it says much for his personal qualities that he worked effectively with Thwaites in often difficult circumstances and appointed John Grant as his deputy.

Bazalgette was as familiar as anyone with the numerous proposals that had been advanced for metropolitan drainage since 1849, when he had been appointed Assistant Surveyor to the Second Commission of Sewers. He had been responsible for examining and evaluating the 137 plans submitted to the Third Commission in 1850 and had worked on the Commission's own scheme with Frank Forster, whom Bazalgette succeeded as Chief Engineer upon the death of Forster in 1852. Bazalgette was therefore well acquainted with the multitude of solutions to London's drainage problems that had been proposed over the previous seven years. Following the instruction issued by the Board on 18 February 1856 Bazalgette was able to submit plans for the southern drainage on 4 April and for the northern drainage on 23 May.<sup>25</sup> He presented the plans with a modesty that was to become his hallmark:

Almost every suggestion which can be made upon the subject has been so often repeated in some shape or other that it would be difficult to detect which were the first authors of the various schemes propounded. Having had the advantage of access to all, I cannot pretend to much originality; my endeavour has been practically to apply suggestions, originating in a large measure with others, to the peculiar wants and features of different districts, with which my position has made me familiar.<sup>26</sup>

Sir George Humphreys, who as Chief Engineer of the London County Council assumed responsibility for Bazalgette's system in the twentieth century, took a more flattering view of his predecessor's work in his account of the development of London's drainage system. Commenting in 1930 on Bazalgette's modest claims he wrote that:

This fair and frank statement, disclaiming credit which he considered was not due to him, must not be allowed to deprive Sir Joseph Bazalgette . . . of the great credit to which he is entitled as the engineer who not only evolved a practical scheme out of these various proposals but also carried it out in so efficient a manner that to-day, with trifling exceptions, the whole work is still carrying out the function for which it was created.<sup>27</sup>

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*'With trifling exceptions, the whole work is still carrying out the function for which it was created'*

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The area north of the river was to be served by three sewers and that south of the river by two, with some sewers also having branches. At Abbey Mills, West Ham, in the north the low level sewer's contents would be pumped up to a level with the middle and high levels; thence the combined flow would proceed via the three outfall sewers to Barking where it would be discharged into the Thames just west of the River Roding (Barking Creek) which formed the metropolitan boundary. At Deptford, on the south side, the contents of the high level sewers would discharge to an outfall and the Low Level sewer's contents would be lifted to the outfall which would run to Crossness, on Plumstead marshes.

On 3 June 1856 Bazalgette's plan was sent to the First Commissioner, Sir Benjamin Hall, for his approval, as the Act required. There followed a protracted, frustrating and sometimes acrimonious debate between Hall and the Board concerning the interpretation of the Act, particularly as it affected the positions of the outfalls into the Thames. From the beginning of the project Hall showed a keen awareness of his responsibilities for supervising the Board's affairs though this appears to have been prompted by diligence rather than by distrust of the Board. Hall submitted the Board's plans to an independent consultant, Captain Burstall, who reported on them in little more than three weeks, on 30 June 1856.<sup>28</sup> On 2 July Hall sent the plans back to the Board accompanied by a letter which made plain his own reservations about them:

By the Metropolis Act of 1855 it is provided that the Metropolitan Board of Works shall make sewers and works for preventing *all or any part of the sewage of the Metropolis from flowing or passing into the Thames in or near the Metropolis.* [Author's italics] But the scheme submitted for the approval of the First Commissioner actually provides that the sewage shall flow into the Thames at a point within the Metropolis. The First Commissioner feels that he cannot undertake to do this and, considering that the scheme is entirely at variance with the intentions of the legislature as set forth in the Act which passed last August he considers it to be his duty to return the plans which were submitted for his approval.<sup>29</sup>

It is hard not to feel sympathy for Benjamin Hall in the disputes that occupied the next two years. On the one hand he had the Metropolitan Board, Bazalgette and the vestries who did not want the project to be more costly or complicated than was absolutely necessary. On the other hand he must have known that, if the sewage was not discharged at a safe distance from the metropolis, and particularly from the Houses of Parliament, his career would end in acrimony and ridicule.

In the weeks that followed, numerous alternative plans were devised by Bazalgette and debated by the Board, the most radical of

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*If the sewage was not discharged at a safe distance from the metropolis, and particularly from the Houses of Parliament, his career would end in acrimony and ridicule*

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which required Bazalgette to prepare a plan for carrying the southern sewage across the river via a tunnel starting near Greenwich marshes and then proceeding by one channel to an outfall at Mucking Creek just short of Canvey Island, Essex, 20 miles beyond the metropolitan boundary. The numerous resolutions and heated debates which characterised these few weeks are no doubt a reflection of the pressure felt by the Board, on the one hand to conform with the Act and on the other to do so at a cost that would be acceptable to the Vestries and Districts whose rates would have to pay for it. As it wrestled with this dilemma the Board was the object of some severe criticism, such as that which came from the *Illustrated London News*:

In sullen, Pistol-like compliance with Sir Benjamin Hall's desire they have, a fraction at a time, amended their plan for Thames purification; though in this respect their latest effort is still a half-measure. It will, however, ensure the destruction of the riverborne fish trade, ruin the waterside towns and waste upon the unthankful flood the fertilising matter.<sup>30</sup>

On 5 November Thwaites and Bazalgette visited Hall to submit a modified plan, together with an offer to site the outfalls further downstream at the government's expense. The plan did not really suit anyone and, in the words of *The Builder*, 'it would appear that the deputation was considerably snubbed'.<sup>31</sup>

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*'It would appear that  
the deputation was  
considerably snubbed'*

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### *The Referees' Plan*

On 31 December 1856 Hall referred the Board's modified plan to a committee of three referees: Captain Douglas Galton of the Royal Engineers; James Simpson, engineer to two London water companies; and Thomas Blackwood, engineer to the Kennet and Avon Canal.<sup>32</sup> Their terms of reference were broader than those of Burstall since they were allowed to put forward their own proposals and were especially enjoined to consider the possibility of using the sewage for agricultural purposes: a matter which was to influence, and often confuse, the deliberations of the Board over the following years. Seven months passed before the referees submitted their 500-page report to Hall on 31 July 1857.<sup>33</sup> They recommended that, on the north side, the outfall be situated near Mucking lighthouse in Sea Reach and on the south side at Higham Creek – 20 miles beyond the metropolitan boundary on the north side and 16½ miles on the south side – since 'these are the only places in the river, either above or below, which appear to us entirely to fulfil the conditions essential to the objective

in view'. The proposed outfalls would be open channels (in effect canals of liquid waste) and were designed to run to an outfall some 15 miles beyond the lowest points at which the Board considered it necessary to discharge. Moreover the additional drop in the level of the outfalls at the point of discharge, caused by the additional 15-mile incline, was such that the outflow could take place only at low tide, thereby ensuring that the initial movement of the sewage would be upstream towards the population centres. Finally, the referees added that the construction of the system should not be dependent upon the development of proposals for sewage utilisation though it was hoped that some of the sewage would be siphoned off from the channels in order to fertilise the barren Essex marshes through which it would pass on its long journey to the outfalls.<sup>34</sup>

In the meantime, during the summer of 1857, Hall was starting to come under pressure to bring about some improvements in the condition of the river flowing past the Palace of Westminster itself. The Lord Chamberlain wrote to Hall complaining that 'the pestilential state of the atmosphere at times in and about the New Houses of Parliament has on several occasions compelled me to leave the terrace and I am frequently obliged to close the door of my office'.<sup>35</sup> Similar pressure in the following summer, that of 1858, proved to be more decisive.

The referees' report was submitted to the Board in October 1857 and was greeted with a predictable lack of enthusiasm. The referees estimated that it would cost £5,437,265, a sum that compared unfavourably with the estimates for Bazalgette's plans, which ranged from £2,135,196 to £2,413,376.<sup>36</sup> On 5 November a meeting was held attended by Sir Benjamin Hall, two of the referees (Galton and Simpson), Thwaites and Bazalgette. In response to a question from Thwaites and Bazalgette concerning the additional cost of carrying the outfalls so much further downstream Hall 'stated that in his opinion Parliament will refuse to make any contribution to the works in question'.<sup>37</sup> This news prompted such an adverse reaction from the Vestry and District Boards that on 16 November the Metropolitan Board passed a resolution to the effect that it would be contrary to the provisions of the Metropolis Local Management Act to charge metropolitan ratepayers with the cost of the extension. The argument continued with mounting bitterness during the hot, dry summer of 1858 in a correspondence which the 1884 *Report of the Commissioners Appointed for the Purpose of Enquiring into the Effect of the Discharge of the Sewage of the Metropolis into the River Thames* characterised as having 'taken a somewhat acrimonious and personal tone'. In the meantime events had occurred which had the effect of relegating the engineering disputes to the margin.

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*The construction of the system should not be dependent upon the development of proposals for sewage utilisation*

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## *The Great Stink*

In February 1858 Palmerston's government fell and was replaced by a Conservative administration led by Lord Derby who appointed Lord John Manners as First Commissioner of Works in place of Hall. In the months that followed the hot, dry summer reduced the Thames to a condition which the press named the 'Great Stink'. It raised to irresistible levels the pressure to resolve the disputes over London's drainage in circumstances which were described in a leading article in *The Times* on 18 June:

What a pity . . . that the thermometer fell ten degrees yesterday. Parliament was all but compelled to legislate upon the great London nuisance by the force of sheer stench. The intense heat had driven our legislators from those portions of their buildings which overlook the river. A few members, bent upon investigating the matter to its very depth, ventured into the library, but they were instantaneously driven to retreat, each man with a handkerchief to his nose. We are heartily glad of it.

Eleven days earlier Hansard recorded a claim by one honourable member that 'It was a notorious fact that Hon. Gentlemen sitting in the Committee Rooms and in the Library were utterly unable to remain there in consequence of the stench which arose from the river'.<sup>38</sup> *The Times* writer went on to predict that the discomfort suffered by the Parliamentarians would finally lead to a remedy and on the same day the House of Commons debated the state of the river in response to a question by a member, R.D. Mangles, MP for Guildford, who 'rose to ask the Chief Commissioner of Works what steps he has taken, or proposes to take, to preserve the health of the members of the two Houses of Parliament from being destroyed by the present pestilential condition of the River Thames'. Mangles proceeded to make several unflattering references to the Metropolitan Board of Works who, he had heard, proposed to take a voyage in a steamboat for the purpose of inspecting the river:

If they were to go on that voyage of inspection, he hoped that they would take a good supply of brandy and other condiments with them for the purpose of obtaining relief from the sickening sensations they must experience. . . . he believed that the House has committed a great mistake in handing over a matter of that importance to any municipal body. The question was really one of an imperial character and ought to have been so treated by the legislature.<sup>39</sup>

The debate that followed attracted much press comment, led by the *City Press* which wrote on 19 June that 'Gentility of speech is at an

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Father Thames introducing his offspring to the city of London; *Punch's* view of the condition of the Thames in July 1858, as the Great Stink reached its climax. (*Punch*)

end – it stinks; and whoso once inhales the stink can never forget it and can count himself lucky if he live to remember it'. *The Observer* reported in similar terms two days later while a later commentator has written that 'The Thames, which had become more and more heavily used as a sewer, finally made its point by stinking out the Commons Committee'.<sup>40</sup>

On 2 June 1858 the Metropolitan Board passed a resolution on the drainage to the effect that they would 'defer all consideration of it until the middle of October next, leaving the whole summer to pass without any care for the state of the river'.<sup>41</sup> In his contribution to the Parliamentary debate Sir Benjamin Hall, now out of office, hinted that the Metropolitan Board was taking advantage of the discomfort caused by the stench of the adjacent river to exert pressure upon the Members to resolve the engineering and financial arguments in its favour. Hall went on to ask whether 'the Government should consider whether it would not be better to take the whole of this great work into their own hands . . . works of such magnitude that it was impossible that they could be paid for wholly out of local rates'.<sup>42</sup>

A week later, on 25 June, the House debated the matter again when Owen Stanley, a Welsh MP, quoted a letter addressed to the Speaker by Mr Goldsworthy Gurney, who was responsible for lighting and ventilation of the House. Gurney had written that he 'can no longer be responsible for the health of the house' and Stanley went on to describe interruptions to the business of the Court of

Queen's Bench where the surgeon Dr John Bredall had testified that 'it would be dangerous to the lives of the jurymen, counsel and witnesses to remain. It would produce malaria and perhaps typhus fever.'<sup>43</sup> It should be remembered that at this time most MPs would have believed in the 'miasmatic' explanation of disease propagation and would have been easily persuaded that the stench was potentially fatal as well as very unpleasant.

Against this background the movement for reform proceeded. On 15 July Disraeli, as leader of the House, introduced the Metropolis Local Management Amendment Act: 'An Act to alter and amend the Metropolis Local Management Act (1855) and to extend the powers of the Metropolitan Board of Works for the purification of the Thames and the Main Drainage of the Metropolis'. The first clause amended the original Act in a subtle but significant way by instructing the Board as follows:

The Metropolitan Board shall cause to be commenced as soon as may be after the passing of the Act and to be carried on and completed with

### SIR GOLDSWORTHY GURNEY, 1793–1885

**A** Cornishman, Goldsworthy Gurney practised as a surgeon in Wadebridge while remaining an enthusiastic student of engineering and chemistry. In 1820 he moved to London and delivered a series of lectures on chemistry which greatly impressed the young Michael Faraday, then at the beginning of his career. Gurney developed the process for producing limelight, the very bright light used in theatres; and a steam jet which was adopted by the Stephensons to power *The Rocket*. Gurney also patented a steam-carriage in which he travelled from London to Bath and back in 1829 at an average speed of 15mph. He installed a heating and lighting system in the House of Commons. In 1834 the building was burned down as a result of a well-intentioned but misguided attempt to fuel the boilers with medieval exchequer tally sticks (receipts for taxes paid) whose rotting wood proved excessively combustible. Gurney then installed a new heating, lighting and ventilation system in the rebuilt House – hence his anxieties and responsibilities during the Great Stink.



Goldsworthy Gurney. Inventor of limelight and the steam jet, he had the misfortune to be responsible for ventilating the Houses of Parliament at the time of the Great Stink. (By courtesy of the National Portrait Gallery, London)

all convenient speed according to such plan as to them may seem proper the necessary Sewers and Works for the Improvement of the Main Drainage of the Metropolis, and for preventing *as far as may be practicable* [author's italics], the sewage of the Metropolis from passing into the River Thames within the Metropolis.

The italicised phrase effectively resolved, in the Board's favour, the arguments over the positioning of the outfalls which had involved Bazalgette, Burstall and Sir Benjamin Hall's three referees for the previous two years, since it effectively repealed Clause 135 of the original Act with its unambiguous prohibition on 'all or any part of the sewage of the Metropolis . . . passing into the Thames in or near the Metropolis'. This had prompted Hall to reject the Board's original plans in July 1856. Clauses 4 and 6 enabled the Board to raise £3,000,000 by bonds or debentures and allowed the Treasury to underwrite these instruments, thus enabling the Board to obtain the money at low rates of interest, often from insurance companies. Clause 25 repealed clauses 136 and 144 of the original Act – the two clauses which had, in effect, enabled Parliament in the form of the First Commissioner to veto plans for the main drainage and any expenditure on any project in excess of £50,000. Further clauses removed the rights of ratepayers to appeal to the Quarter Sessions against the rates they were paying.

The introduction of the Bill was preceded by debates on the state of the Thames and was itself debated on 22, 23 and 24 July 1858. On the day before the debate started, *The Times*, in a long article, expressed its frustrations in the most trenchant terms:

The truth is, that this is a case where the fool's argument that 'something must be done' is applicable . . . the sewage of a mighty city lies in a broad stream under our very noses. The actions of the [Metropolitan] Board were crippled in two most important respects. It had no money and it had no power; it had no authority to raise the means required, and its engineers were liable to be confronted with engineers appointed by government and armed with a veto . . . if we wait for a concurrence of opinions on this subject, we shall never stick a spade in the ground or construct either a drain or a tunnel, or get, in fact, a single inch beyond the recent expedient of correcting Thames water with tons of lime. . . . The stench of June was only the last ounce of our burden. That hot fortnight did for the sanitary administration of the Metropolis what the Bengal mutinies did for the administration of India.<sup>44</sup>

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At the same time the *Journal of Public Health and Sanitary Review*, in an article called 'Is the Thames Pernicious?', reported 'stories flying

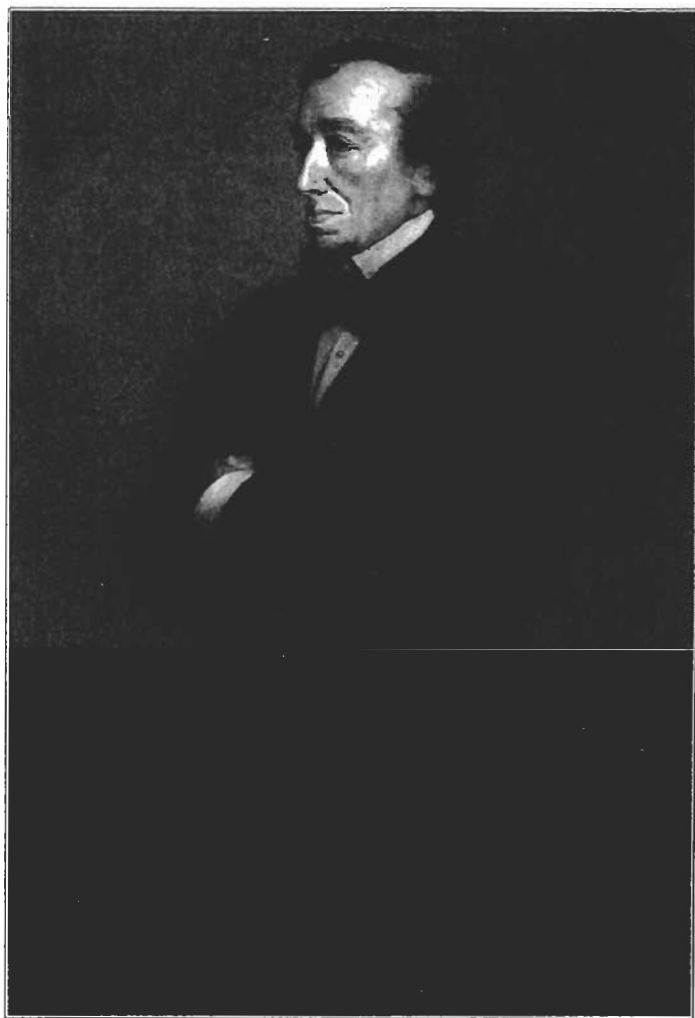
of men struck down with the stench, and of all kinds of fatal diseases, upspringing on the river's banks'.<sup>45</sup>

Several members including Robert Stephenson, Lord John Manners and Disraeli referred to the need to deodorise the waste before it was discharged and the Prime Minister, Derby himself, during the debate in the Lords on 27 July, made a more specific reference to this question.

It is generally understood, although there is no express provision in the Bill to that effect, that the *modus operandi* is to be by intercepting sewers, whereby the sewage of the Metropolis will not be allowed to be poured into the river until it shall have undergone, at such place or places as shall be determined on, the process of de-odorisation.<sup>46</sup>

The implication of Derby's 'general understanding' and of the thrust of the debate on the matter, was that, if sewage were to be allowed to drift with the tide to within the boundaries of the metropolis, then deodorisation would have removed its most offensive properties. Such deodorisation was normally accomplished by the addition of lime but the only reference to the subject in the Amendment Act itself was Clause 23 which prescribed that the sewage would be deodorised 'in the meantime and until the works required by the Act for the purification of the River Thames are completed'. This ambiguity became significant in a later dispute about the outfalls.

On 2 August 1858 the Metropolitan Local Management Amendment Act became law, just eighteen days after Disraeli had introduced it. It gave the Board all it needed to carry out the main drainage. The Parliamentary veto was removed and the Board was empowered to borrow £3,000,000, guaranteed by the Treasury, to be repaid by the proceeds of a threepenny rate levied over forty years. In 1863 the Board was authorised to raise a further £1,200,000 on the same terms. The Act also gave the Board discretion over the siting of the outfalls. It did not mark the end of criticism of the Board. In 1861, with the drainage works well advanced, *The Times* compared the municipal government of London with that of Paris, to the detriment of London, and it advocated a directly elected body to



Benjamin Disraeli. His Bill in 1858 gave the Metropolitan Board and Bazalgette the authority and money they needed to construct the main drainage. (By courtesy of the National Portrait Gallery, London)

govern the whole metropolis, including the City, arguing that such a body 'would have strength enough to double the work of Hercules and to cleanse not only the filthy stables but the river which runs through them'.

In a late contribution to the debates on the Amendment Act Viscount Ebrington, who had experienced some of the problems of the earlier Sewers Commissions, was close to the truth when he 'remarked that this Bill had been forced upon the government by a panic rather than with dignity'.<sup>47</sup> A later commentator observed, more succinctly, 'the "Great Stink" concentrated minds wonderfully'.<sup>48</sup> Whatever the reasons, the 'centralisers' had won. Parliament had given the Board more authority than any of its predecessors had enjoyed to construct a new system of drainage for London according to its own judgement, with little danger of interference either from Parliament or from the vestries. Thwaites and his colleagues had gained a degree of autonomy which Chadwick had sought in vain.

Bazalgette could at last begin to build.

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