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THE TRANSFORMATION OF LONDON'S WATER SUPPLY, 1805-1821

by

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A thesis offered to the Open University for the degree
of Master of Philosophy in the Discipline of History,
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THE TRANSFORMATION OF LONDON'S WATER SUPPLY, 1805-1821ABSTRACT OF THESIS

In 1805 London was supplied with water by several old-established companies which used the traditional method of distribution by gravity, through wooden pipes, from reservoirs which were at no great elevation above the districts supplied. The New River Company was by far the largest of these. Supplies were intermittent and unreliable, and many of the suburbs had no piped water supplies at all.

During the period 1805-1811 a number of new companies were set up, initially with the purpose of supplying the neglected areas on the outskirts. They used the latest technology of steam engines and cast iron pipes to give a high-pressure supply, and due to the iron pipes their supplies were more reliable, although they generally kept the intermittent system. They soon began to compete directly with the established companies, causing these to lose many customers and to experience severe financial difficulties. The new companies themselves, however, also had financial problems. They expanded their systems too rapidly, in a period of high prices, so that they needed very large capital investment, their share prices were manipulated by speculators, and no adequate return on their capitals could be gained from water charges, which were in general reduced as an inevitable result of competition.

The old and new companies recognised that the competition was likely to ruin them all, and in 1815-1818 agreed boundaries giving each company an exclusive area of supply. They then substantially increased their charges, which led to furious agitation against them by groups of consumers. A Parliamentary Select Committee investigated the question in 1821 and found that the companies had generally acted reasonably.

As a result of the competition and agreements among the companies, London in 1821 had a much more abundant and regular water supply, using the most up-to-date methods, than ever before.

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ABBREVIATIONS

1810 Minutes	Evidence before the Committees of Both Houses of Parliament considering the West Middlesex Water Works Bill, 1810 (unpublished, printed for the West Middlesex Water Works Company, 1810)
1819 Minutes	Minutes of Evidence Before the House of Lords Committee on the West Middlesex and Grand Junction Water Works Bill, 1819 (unpublished)
1821 Minutes	Parliamentary Papers: Minutes of Evidence Taken Before the Select Committee on the Supply of Water to the Metropolis, 1821
1821 Report	Parliamentary Papers: Report of the Select Committee on the Supply of Water to the Metropolis, 1821
CWWC	Minutes of the Courts of Directors of the Chelsea Water Works Company (unpublished)
ELWWC	Minutes of the Meetings of the Directors of the East London Water Works Company (unpublished)
ELWWC - GA	Minutes of the General Assemblies of the Proprietors of the East London Water Works Company (unpublished)
GJWWC	Minutes of the Meetings of the Directors of the Grand Junction Water Works Company (unpublished)
GJWWC - GA	Minutes of the General Assemblies of Proprietors of the Grand Junction Water Works Company (unpublished)
HLRO	House of Lords Record Office
LBWW	Minutes of the Meetings of the Committee of Managers of the London Bridge Water Works (unpublished)
LWWC	Minutes of the Meetings of the Directors of the Lambeth Water Works Company (unpublished)
NRC	Minutes of the Courts of Directors of the New River Company (unpublished)
PRO	Public Record Office
SLWWC	Minutes of the Meetings of the Directors of the South London Water Works Company (unpublished)
WMWWC	Minutes of the Meetings of the Directors of the West Middlesex Water Works Company (unpublished)

ACKNOWLEDGEMENTS

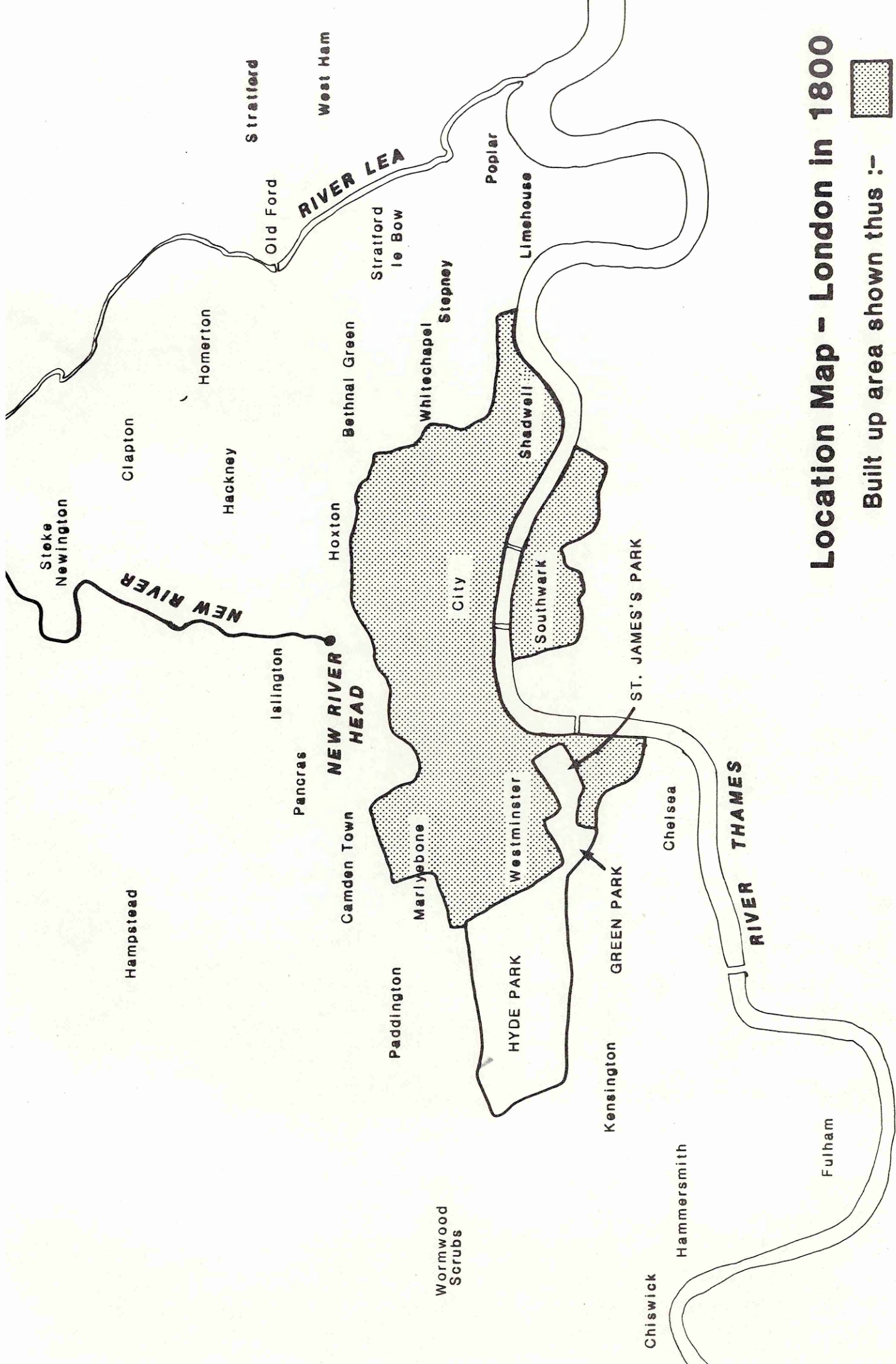
My thanks are due firstly to the Thames Water Authority, which allowed me to study the archives on which this thesis is based, together with its fine collection of books and Parliamentary Papers concerning London's water supply. Other institutions which permitted me to use their facilities included the British Library, the Institute of Historical Research at the University of London, the Guildhall Library, the National Register of Archives, the Public Record Office, the House of Lords Record Office and the Institution of Civil Engineers. I am grateful to all of these, and to the British Museum for supplying the print reproduced here.

Individuals who have given me their help and encouragement include Professor Theo Barker of the London School of Economics, Dr Francis Sheppard, late of the Greater London Council, Alan Longstaff and Jim Whitehead, late of the Thames Water Authority, and Steve Jakeman of the Thames Water Authority, who drew the maps.

Finally, my wife's services as critic and proof-reader have been invaluable.

AUTHOR'S NOTE

This thesis is concerned almost entirely with London north of the Thames, although the Borough water works and the Lambeth Company, and the advent of the South London Company, are noted in Chapter 2. There was no competition and no controversy concerning south London's water supply in this period, and the importance attached to the area at the time can be judged from the fact that the 1821 Parliamentary Select Committee ignored south London completely. I have therefore dealt only briefly with events south of the Thames.



Location Map - London in 1800



Built up area shown thus :-

CHAPTER 1

THE POSSESSORS: THE OLD WATER COMPANIES TO 1805

At the opening of the nineteenth century London north of the Thames was supplied with water by a number of long-established companies. Of these the oldest was the London Bridge Water Works, established by Peter Morris, a German or Dutchman, in 1581. In that year Morris was granted a 500-year lease of the first arch at the northern end of London Bridge, in which he erected a water-wheel to raise Thames water for distribution through the southern and eastern parts of the city through wooden pipes. The water works itself was destroyed in the Great Fire of 1666 but was shortly afterwards re-erected, and by the mid-eighteenth century had five water-wheels occupying three arches of the bridge. In 1761 an additional wheel was erected in order to extend the supply to Southwark.¹ In 1809 the works supplied an average of nearly four million gallons of water per day to some 10,000 consumers, and had a gross income from water rents of about £12,000 per annum.² The average charge per house had scarcely altered for a century, remaining at about 20s per annum.³ Although charges were reasonable for the volume of water supplied, the works' powers of supply were limited by the height to which water could be raised by the water-wheels, and many consumers therefore preferred to take the New River Company's water. The London Bridge works had no space to erect a steam-engine, and thus could not provide a 'high service' or supply of water to the upper stories of houses. The Morris family sold the works in 1701 to Richard Soame, who also extended the area of supply by acquiring a lease of certain public conduits from the City Corporation. Soame's undertaking had a nominal capital of £150,000, initially in 300 £500 shares, and by 1708 the capital had been divided into 1,500 £100 shares. At the end of the eighteenth century the London Bridge works was moderately profitable; dividends of 2% on the nominal capital were paid annually from 1794 to 1797, and of 3% from 1798 to 1811. The nominal £100 shares changed hands for only £70 apiece between 1789 and 1811, however, so that purchasers enjoyed a higher rate of return on their investment.⁴

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1. Accounts of the history of the London Bridge Water Works are to be found in H.W. Dickinson, Water Supply of Greater London (London 1954), and The Water Supply of London, published by the Metropolitan Water Board in 1961 and written by the Board's Archivist, Mr G. Berry.
 2. 1821 Report, Appendices B and L. This source gives figures of water supplied in hogsheads per year; I have converted these into gallons per day, taking one hogshead as 52½ Imperial gallons.
 3. Dickinson, op cit, 25.
 4. 1821 Report, Appendix B.

The New River Company was a much bigger and better-known enterprise. It originated soon after the London Bridge concern, with Acts of Parliament obtained by the City Corporation in 1606 and 1607 empowering the undertakers to bring water from springs at Chadwell and Amwell, near Hertford, by means of a conduit or tunnel. The Corporation granted its powers to Hugh Myddelton, a London goldsmith, in 1609, and Myddelton and 28 other 'Adventurers' each subscribed £500 towards the cost of constructing a conduit. The New River was built over a distance of 40 miles from Amwell to Clerkenwell between 1609 and 1613, and the 'Company of the New River brought from Chadwell and Amwell to London' was incorporated by Royal Charter in 1619. By 1636 the Company's capital was divided into 72 shares, of which 36 were known as Adventurers' Shares and the other 36 as King's Shares.¹ Most of the King's Shares, and also a few of the Adventurers' Shares, carried with them an obligation to pay a charge averaging £13.17s.9½d per share per annum to the Crown; this was known as the 'Crown Clogg' and resulted from the partial financing by King James I of the original construction of the New River.²

The water carried in the New River discharged into a pond at New River Head, Clerkenwell, at a height of some 84 feet above the level of the Thames, whence it was distributed by gravity through a system of wooden pipes to consumers in various parts of the city. About 1709 the Company constructed an 'Upper Pond' at a higher level immediately to the north of New River Head so that houses on higher ground could also be served; water was raised to this pond initially by a windmill and later by a horse-mill. Soon after the commencement of the Company's operations increasing demand rendered the quantity of water obtainable from the Chadwell and Amwell springs insufficient, and from 1660 the supply was supplemented by water drawn from the River Lee near Hertford.³ In 1809 the Company served some 59,000 houses in the City, the areas between there and Westminster, and outlying districts to the north and east. An average of about 11 million gallons of water a day was supplied in return for a gross rental of £81,000, an average of about 27s.6d per house per annum.⁴

In its early years the New River Company had shown only small profits, but by the late eighteenth century the proprietors were receiving considerable annual dividends. The value of the shares is hard to

1. Dickinson, op cit, 35-41; Berry, op cit, 7-8; J. Jeffery, The Statutory Water Companies (London 1981), 9-10.

2. 1821 Report, Appendix B.

3. Berry, op cit, 8; R.E. Morris, History of the New River (London 1934).

4. 1821 Report, Appendices C and L.

determine, but in 1815 the Company estimated its capital at £750,000, giving a notional value of over £10,000 for each of the 72 shares.¹ The 36 Adventurers' Shares were more valuable than the King's Shares, which were generally burdened with the Crown Clog and did not give their owners the right to serve as directors. Annual dividends between 1789 and 1810 varied between £396 and £486 per share; by that time some of the shares were divided among part-owners into as many as 32 parts, but 27 King's Shares and 30 Adventurers' Shares were still complete.²

The third largest company in terms of water supplied was the Chelsea Water Works Company, which was incorporated by letters patent in 1723 to supply the City of Westminster and adjacent places, and had an original capital of £40,000 in 2,000 £20 shares. The Company ran into financial difficulties while its works were being constructed, and in 1733 it was necessary to raise further capital. No investors could be found to take new £20 shares, however, so 2,000 £10 shares were issued, the proprietors of these having the same voting and dividend rights as the holders of the original issue. The Chelsea Company initially raised water from the Thames at Chelsea by water-wheels and horse-mills, discharged it into two reservoirs at Green Park and one in Walnut Tree Walk, Hyde Park, and then piped it to consumers through wooden mains.³ In 1809 the Company supplied 9,500 houses in Westminster and Chelsea with about $1\frac{1}{4}$ million gallons per day. Its gross rental in that year was nearly £15,000, the average annual charge of over 30s per house reflecting the better class of the houses in its area of supply.⁴ In its early years the Company was not profitable (no dividends at all were declared before 1737 or between 1740 and 1753), but by 1797 the proprietors were dividing profits of £2,000 per annum, representing a rate of just over 3% on the £60,000 nominal capital.⁵ The Company was also able to accumulate a reserve in Consols, amounting to £40,000 in 1810, against possible extraordinary expenditures.⁶ During the early years of the nineteenth century the Company was extending its area of supply northwards through Marylebone

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1. WMWWC, 9 August 1815: report of the Committee negotiating with the New River Company.
 2. 1821 Report, Appendix C.
 3. Dickinson, *op cit*, 55-58; Berry, *op cit*, 13; W. Matthews, Hydraulia, An Historical and Descriptive Account of the Water Works of London (London 1835), 80-84.
 4. 1821 Report, Appendix L.
 5. *Ibid*, Appendix D.
 6. Matthews, *op cit*, 84.

up to and beyond the New Road (now Marylebone Road).¹

The York Buildings Company ('The Governor and Company of Undertakers for raising the Thames Water in York Buildings') was incorporated by Act of Parliament in 1691, and its works occupied a site near the Strand at Charing Cross. Initially water was raised to an elevated cistern by a horse-mill and distributed thence in wooden pipes to consumers in the surrounding parts of Westminster - also a well-to-do area.² The Company's capital totalled £21,000 in 84 £250 shares, and its rental in 1810 amounted to £3,400 from 2,250 consumers, who thus paid an average of about 30s each per annum. The amount of water supplied averaged 150,000 gallons per day.³ The Company went through many vicissitudes in the eighteenth century; after the 1715 Jacobite rising it invested heavily in buying confiscated land, and in the 'Bubble' of 1720 its shares rose to enormous prices before collapsing. In 1732-35 its affairs were the subject of a Parliamentary inquiry, which found it to be losing £10,000 a year, and by 1792 all its property other than the water works had been sold to pay creditors.⁴ At the end of the eighteenth century its profits were small; the proprietors received no dividends between 1795 and 1800, then an £8 per share dividend in 1801, nothing in 1802 or 1803, £4 per share in 1804, then nothing until 1810.⁵

Between them the London Bridge, New River, Chelsea and York Buildings Water Works supplied all the piped water received by consumers in London north of the Thames prior to 1806. There were three other water companies supplying outlying areas which were soon to become part of the expanding metropolis. One of these was the Hampstead Water Company, incorporated in 1692, which supplied water to the villages of Hampstead and Highgate from ponds on Hampstead Heath. This undertaking was a very small concern.⁶ Considerably larger was the Shadwell Water Works, which commenced operations in 1669 and was incorporated in 1692. Until 1750 the works consisted of a horse-mill which raised water for distribution to consumers in Shadwell, Stepney and Wapping. The Company was bought by the London Dock Company in 1801 for £50,000.⁷ In 1808 the Shadwell works supplied

1. 1810 Minutes.

2. Berry, op cit, 12; Dickinson, op cit, 48-49.

3. 1821 Report, Appendix L.

4. David Murray, The York Buildings Company (Glasgow 1883).

5. 1821 Report, Appendix E.

6. Berry, op cit, 12.

7. Berry, op cit, 16; Dickinson, op cit, 49-51.

about '8,000 houses besides Sugar houses and breweries which is equal to the full extent of its power so that any additional supply from it at present is altogether out of the Question'.¹ The third company was the West Ham Water Works, which commenced in 1743 (incorporated 1747). These works raised water from the River Lee at Bow and supplied consumers in Mile End and Stratford. During the later eighteenth century the West Ham and Shadwell Companies competed against each other, but in 1785 they agreed a boundary giving each an exclusive area of supply, and in 1800-1 were both bought by the London Dock Company which continued their operation without seeking to improve their efficiency. In 1808 the West Ham works supplied about 2,250 houses and were estimated to be capable of supplying up to 2,000 more.² The two companies between them had a rental of £10,000 in 1809, an average of less than 20s per house, demonstrating that the areas they supplied were generally poorer than those further west. With an average daily supply of approximately 600,000 gallons, they also supplied less water per house than any of the London companies except the York Buildings.³

The total amount of water supplied by the 'old' companies in 1809 (excluding the Hampstead Company, for which no figures are available) was on average about 17 million gallons per day. No doubt a considerable proportion of the total was taken by large consumers who used water for trade purposes, but it is not possible to give any figures in this respect as the companies did not keep such records.⁴ The total number of 'houses' (including trade premises) supplied was 92,000, so each house theoretically received, on average, 185 gallons of water each day.⁵ This implies an average allowance of some 23 gallons per day for each person supplied, using the accepted average of eight people per house. This is a surprisingly large amount, for the present Thames Water Authority estimates that each of its eleven million consumers will use 35 gallons per day for domestic purposes; the amount actually received by consumers in the early nineteenth century was considerably less than 23 gallons per day, however.

The Romans had used lead pipes for distributing water, but in

1. ELWWC, 17 March 1808.

2. Ibid.

3. 1821 Report, Appendix L.

4. The Parliamentary Select Committee investigating the water companies in 1821 found that 'The [New River] company's books...do not furnish any means for distinguishing the amount received for water supplied for domestic purposes, and for water used for the purposes of trade or manufacture.' (1821 Report, Appendix C).

5. 1821 Report, Appendix L.

sixteenth-century London, when piped supplies were reintroduced on a large scale for the first time in over a millennium, it was found cheaper to use wooden pipes for all but the smallest sizes.¹ For the next two centuries the standard distribution system remained a series of wooden pipes, usually of 7" bore, leading from the company's reservoir or water tower to a network of smaller wooden pipes through the streets to be served. Small lead 'communication pipes' were inserted into the wooden 'services' and led into the consumers' premises.

This system of distribution was defective in several respects. The entire system was gravity fed, so that only those consumers living at a much lower level than that of the reservoir would have had a supply at a reasonable pressure. Since the level of the reservoir at New River Head was only 84 feet above the level of the Thames, for instance, many of the New River Company's consumers must have received a trickle rather than a flow of water.² No improvement in the pressure was practicable so long as wooden pipes were used, because these would not withstand a pumped, high-pressure supply. Even with the traditional low-pressure gravity feed, the wooden pipes were far from perfect. Generally made out of elm trunks, they were bored by long augers driven by water- or horse-mills (the New River Company had a pipe-boring yard with a horse-mill at Dorset Stairs in the City), and were jointed by ramming the tapered top of the pipe into the countersunk butt of the next pipe; the butt was generally reinforced by an iron hoop to avoid splitting.³ The standard length of each elm pipe was nine feet. The maximum bore of pipes made out of elm trunks was 12", and 7" was the largest commonly in use.⁴ This restriction in the size of pipes meant that several parallel lines of pipes had to be used to convey the main supply of water from the reservoir, such lines of pipes being called 'mains' to distinguish them from the single 'services'. In 1756 the London Bridge Water Works had eight 7" pipes leading from the water tower to the distribution network, the York Buildings Company had two, the Chelsea Company had five pipes (one 8", three 7", one 6"). The New River Company had the massive total of fifty-eight 7" pipes to convey the water of the New River into the City,⁵ and in 1810 its largest main, leading down Goswell Street (now Goswell Road), consisted of nine

1. Berry, op cit, 24; Dickinson, op cit, 30-31.

2. R. Sisley, The London Water Supply (London 1899), 22.

3. Berry, op cit, 23.

4. Dickinson, op cit, 118; Matthews, op cit, 66-67.

5. Dickinson, op cit, 57; Morris, op cit, 9.

parallel 7" pipes.¹ Leakages from wooden pipes were very frequent; the thinner wood of the butt and taper of a joint provided a weak point so that a relatively short period of rotting would allow water to leak out. The system of rows of pipes in the same street made locating the source of any leakage very difficult, and streets were constantly being excavated in the course of searching for and remedying leakages.² In 1810 a Commissioner of Paving for the parish of St James's, for example, gave evidence before a Parliamentary Committee of 'the great destruction of the pavement by taking up the pipes, which is a very great annoyance', and, before the same Committee, Counsel for the West Middlesex Water Works Company said that 'with the Chelsea pipes all over the district, there are as many springs as if it were a place for woodcocks and snipes', giving rise to 'a sort of marshy ground, where springs rise up round Coventry-street'.³ Also in 1810, the Engineer of the East London Water Works Company reported that 'Where the streets are worst is occasioned by leakage from the New River pipes, the water being on at the time...we could ascertain that fact by seeing where the water rose, in a great many places washing up the soil, and occasioning the Pavement to fall'.⁴ In 1821 the Engineer of the New River Company estimated that a quarter of the whole amount of water raised had been lost through leaks from wooden pipes,⁵ and this was probably an under-estimate.

The procedure whereby water was actually delivered to consumers' houses brought about further wastage. There were normally no individual stopcocks on communication pipes, and on 'water day' (which normally came round three times a week) the company's turncock would open a valve controlling the wooden service pipe in the street. Water then filled the service from the main and automatically entered each communication pipe, which terminated in a cistern or water butt in the consumer's basement. The turncock left the valve open for a period long enough to allow the cisterns to fill, about 1½ to 2 hours. Any cisterns which had already been partly full, or were of inadequate size, overflowed unless they were fitted with ballcocks, which were then uncommon. Once the controlling valve was shut, the service would empty through

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1. 1821 Minutes: evidence of William Chadwell Mylne.
 2. Berry, op cit, 25.
 3. 1810 Minutes: evidence of John Freeman, and questions put by Wetherell, Counsel for the West Middlesex Water Works Company.
 4. ELWWC, 14 November 1810.
 5. 1821 Minutes: evidence of William Chadwell Mylne.

the communication pipes until only a small amount remained in the bottom of the pipe. The services were not kept full of water, and even the mains were generally left empty at night.

While distribution systems remained unimproved until the beginning of the nineteenth century, some technical improvements had been made in the capital equipment of water works during the eighteenth century. Horse- and water-power was gradually displaced by the steam engine for pumping to reservoirs and water towers. The first London water company to erect a steam engine was the York Buildings Company, which in 1712 installed an atmospheric engine, of the type recently invented by Thomas Savery, for 'raising water by fire' from the Thames to its water tower. This engine was soon abandoned as its high consumption of coal made its use uneconomic, but in 1726 the Company installed another atmospheric engine, of the improved type designed by Newcomen. This engine was used for five years before it was decided that it too consumed too much coal and it was abandoned.¹ The continuous history of steam pumping in London begins with the installation of two Newcomen engines at the Chelsea Company's works in 1741 and 1742.² These engines were a great success as replacements for the old water-mill, and the Chelsea Company's example was soon followed by others. The Shadwell Water Works replaced its horse-mill by two steam engines in 1750, and in 1752 the York Buildings Company erected a third atmospheric engine, this time as a permanency.³ In 1766 the New River Company installed an atmospheric engine of the Newcomen type, as improved by John Smeaton, to raise water to a tower at New River Head, enabling the Company to supply houses on higher ground.⁴ After James Watt had patented his separate condenser engine in 1769 and begun his partnership with Matthew Boulton in 1775, steam engines of this more efficient type were soon introduced by the London water companies. The first of the Boulton and Watt engines to be installed by them was erected at Shadwell in 1778, and was followed by others at Chelsea (1778) and New River Head (replacing Smeaton's engine, 1786).⁵ By 1800, therefore, most of the companies relied wholly or mainly on steam pumping to raise water to their reservoirs. Water-wheels and horse-mills remained in use, however, and there

1. Berry, op cit, 27; Dickinson, op cit, 49 and 63-64.

2. Berry, op cit, 27.

3. Dickinson, op cit, 49-51.

4. Ibid, 65.

5. Ibid, 68-70.

was still no pumping into the distribution systems.

The other great improvement introduced during the eighteenth century was much less widespread. This was the cast iron water pipe, which was first used by the Chelsea Company in about 1746.¹ It lasted longer than the wooden pipe, which had a maximum useful life of twenty-five years and was generally expected to last for an average of fourteen years. In some soils, wooden pipes could require replacement after only four years.² For most of the eighteenth century, however, the high cost of iron and difficulty in obtaining a watertight joint precluded the introduction of iron pipes on a large scale. Until 1785 iron pipes were generally flanged at both ends and were jointed by bolting the flanges together. This method did not always produce a satisfactory joint, and in 1785 Thomas Simpson, Engineer of the Chelsea Company, introduced the 'spigot and socket' joint, which could be stuffed tight with tow and sealed with lead.³ This technique was extensively used in later years, but the continued high cost of iron meant that at the beginning of the nineteenth century it was used only in especially important situations where pumping was necessary, such as the rising mains at London Bridge (vertical pipes carrying water from the wheels to the elevated reservoir) and the main pipes from the Thames to the reservoirs at Chelsea.⁴ The distribution systems continued to be entirely of wood.

The unsatisfactory nature of the companies' supplies naturally led to numerous complaints from consumers. Although Thomas Simpson testified before a Parliamentary Committee in 1810 that, as Engineer of the Chelsea Company, he 'never had any complaints, either of the badness of the water or of insufficient supply', the same Committee heard much evidence to the contrary, principally from Fire Offices. The mains and services, of course, were not kept full at night (Simpson testifying that if the mains were kept full waste of water through leakage would increase and dishonest turncocks would supply their friends with water free of charge), and the utility of the wooden 'fire plugs' which the companies provided on their pipes was therefore limited.⁵ The plugs were supposed to be drawn only by the companies' turncocks, and in the event of a fire occurring at night application had to be made to the appropriate company's works (in most

1. Dickinson, op cit, 118.

2. Berry, op cit, 25; Dickinson, op cit, 118: 1810 Minutes, evidence of Thomas Simpson.

3. Berry, op cit, 25; Dickinson, op cit, 118.

4. Dickinson, op cit, 118.

5. 1810 Minutes.

instances New River Head) for the main to be filled, before water could be obtained for fire-fighting.¹ This sometimes led to a delay of several hours before a fire could be fought effectively, and the Fire Offices were very dissatisfied with the system. William Yambold, for example, a former parish officer giving evidence in 1810, instanced a fire in Frith Street, Soho, in 1804 or 1805 when he had applied to the turncock for water but none had been available because the turncock, 'a stupid Irishman, as most of them are', had not complied with due expedition. Much additional damage had therefore been caused. As a result of this incident a well had been dug in Soho Square to provide water for fire-fighting.² Irregularity in supply also caused great annoyance. A member of the St George's Paving Committee, George Halfhide of Coventry Street, complained that he was 'sometimes ten days without water', Richard Thomas of High Holborn testified that 'we are very often out of water, for a week or more together', and Henry Barnes of Princes Street had tried bribing the turncock and complaining to the General Committee of the New River Company, without obtaining any regularity in supply. The 1810 Committee heard these and other similar complaints.³

Water quality does not seem to have been considered so important; the discovery that water pollution and disease were connected lay half a century in the future, and water which was not obviously discoloured or malodorous was regarded as satisfactory. Even foul water was not necessarily viewed with concern: Ralph Dodd, the engineer and water company promoter, wrote in 1805 that 'Thames water being kept in wooden vessels, after a few months, often becomes apparently putrid...and produces a disagreeable smell. But even when drunk in this state, it never produces sickness; therefore it is evident no harm or ill occurs to persons whose resolution, notwithstanding its offensive smell, induces them to drink it'.⁴ James Pitt of Coventry Street testified in 1810 that the Chelsea Company's water was 'thicker' than and 'considerably inferior' to the New River Company's, but the number of complaints of 'bad water' was far outnumbered by complaints of insufficient supply.⁵

1. Matthews, op cit, 71.

2. 1810 Minutes, evidence of William Yambold.

3. 1810 Minutes.

4. R. Dodd, Observations on Water: With a Recommendation of a more Convenient and Extensive Supply of Thames Water, to the Metropolis, and its Vicinity, as the best Means to counteract Pestilence or Pernicious Vapours (London 1805), 75.

5. 1810 Minutes.

The water companies normally undertook to turn on the water in each street service on alternate days, other than Sundays, that is three times per week. Demand was outstripping the companies' ability to supply, and defects in their distribution systems added further difficulties. London was growing rapidly in size and population: in 1776 it contained some 700,000 people, but by 1801 957,000.¹ The fastest growth was in newly built-up areas such as St Pancras, whose population increased from around 600 in 1770 to 31,779 in 1801,² and in the poorer-class areas around the booming Port of London. Shadwell and Wapping, where new docks were built in the decade after 1799, were areas of considerable population growth. Southwark, Rotherhithe, Stepney, Bethnal Green, Somers Town, Camden Town, Paddington and Kensington were all districts which required more piped water to serve new buildings and expanding populations. The parish of St Marylebone, north of Westminster, where both the Chelsea and New River Companies had mains, developed with particular rapidity and the houses there were often large and of good quality. Custom there was a prize worth securing by any water company, and between 1806 and 1810 the Chelsea Company spent £30,000 on extending its works and pipes to enable it to serve Marylebone and the adjacent areas northwards to Paddington.

The companies did not, in general, keep detailed records of the amount of water they supplied, but from 1787 to 1809 the New River Company recorded the amount of water pumped by its Boulton and Watt steam engine, this being required by the manufacturers. The engine raised all the water supplied by the Company to 'the western parts of the town', and the figures show a considerable increase over the period. From some 100 million gallons raised in 1790 the amount increased to 190 million gallons in 1793, 350 million gallons in 1797 and 450 million gallons in 1806. No consistent pattern of increase can be discerned because of variations in the area supplied from the Upper Pond, and thus by the engine, but the upward trend is clear.³

Apart from the greater numbers of new buildings and of people, the demand for water also increased through the use of new appliances and a general increase in cleanliness. The most important of these appliances

1. D. Marshall, Industrial England, 1776-1851 (London 1973), 29-30.

2. F. Sheppard, London 1808-1870: The Infernal Wen (London 1971), 25.

3. 1821 Report, Appendix C.

was the water closet. Originally invented in the sixteenth century, the water closet became popular only after improved versions were patented successively by watchmakers Alexander Cummings and Joseph Bramah in 1775 and 1778 respectively. Bramah's design remained standard for a century, and he claimed to have made and sold 6,000 closets by 1797.¹ Fixed baths in numbers were much later in making their appearance, but in 1809 they were sufficiently numerous for the East London Water Works Company to assess an additional charge for houses which had such appliances fitted.² Water closets and fixed baths required a head of water to operate effectively, and their introduction therefore increased the likelihood of dissatisfaction with low-pressure water supplies. If a water closet was to operate on any floor of a house above the basement, water would have to be carried from the basement water butt to a cistern on a higher floor.

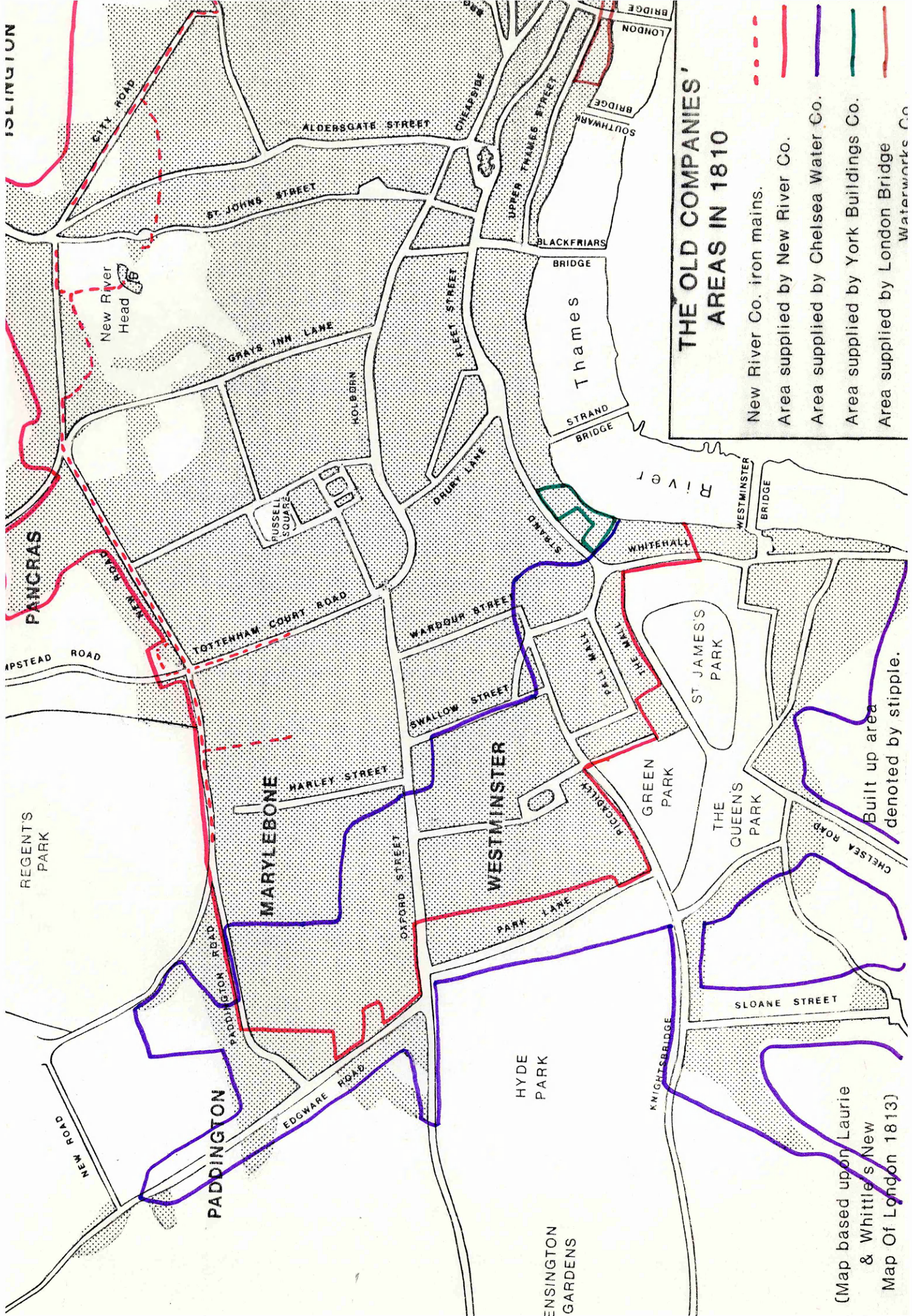
Another factor making for increased demand for water was the greater use of cotton clothing which could easily be washed. In 1824 Francis Place, contrasting the present habits of the people of all classes with what he remembered from his boyhood in the 1780s, wrote that cotton clothes 'were found to be less expensive and as it was necessary to wash them, cleanliness followed as a matter of course...Cleanliness in matter of dress was necessarily accompanied by cleanliness in other particulars, and this again by the desire to possess more conveniences, and better utensils'.³ In 1822 Place wrote that the decline of the London death rate in his own lifetime was largely due to 'the change that has taken place...in the habits of the working classes, who are infinitely more moral and more sober, more cleanly in their persons and their dwellings, than they were formerly...partly from the success of cotton manufacture'.⁴ The enthusiastic commentator who, in 1783, extolled the system of 'buried wooden pipes that supply every house plentifully with water, conducted by leaden pipes into kitchens or cellars, three times a week for the trifling expence of three shillings per quarter'⁵ had by 1810 been succeeded by the irritated complainants quoted above.

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1. L. Lambton, Temples of Convenience (London 1978), 5-9.
 2. ELWWC, 12 July 1809. The Company charged two guineas extra for a fixed bath, as against 5s for a two-stall stable and half a guinea for a water closet.
 3. F. Place, Additional MSS 27828, folio 120 ff, quoted in M.D. George, London Life in the Eighteenth Century (London 1925), Peregrine edition (1966), 71-72.
 4. F. Place, Principles of Population (1822), quoted in George, op cit, 72.
 5. Ralph, Critical Review (1783), quoted in George, op cit, 110-111.

The water companies, especially the New River Company, were also criticised for being high-handed and arbitrary towards consumers. In 1810 John Johnson, for example, testified that in 1805 he had applied to the New River Company for a supply of water to thirty new houses he owned at Somers Town, and had been told that as the Company's existing pipes nearby were inadequate he would have to pay £100 for new services before any supply could be given. There being no other way of obtaining water for his tenants, he had had no option but to pay.¹ The New River Company showed its tyrannical side in the incident of Pocock's Well. For several years before 1809 the Company had been requested to supply water to an increasing number of houses in Holloway and Islington but had neglected to do so, presumably because of the difficulty of supplying areas at a level higher than that of New River Head. In 1809 one George Pocock obtained an Act empowering him to sink a well and pump water from it to Holloway and Islington, but immediately the Act passed the New River Company laid pipes through the area 'with great expedition'. The Company even pulled down the pump from which the inhabitants had previously obtained their water, thus forcing them to take the Company's supply. The unfortunate Pocock did sink his well, but was unable to meet his costs and went bankrupt in 1815.²

Such was London's water supply at the beginning of the nineteenth century. The companies had effected certain improvements in efficiency, notably the progressive introduction of steam engines to raise water and of iron pipes at especially important situations, but these did not directly benefit the consumer. Iron was increasingly available with the great expansion of production during the Revolutionary and Napoleonic Wars and its price was already beginning to fall: but companies which had large capitals tied up in old wooden pipes (of which the New River Company had 400 miles) were disinclined to expend more capital on renewing their distribution systems. By the opening years of the century, however, it could perhaps have been foreseen that if the established companies did not take steps to provide a more regular, higher pressure supply, they would find more powerful competitors than Pocock arising in response to public demand.

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1. 1810 Minutes, evidence of John Johnson.
 2. Dickinson, op cit, 76: Sisley, op cit, 23.



THE OLD COMPANIES' AREAS IN 1810

- - - New River Co. iron mains.
- Area supplied by New River Co.
- Area supplied by Chelsea Water Co.
- Area supplied by York Buildings Co.
- Area supplied by London Bridge Waterworks Co.

(Map based upon Laurie & Whittle's New Map Of London 1813)

Built up area denoted by stipple.

CHAPTER 2

NEWCOMERS: THE ESTABLISHMENT OF THE SOUTH LONDON, WEST MIDDLESEX AND EAST LONDON WATER WORKS COMPANIES, 1805-1810

The successful competition came from London's outskirts. The promoters' main aim originally was to supply outlying areas which had no piped water at all, rather than to compete in districts already served: nor did they propose any major departure from the traditional methods of distribution by gravity through wooden pipes. Technical improvements, however, soon enabled them to extend high-pressure supplies into the densely populated central areas, in competition with the older-established companies.

The first of the new water companies was established in south London, where the most important of the existing concerns, the Lambeth Water Works Company, had been in operation only since 1785. The Lambeth Company supplied Lambeth with water drawn from the Thames near the site of the present Waterloo Bridge. Southwark was supplied partly by the London Bridge Water Works and partly by the small Borough Water Works, which raised water by means of an atmospheric engine situated at Bank-side, near the south end of the later Southwark Bridge. According to Matthews, writing in 1835, these latter concerns 'were in a very inefficient state, besides having their pipes running in the same streets, so as to interfere much with each other'.¹ The Lambeth Company, on the other hand, had started with a capital of only £5,590 'but by careful management, and avoiding a large expenditure at the commencement, a remarkable degree of success attended their enterprise'; the shareholders must have been very patient men, for all profits had been ploughed back into the works rather than distributed as dividends.² By 1828 the Company's capital stood at £130,000.³

In 1804 proposals for new water works in south-west, north-east and north-west London were made by Ralph Dodd. Dodd, who was born in about 1756, probably in Northumberland, had begun work as a self-styled engineer on the Grand Junction Canal in 1794, after an earlier career as a painter. He had worked on other canals up to 1802, mostly in a minor capacity, and had unsuccessfully projected tunnels beneath the Tyne and

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1. W. Matthews, Hydraulia, An Historical and Descriptive Account of the Water Works of London (London 1835), 119.
 2. Ibid, 121.
 3. Ibid, 123.

the Thames.¹ He had no previous experience of water works. His two sons, Barrodale Robert and George, also styled themselves engineers and worked with him. His proposals for new London water companies were set out in his book Observations on Water², published in 1805, which (after turgid and inaccurate remarks on water generally) contained reports to the subscribers about his intended South London and East London Water Works. It is clear from these that Dodd intended to supply mainly areas which had not previously had piped water; after listing various parishes he remarked that 'Although all the places above-mentioned may not be wholly destitute of Soft Water, by far the greater part are obliged to depend upon uncertain supplies, and precarious Rains that may fall from the Heavens, take it from stagnated pools, or expensively brought to them by Water Carts'.³ He proposed to bring to the inhabitants a regular, piped supply, which 'possesses the united advantages of administering to our domestic comforts, and ensuring our safety, by extinguishing the devouring Flames that too often invade our dwellings'.⁴

Dodd's South London Water Works was the first to get under way. The inaugural meeting of subscribers was held on 6 October 1804, when it was agreed that a capital of £30,000 should be raised in £100 shares, that a Bill for incorporating the undertaking should be introduced into Parliament, and that Ralph Dodd should be the Company's Engineer.⁵ The required Act was duly obtained, receiving the Royal Assent on 12 July 1805. It empowered the new Company to supply water to Camberwell, Lambeth, Bermondsey, Rotherhithe, Deptford, Newington, Walworth, Kennington, Stockwell, Clapham, Peckham Rye, Dulwich, 'and Places adjacent'. Opposition to the Bill by the Lambeth Water Works Company was overcome by inserting a clause which laid down a boundary between the areas to be served by the two companies, and the opposition of various canal companies was removed by a clause prohibiting the Company from using its aqueducts as waterways for the carriage of goods or passengers. The Act fixed the Company's capital at £50,000, with power to raise a further £30,000 if necessary.

The South London Water Works Company proposed to site its works at

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1. J.G. James, 'Ralph Dodd, The Very Ingenious Schemer', in Transactions of the Newcomen Society, vol 47 (1974-6), 161-178.
 2. R. Dodd, Observations on Water: With a Recommendation of a more Convenient and Extensive Supply of Thames Water, to the Metropolis, and its Vicinity, as the best Means to counteract Pestilence or Pernicious Vapours (London 1805).
 3. Ibid, Appendix 2.
 4. Ibid.
 5. SLWW.

Vauxhall Creek, Kennington (the lower stretch of the River Effra), and to raise water by means of a 16 horse-power steam engine to an 'upper tank' 30 feet above ground level.¹ Before any work had started, on 12 August 1805 the Directors reported to the shareholders that 'with regard to Mr Dodd the Engineer they feel it a Duty to report to the Proprietors with all the delicacy the subject requires they cannot, from all the various Circumstances within their knowledge, recommend his being further employed'. The shareholders duly dismissed Dodd and appointed one Chapman in his place.² A long dispute followed over the sum owed to Dodd to cover his expenses as Engineer, which was ultimately settled by arbitration.

Having discarded its originator, the Company proceeded to erect its works as planned, and to lay a 12" bore iron pipe from its intake to the reservoirs. The traditional wooden pipes, of 3" to 7" bore, were used for distribution. The works proved to be more expensive and to take longer to construct than had been anticipated, but on 24 June 1807 the first public supplies of water were commenced. Disaster then struck: only 56 customers had been obtained when, on 6 August 1807, the engine house, steam engine and upper reservoir were destroyed by a fire which was believed to have been started deliberately. Although £2,700 fire insurance was paid by the Albion Fire Office, the Directors believed that the Company had suffered injury to its interests over and above the actual damage because of the delay resulting from the fire.³ The steam engine was replaced at first by two smaller ones, of two and three horse-power respectively, and then, in 1809, by an eight horse-power Trevithick engine.⁴ In June 1808 the Company still had only 270 customers, and a year later only 525. Although by June 1810 it had laid nearly fifteen miles of wooden pipes and supplied over a thousand consumers, its income was still insufficient for any dividend to be declared, despite the relatively high charges of over 30s per house per annum.⁵

The attitude of the Lambeth Company to its new neighbour appears to have been one of wary benevolence, and relations between the two were reasonably good. When the South London Company's steam engine was

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1. SLWWC, 24 August 1805.
 2. Ibid, 12 August 1805.
 3. Ibid, 13 August 1807.
 4. Ibid, 6 June 1808 and 5 June 1809.
 5. Ibid, 4 June 1810.

destroyed by fire the Lambeth Company immediately offered to supply the 56 customers who had been cut off, until the South London was able to resume operations: the offer was regarded as 'friendly and amicable'.¹ The boundary fixed by Parliament between the two companies prevented the South London from encroaching on the Lambeth Company's area, but not the reverse. Nevertheless, the Lambeth Company was anxious to avoid any competition, and in December 1807 suspended the laying of its 4" pipe in East Lane in order 'to prevent any irritation to the South London Company in the way of competition in that neighbourhood'.² In April 1808 the East Lane pipe was taken up, the Lambeth Company 'being of the opinion that a competition would not be to the advantage of either Company'.³ In 1810, however, the financial difficulties of the South London Company appear to have led its Directors to believe that an active competition might prove to be the answer to their problems, and they petitioned Parliament for the repeal of the restrictive clause in their Act. The Bill for this purpose was rejected at the Committee stage, and the statutory boundary remained until 1834.⁴ There was no real competition among the water companies south of the Thames until 1839.⁵

The second of the new water companies to be established was much more significant. The West Middlesex Water Works Company was projected by Ralph Dodd in 1804, and its Engineer was his son B.R. Dodd. B.R. Dodd drew up plans during 1805 showing works on Pooles Creek, Fulham, near Walham Green, with an upper reservoir on the north side of Fulham Road,⁶ and in 1806 a Bill was presented to Parliament for the incorporation of the new company. Before the House of Lords Committee B.R. Dodd 'proved' the expense of the proposed works as being £23,835, including excavating three reservoirs holding a total of 14½ million gallons, erecting engine houses and laying twelve miles of pipes.⁷ The Act was passed in July 1806, and on 12 August a Board of Directors was appointed by the sixty proprietors named in it. The Act empowered the Company to raise a capital

1. SLWWC, 13 August 1807: also LWWC, 18 August 1807.

2. LWWC, 8 December 1807.

3. Ibid, 5 April 1808.

4. Ibid, 25 February, 4 April and 25 April 1810.

5. There was an outbreak of fierce competition among the water companies south of the Thames between 1839 and 1842.

6. HLRO, Deposited Plan, H.L., 1806, Kensington Waterworks Bill.

7. Estimate deposited with plan, HLRO.

of £80,000 in £100 shares, and to construct works for the purpose of supplying Hammersmith, Chiswick, Brentford and other expanding villages to the west of London, together with 'places adjacent' thereto. The preamble to the Act stated that 'many parts of the said Parishes, Townships and Places are become very populous, and are greatly increased and increasing in Houses and Buildings, and in Cases of Accidents by Fire, the Inhabitants thereof might be exposed to the most calamitous losses for Want of a sufficient supply of Water'. The Act also specifically excluded the Company from supplying any part of the City or Liberties of Westminster or Chelsea, this clause being inserted at the instance of the Chelsea Water Works Company, which feared competition.

Immediately after the passing of the West Middlesex Water Works Act, B.R. Dodd began making preparations for the construction of the works at Pooles Creek, as specified. Almost at once the Directors expressed a preference for siting the works at Hammersmith instead, and they instructed their Chief Clerk, Robert Sloper, to investigate the legal problems which this would raise. Sloper reported that there were no legal difficulties which could not easily be surmounted, and the Directors then purchased plots of land at Hammersmith for £4,500 (compared with the £2,700 allowed in Dodd's estimate for buying land at Pooles Creek). When they instructed B.R. Dodd to prepare estimates for constructing works there, he refused and was suspended, and then, in November 1806, dismissed. William Nicholson¹, a well-known scientist, was appointed Engineer in his place and agreed that the works should be sited at Hammersmith: he pointed out that this was nearer to the areas to be supplied than was Pooles Creek, which in any case was heavily polluted by land drainage and unfit to be a source of supply. Water would instead be drawn directly from the Thames.²

During 1807 the works at Hammersmith were constructed under Nichol-

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1. William Nicholson (1753-1815) had published many scientific books and worked as a patent agent before turning his talents to water works. He was much in demand as a 'scientific umpire'. See entry in Dictionary of National Biography.
 2. WMWVC, 17 September to 13 November 1806. The account of this incident given by M.K. Knight to the 1821 Parliamentary Select Committee and followed by Matthews in Hydraulia (1835) is incorrect. Knight stated that Dodd originally proposed Hammersmith as the site for the works, then changed his mind and wanted to build them at Pooles Creek.

son's supervision, being completed by November. They consisted of two reservoirs each holding about 1,300,000 gallons and fed by an intake from the Thames, with two 20 horse-power steam engines to pump from the reservoirs into the mains.¹ The Directors resolved to use stone pipes, 'a conveyance by Means of which the Water will be purified, and entirely free from the unpleasant Taste which it is apt to acquire by passing through Wood or Iron', and handbills were distributed extolling the virtues of stone pipes.² By the end of 1807, however, when the Stone Pipe Company had proved unable to deliver on time, the Directors resolved to use wood or iron instead.³ John Millington, their Conductor of Works, was asked to report on the relative merits of the two materials. He concluded that the greater cost of iron was more than outweighed by its advantages over wood, principally the longer life and lack of need for maintenance. Iron was stated to cost approximately twice as much as wood, 6" iron pipes costing 12s.6d per yard compared with 6s.3d for wood, but wooden pipes were more expensive to lay because of their larger outside diameter and would not stand up to high pressure. Millington estimated that a mile of iron pipes would cost £1,307 to maintain over a period of 27 years, whereas to maintain a mile of wooden pipes would cost £2,867.10s. On the basis of these calculations the Directors decided to use iron pipes only, which they purchased principally from the Butterley Iron Company in Derbyshire.⁴ By the middle of 1808 the Company was supplying water to houses in Hammersmith and Chiswick. Nicholson had by that time been replaced as Engineer by Ralph Walker, it being felt that Nicholson's many commitments did not allow him to devote sufficient time to the Company's interests. He was, however, retained as a consultant.⁵

Even before the first supplies were available from the West Middlesex Company, the Directors were thinking in terms of expansion - but not towards the Middlesex and Surrey villages listed in their Act. At

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1. WMWVC: Directors' Report to General Assembly, 3 November 1807.
 2. WMWVC, 29 June 1807.
 3. Ibid, 24 December 1807.
 4. Ibid, 29 March 1808.
 5. Ibid, 3 November 1807. Ralph Walker was already an experienced engineer, having been employed with John Rennie and others as an arbitrator for the London Dock Company in 1800, and involved with the construction of the London, East India and West India Docks. He was Engineer at various times to the East London, West Middlesex and Portsmouth and Farlington Water Works.

the suggestion of Nicholson, the Directors decided to construct a pipeline to a further reservoir at high level on Campden Hill, Kensington, with the object of supplying that part of Marylebone which lay outside the Liberties of Westminster and was thus not prohibited to them by statute. This would involve direct competition with the New River and Chelsea Companies, which already had pipes in Marylebone, although the West Middlesex Directors reckoned in February 1808 that there were 1,200 houses there which were not supplied by either of the old companies.¹ Such direct competition would be something new, as although the old companies did not possess any legal right to a monopoly 'each possessed a monopoly in effect, through the greater part of the district which it supplied. Where their works intermixed, as they often did, it was the effect of a very gradual extension; and though the inhabitants of those parts of the town had the benefit of a choice, no mischievous spirit of rivalry seems to have been excited between the companies'.² The Directors considered that their iron mains and high-pressure supply (to be pumped by a new 70 horse-power Boulton and Watt engine) would enable them to compete successfully for the high water rents of the prosperous and rapidly-growing areas of Marylebone, Paddington and St Pancras. They concluded that 'the well known extortion and limited power, as to supply, of the New River Company and the bad water and injudicious management of the Chelsea Company render a competition against them, even in the lower or long established part of Marylebone, likely to be very gainful'.³ During 1808, therefore, the West Middlesex Company secretly purchased land at Kensington (where 2,000 new houses were laid out) and in the following year an 'upper reservoir' was constructed on Campden Hill.

The Directors were not averse to seeking powers or property from other companies if this would help their expansionist policies. In December 1807 they approached the Grand Junction Canal Company with a view to purchasing the rights of supplying water to Paddington and adjacent areas which the latter Company had had since 1798 but had not yet exercised. The price demanded, £22,000 for a 50-year lease of the rights, was felt to be too high, and negotiations were abandoned in March 1808.⁴ A further attempt at expansion followed in November 1809,

1. WMWVC, 9 February 1808.

2. 1821 Report, 3.

3. WMWVC, 3 May 1808.

4. Ibid, 24 December 1807 and 3 March 1808.

when the Company offered £20,000 for the York Buildings Water Works Company. In response to the asking price of £26,000 the West Middlesex would increase its offer only to £22,000, which was not acceptable to the York Buildings Directors. These negotiations also failed.¹

The West Middlesex Company, in its early years, went to some lengths to secure public support. The Chelsea and New River Companies were constantly tearing up pavements in order to gain access to leaking wooden pipes, to the annoyance of the public. The West Middlesex Company, on the other hand, was able to assure Commissioners of Paving and the general public that its exclusive use of iron pipes would mean far less frequent repairs and therefore far less inconvenience. In April 1808 complaints were received from the Brentford Turnpike Trust that the Company's pipe-laying activities had caused the state of the roads to deteriorate, and the Company promptly carried out repairs. The Directors resolved that the Great Western Road, 'already almost unmanageable as to Repairs, should be as little disturbed as possible, by any System of Pipes adopted by this Company', and pointed out to the Trustees that 'Iron will last almost in aeternum'.² Subsequently, in 1809, the Company offered to supply water to the Trustees for the purpose of laying the dust on the highways.³ When the Directors were informed that the expense of laying lead communication pipes deterred householders from taking the Company's supplies, they resolved that where inhabitants were already supplied by another company 'as an inducement for such to take a supply from this Company, they will at their own expence make such alterations as may be necessary to change the Lead Pipes already laid, from the pipes of other Companies to their own'.⁴ During these years the Company was constantly employing canvassers and distributing handbills to secure custom. The scale of charges adopted by the Company in July 1809 was competitive, if not particularly cheap. The most usual category of house, paying a rental of up to £30 per annum, was to pay water rents of 5% of the annual rental, subject to a minimum of 10s a year. Houses with a rental of over £40 were to pay 4%. Additional charges were to be made of three guineas for a fixed bath, half a guinea for a water closet, 15s for a one- or two-stall stable, and 10s if a carriage was kept.⁵

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1. WMWVC, 21 and 23 November 1809.
 2. Ibid, 3 May 1808.
 3. Ibid, 14 February 1809.
 4. Ibid, 10 August 1809.
 5. Ibid, 13 and 17 July 1809.

The West Middlesex Company's new reservoir at Kensington was opened on ⁴ December 1809 in a ceremony attended by a detachment of the Kensington Volunteers. Lord Cochrane, George Byng, Sir Francis Burdett and William Mellish, all members of Parliament, were invited as guests of honour.¹ By that time the Company's plans for expanding its activities into the area already supplied by the Chelsea Company had run into opposition from the influential Marylebone Select Vestry, which feared that the entry of another water company into the parish would mean great destruction of the pavements, and doubts were raised as to whether the Company could legally enter any part of Marylebone. Counsel's opinion was sought, and the Directors decided that it would be advisable to obtain a new Act of Parliament in order to remove the restrictive clause in the Act of 1806.²

A new West Middlesex Water Works Bill was introduced into Parliament in the session of 1810, supported by petitions which the Company had secured from inhabitants of Marylebone, Westminster and other districts: the Company's Chief Clerk reported to the Directors that 'it is most true that no Bill ever appeared in the House of Commons supported by a more powerful Body of Petitions'.³ Support was also canvassed and obtained from the Fire Offices, with promises that the Company's iron mains would be kept full of water at all times. Even the Marylebone Select Vestry was persuaded to support the Bill - the Directors had issued instructions in November 1809 that for the time being pipe-laying in Marylebone should be done only in unpaved streets.⁴ The agreement of the Chelsea Company, however, was not forthcoming. The battle between the rival companies was fought out before the Commons and Lords Committees, and the stream of witnesses produced by the West Middlesex Company, testifying to the 'scanty and insufficient' supply provided by the old companies to Marylebone, carried the day.⁵ Valuable support was given by George Byng and the Dukes of Bedford and Portland, the two Dukes having much property in the area of London concerned. Unexpected opposition was encountered in the House of Lords from the Grand Junction Canal Company, but, in the words of the West Middlesex Company's Chief Clerk, the proprietors 'were possessed of firmness enough to determine on an energetic resistance against the Extortion

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1. WMWVC, 3 November 1809.
 2. Ibid, 7 November 1809.
 3. Ibid, 19 April 1810.
 4. Ibid, 28 November 1809.
 5. 1810 Minutes.

and Oppression which was attempted and threatened', and the contest resulted in the 'discomfiture and disgrace' of the objectors.¹ The West Middlesex Water Works Act duly received the Royal Assent in May 1810.

The new Act gave the Company power to raise an additional £160,000 capital (the original £80,000 having all been raised and expended), raised the limit on the number of shares held by any individual from 20 to 50, and removed the boundary laid down by the Act of 1806. The Company was therefore empowered to supply houses in the whole of Marylebone and Westminster, and to raise the funds which would enable it to do so. The Act also forbade the Company to sell its rights of supply to any other company, compelled it to lay mains in certain streets and to keep them full of water for security against fire, and, while recognising the principle of fair competition, prohibited it from 'hindering or obstructing' the New River, Chelsea and York Buildings Companies. The scene was thus set for a vigorous competition among water companies in the western part of London. The West Middlesex Directors were in no doubt as to the rightness of their policy: in November 1809, when announcing to their shareholders their intention to compete against the 'monopolistic' Chelsea Company, they declared that 'the struggle against an attempt at Monopoly will add additional Lustre to the Patriotic Exertions of the Individuals who have so liberally advanced their Capital in this most Important Public Undertaking'.²

Meanwhile, on the other side of London, the third of the new water companies conceived by Ralph Dodd had taken shape. This was the East London Water Works Company, whose early history followed a somewhat similar course to that of the West Middlesex Company (the two had many proprietors and some Directors in common). Dodd's original proposals in 1805 provided for a lower reservoir to be constructed at Old Ford on the lower Lee, sited so that it would be filled by the action of the tide flowing up the Thames, and for water 'after sufficiently settling and filter'd, to be forced through Iron Pipes to a summit Reservoir' by a steam engine.³ Dodd was confident that 'a

1. WMWVC, 21 May 1810.

2. Ibid, 7 November 1809.

3. Dodd, op cit, Appendix 2. The reference to filtering is interesting, but this proposal was not adopted: no London water company filtered its water before 1829, and the East London Company did not do so until compelled by statute after 1852. See M.N. Baker, The Quest For Pure Water (New York 1948), 89-90.

very handsome Profit will accrue to the Share-holders, for their capital advanced in this desirable Undertaking; which profits will be of a perpetual and increasing nature, from various improvements and New Buildings which are continually erecting, which will doubtless need a supply of Water'. He pointed out that 'in the three Parishes of Bethnal Green, Hackney and Tottenham, only, are upwards of 15,000 Houses'.¹ Subscriptions were obtained, including one from the celebrated East End brewers, Truman, Hanbury & Co, and a Bill was introduced into Parliament in the 1807 session. The now familiar figure of Ralph Dodd, squeezed out of the South London and West Middlesex concerns, reappeared as the East London Company's Engineer. He deposited a plan showing mains extending from Old Ford northwards through Hackney, Dalston, Stoke Newington, Clapton, Stamford Hill and Tottenham, westwards to Bethnal Green, Islington and Holloway and through the City as far as St Paul's, and southwards to Bow, Stepney and Mile End.² Most of the areas concerned were outside the districts served by the New River Company, which however already supplied the City and part of Islington. The main opposition to the Bill came from the London Dock Company, which owned the old Shadwell and West Ham water works.³

The East London Water Works Act became law in August 1807 and the first General Assembly of Proprietors was held on 13 August. Already, as in the case of the South London Company, Ralph Dodd had been dismissed as Engineer, this time after quarrelling with the Directors. Ralph Walker, who was later to become Engineer to the West Middlesex Company, was appointed in his place. Dodd having been disposed of, the Company proceeded to construct the Old Ford works and to lay pipes to the surrounding districts. One of the first steps was to open negotiations with the London Dock Company for the purchase of the Shadwell and West Ham works; the purchase was made in January 1808 for £130,000, payable in instalments.⁴ The high price necessitated another Act of Parliament being obtained in the 1808 session to empower the Company to raise the required additional capital. The next decision to be made was the material of the pipes to be used, and the Engineer initially recommended that while iron pipes should be used for mains, to avoid the need for parallel lines of wooden pipes, the services should be of wood. Walker held that 'neither Public nor private Bodies ought to run any

1. Dodd, op cit, Appendix 2.

2. HLRO, Deposited Plan, H.L. 1807, East London Waterworks Bill.

3. HLRO, Committee Book, H.L., 31 July 1807.

4. ELWWC, 16 December 1807 and 25 January 1808.

risk by trying new experiments or Inventions in the first Instance',¹ and in accordance with this belief the Directors decided not to try the stone pipes which were offered at competitive prices by the Patent Stone Pipe Manufactory.² Walker surveyed the Shadwell and West Ham works in March 1808, and recommended that the first extensions of mains from them should be towards Bethnal Green, which 'is also the situation, where the greatest number of Houses are in want of water. In Bethnal Green and Stepney 1,500 houses may soon be added to the supply'. Walker felt that 'little or no danger is to be apprehended from the New River Company carrying their supply to the Eastward, first because of the increase of first and second rate houses of the West End of Town will pay better than those to the Eastward, and secondly because in the dry seasons of the year...they are unable to give satisfaction to their present customers particularly to Brewers, Dyers &c'.³ Despite this, in April 1808 an anonymous shareholder warned the Directors that 'It is the determination of the New River Company to surround and encompass the East London Water Works every way possible in Order to injure the concern as far as in their power to do',⁴ and in June the Directors decided to extend their mains to Limehouse as soon as possible in order to forestall any moves in that direction by their rivals. In East London, therefore, there were early indications that competition was likely to develop. An unofficial approach from the New River Company in June 1808, with a view to agreeing a boundary between the two companies, came to nothing.⁵

The East London Company bought some wooden pipes in 1808, but Walker then apparently changed his mind and advised that the services should instead be of iron. After a careful comparison of the current prices of iron, wooden and stone pipes in August 1808 the Directors decided to use iron only,⁶ and in April 1809 Walker reported that 'The more I see of the daily failures of wooden Pipes and the labour and expence of keeping the Mains and Services of your Shadwell and West Ham Works in repair the more I am convinced of the utility and advantages to be ultimately derived by the Company from the adoption of Iron Pipes'.⁷

1. ELWVC, 25 August 1807.
2. Ibid, 14 October 1807.
3. Ibid, 17 March 1808.
4. Ibid, 2 April 1808.
5. Ibid, 29 June 1808.
6. Ibid, 27 July and 10 August 1808.
7. Ibid, 1 April 1809.

Iron pipes were bought mainly from the Butterley Iron Company and from Booth and Company of Sheffield, but difficulties of transport (by canal from Derbyshire or Yorkshire to the east coast, then by sea to London) during the winter of 1808-9 caused delays and irritation. Walker was despatched in January 1809 to the manufacturers in order to speed up deliveries, and in August it was necessary for him to go to Sheffield again for the same purpose.¹ Despite these delays, more than 12½ miles of iron pipes had already been laid by June 1809, including pipes through Bishopsgate, Aldgate and Spitalfields which encroached on the areas of the New River Company and London Bridge Water Works.² Iron pipes continued to be laid as fast as they could be obtained, and by the time that the Old Ford works were completed in October 1809 some 20 miles of pipes had been laid.³ Until this date the customers so far obtained by the Company were supplied from the old works at West Ham and Shadwell, whose power to serve an increased number of consumers was limited, but with the completion of the Old Ford works a great extension of the Company's operations became possible.

The Old Ford works were opened on 23 October 1809 in an impressive ceremony. The Duke of Cambridge was to have attended as guest of honour, but was unable to be present owing to the illness of his sister, Princess Amelia. The ceremony was graced by the presence of the Lord Mayor of London, the Chairman of the Honourable East India Company and William Mellish, MP, and there was a stand for spectators, 'filled with beauty and fashion'. The bands of the 1st Tower Hamlets Militia and the Loyal Bow Volunteers played God Save the King, Rule Britannia, Water Parted From The Sea 'and other popular and appropriate airs', royal salutes were fired and the Union Flag was displayed. The Rev Edward Robson preached a sermon (on the text 'Behold, I will stand before thee there upon the rock in Horeb; and thou shalt smite the rock, and there shall come water out of it, that the people may drink') to 'return thanks to the Supreme Being for the power thereby vested in the Company of dispensing to the numerous Inhabitants of the Eastern District of the Metropolis the Blessings of Health, Security and Domestic Comfort'. To the sound of Bow Bells being rung, the Lord Mayor opened the sluices to fill the reservoir 'amidst the cheering and Acclamations of several Thousands of Spectators', the whole ceremony being 'unattended by the

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1. ELWWC, various dates, 10 August 1808 to 30 August 1809.
 2. Ibid, 21 and 28 June, 1809.
 3. Ibid, 5 October 1809.

smallest Accident'. The motto adopted for the new works was a tag from Horace: 'Fies Nobilium Tu Quoque Fontum'. The proceedings terminated with a grand dinner at the City of London Tavern, costing 15s per head.¹ (For comparison, the labourers at the Shadwell works were paid wages of 13s per week.)

The energetic expansion of the East London and West Middlesex Companies had thus, by 1810, given notice that competition in both eastern and western London was about to begin in earnest. Only south of the river were relations between the old and new water companies amicable.

1. ELWW, various dates, 13 September to 23 October 1809: also The Times, 28 October 1809, which carried a full report of the proceedings. Princess Amelia died in the following year, at the age of 27.

CHAPTER 3
COMPETITION, 1810-1815

By the end of 1809 the West Middlesex Company was supplying water to houses in its original area of Hammersmith, Brentford and Chiswick, and had recently begun to lay mains into Marylebone and Paddington. In November 1809 the Directors reported to the General Assembly of shareholders that they were 'determined to possess the North Western District', and that the supply of some houses in Paddington and Marylebone had already been obtained.¹ The Company's Act of 1810, removing the previous statutory boundary with the Chelsea Company's area, opened up further opportunities for expansion which were quickly seized. By May 1811 the Company considered that it had 'taken possession of the very flourishing District of Chelsea' - allowance must be made for exaggeration here, for the figure proudly given was of 400 houses already laid on 'or promised by builders'.² At the same time the Company was expanding eastwards, into the area previously served exclusively by the New River Company: an 18" main was being laid in Tottenham Court Road. By November 1811 the Company was supplying a total of 1,033 houses, by May 1812 2,053, and by May 1813 4,155. To obtain these customers it was necessary for the Company to lay mains and services through almost the whole of western London; by early 1813 its pipes were being laid through St Giles, Bloomsbury and the great new Bedford Estate there, and in the second half of 1813 fourteen miles of iron pipes were laid in the Marylebone Park development alone. In 1814 the Company extended northwards, laying mains along Euston Street, into Somers Town and the Battle Bridge Estate, and north-westwards along the Hampstead Road to the St John's Wood Estate. This extensive and costly network of iron pipes was accompanied by great efforts to obtain public support for the Company. For example, in October 1811 an advertisement was placed in all the London newspapers for three weeks, saying that competition always reduces prices and that the West Middlesex Company 'can supply the Parish of St Marylebone and its neighbourhood with Water of the purest quality, unlimited in quantity, and delivered, if chosen, in the upper Stories of the loftiest Houses in London'.³ The Company thus asserted its advantages to the public in terms of water quality, cheapness and convenience, as compared with its established rivals. The same message was subsequently given by handbills which the Company distributed

1. WMWVC, 7 November 1809.

2. Ibid, 7 May 1811.

3. Ibid, 2 October 1811.

throughout Marylebone and Paddington.

In November 1812 the West Middlesex Company scored a useful propaganda point as a result of a fire at the Pantheon Theatre. Early in 1812 two large cisterns had been constructed at the top of the theatre as security against fire, an early example of the modern type of fire protection. The Pantheon's example was followed by the Drury Lane and Covent Garden theatres. On 17 November 1812 the Pantheon Theatre caught fire, and the damage was greatly restricted by the immediate availability of water to douse the flames. The West Middlesex Company took great credit for this happy outcome: in an advertisement in the Press the Company pointed out that the Pantheon's fire cisterns were served by the Company's high-pressure supply, which was thus responsible for the preservation of the Theatre and the surrounding houses. Attention was thus drawn to 'the superior power of their works, constructed on principles in which the great improvements of modern science are brought into action'.¹

By November 1815, the West Middlesex Company had by immense exertions secured nearly 7,000 customers. On the other side of London, the East London Water Works Company expanded on a grander scale in terms of number of houses supplied and length of mains laid. Starting with the base of the old West Ham and Shadwell works, which between them served some 10,000 houses (mostly of the poorer sort) on the eastern fringes of London, the Company was able to start a programme of energetic expansion once its Old Ford works were completed in October 1809. The Company had already laid some iron mains into the City around Aldgate, Bishopsgate and Spitalfields, and now extended its system in all directions with great rapidity. Pipes were laid northwards through Hackney to Homerton and Clapton, southwards to Limehouse and Poplar, while the greatest efforts were concentrated westwards, in the densely-populated areas of Bethnal Green, Stepney, Whitechapel, Shoreditch and the City. In March 1810 an 'ocular demonstration' was given in Spitalfields of the 'immense power' of the Company's works, a jet of water being emitted to a height of fifty feet, and as a direct result several very valuable customers were obtained. Messrs Racine and Jacques, dyers, for example, agreed to pay sixty guineas a year for a supply, and Hanbury & Co, brewers, took a supply for £30 a year.² The length of iron mains laid by the East London Company increased from 20 miles in October 1809 to

1. WMWVC, 20 March 1812: The Times, 18 November 1812.

2. ELWVC, 26 March, 4 April and 2 May 1810.

30 miles in March 1810, 54 miles in March 1811 and 67½ miles in October 1812. By the latter date the Company had 21,000 customers (including the 10,000 or so inherited from the West Ham and Shadwell works), and was still expanding.¹

While the two new companies were busily extending their operations, a third was added to their number in 1811, as an off-shoot of a large canal company. In 1798 the Grand Junction Canal Company had obtained powers to supply water to Paddington and adjacent areas from its canal, and in 1810 leased these powers to a group of men also connected with the Stone Pipe Manufactory, the most prominent of them being Samuel Hill. These men had failed to persuade the East London and West Middlesex Companies to adopt stone pipes (except to a very limited extent as experiments) and now, it appears, decided to set up their own water works company to act as an outlet for their pipes. The Grand Junction Water Works Company was incorporated by an Act of 1811, with £150,000 capital in £50 shares. Samuel Hill was a Director, and the services of the celebrated John Rennie were obtained as Engineer. The works were to consist of two reservoirs at Paddington, filled with water from the Grand Junction Canal, with a 42" main iron pipe from the canal to the reservoirs, and two 70 horse-power Boulton and Watt steam engines to pump water from the reservoirs down a 30" main leading to Oxford Street and Drury Lane.² The Company therefore intended to compete directly with the West Middlesex Company as well as the established New River and Chelsea Companies, and its operations were to be on a large scale. In July 1811 the Company commended itself to the public, by handbill and newspaper advertisement, in the following terms:-

'The Directors of the Company feel it their duty respectfully to inform the Public that these Works will be enabled to supply a body of Water three times greater, and in a more pure and brilliant state, than has yet been effected, and that the elevated situation of the Reservoirs, being 86 feet above high Water mark, the magnitude of the principal Main, and the great powers of the Engines, will raise the Water into the upper parts of the Houses, without the great expence and continual Labor of forcing Pumps, for the supply of Baths, Water Closets, Laundries, and other domestic purposes of necessary use, health and pleasure, and that in cases of Fire,

1. ELWVC, 29 October 1812.

2. GJWVC, 5 July 1811.

the body of Water in constant readiness, as well in the Mains, as in the Cisterns at the tops of Individual Houses, will be so great as to prevent the dreadful progress hitherto frequently made, before even a moderate supply could be furnished'.¹

The importance attached to the new technology represented by the very large cast iron pipes and the powerful steam engines is significant. Despite the stress laid on the purity and brilliance of the water to be supplied, Rennie did not consider it necessary to filter the water at the Paddington reservoir. He felt that 'the Water may sufficiently deposit all its impurity in that Reservoir without filtration'.²

In July 1811, before the reservoirs or engine-house had been constructed, the Grand Junction Company ordered 72,000 yards of pipes from the Stone Pipe Company. The Directors considered it as 'a measure of expediency on behalf of this Company and of justice to the Stone Pipe Company if this Undertaking should be extended as far and as rapidly as may be hoped for, so as to require an extension of the present Contract before it may be completed'.³ The utmost confidence was felt in the suitability of the stone pipes: when the Marylebone Select Vestry expressed concern, in September 1811, about the possible damage to pavements caused by leaking stone pipes, the Directors replied that there was no cause for alarm.⁴ The first of the large steam engines was commissioned in April 1812, and 828 yards of 42" iron main was laid from the canal to the Paddington reservoirs by June 1812. The 30" main had by that time been laid as far as Bond Street, and 6,409 yards of stone pipes were in the ground. The stone pipes, however, were not performing as well under pressure as had been anticipated, several failures having occurred. In July 1812, after a report from Rennie, the Directors resolved that 'the use of Stone Pipes for Mains cannot be continued with, and a week later Rennie reported that 'from the trials already made he has great doubts of the effectual and lasting use of Stone Service Pipes'.⁵ The Directors decided to order iron pipes to replace the stone, but were reluctant to abandon the stone pipes entirely until further tests proved conclusively that they were completely unsuitable for use with high-pressure supplies. On 5 March 1813 the Directors resolved 'That this Company determine to have

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1. GJWWC, 5 July 1811.
 2. Ibid, 12 July 1811.
 3. Ibid, 25 July 1811.
 4. Ibid, 16 September 1811.
 5. Ibid, 3 and 10 July 1812.

nothing further to do with Stone Pipes'.¹

The delay caused by the Grand Junction Company's unfortunate experiment with stone pipes had, as Rennie pointed out, 'allowed time for other Water Works Companies to get possession of the supply'.² It was not until late in 1812 that the Company began supplying water; by early December, however, nearly 11,000 yards of iron pipes had been laid and the first 100 houses were receiving supplies in Paddington. By April 1813 some 400 houses were in supply, mainly in the parishes of Marylebone and St George's Hanover Square, and by the end of 1813 the Company had nearly 1,400 customers. At the end of 1815 it had a networks of mains and services through Marylebone, Westminster and Chelsea, and supplied 2,776 houses from some 40 miles of iron pipes.³

Another competitor for the water rents of the west end of London appeared in the shape of the York Buildings Company. This company, as noted in Chapter 1, had been supplying water to a small area of Westminster for over a century; it had shed itself of the numerous other interests which it had acquired early in the eighteenth century, and its chief claim to distinction was its having been the first London water company to install a steam engine. In late 1809, after the failure of negotiations for a take-over by the West Middlesex Company, a group of shareholders in the West Middlesex and East London Companies (including the West Middlesex chairman) bought the York Buildings works and network of wooden mains. According to the Company Secretary, these gentlemen 'conceived that by changing the complete system, which they did...they could realise a very large rental'.⁴ To this end, they raised £75,000 capital in 1810, doubled it in 1812, and expended the whole in laying a system of iron mains through an area much larger than that reached by the Company's old wooden pipes.⁵

By 1812, then, the old New River, Chelsea and London Bridge Companies were under serious attack. The New River Company faced challenges from the East London Company in the east and from the West Middlesex, Grand Junction and newly-aggressive York Buildings Companies in the west, where the Chelsea Company also found itself facing competition. The new companies all used most vigorous methods to promote their expansion and discredit their rivals: they did not hesitate to condemn,

1. GJWWC, 5 March 1813.

2. GJWWC - GA, 3 December 1812.

3. Ibid, 7 December 1815.

4. 1821 Minutes: evidence of James Dupin.

5. Ibid.

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in the name of competition, the 'monopolies' which they alleged to have been enjoyed by the old companies, while resisting the establishment of more new companies which might threaten their own positions.

In June 1809 the East London Company's Committee of Works submitted to the Directors that 'it was material to the Interest of this Company to omit no opportunity of creating a Competition in favour of the Company',¹ and this became the Company's guiding principle during the next few years. Already, the London Bridge Water Works had protested that East London pipes were being laid within the London Bridge limits of supply, at Aldgate, and the answer was given that the East London Company had the power to lay mains in that district and intended to exercise it.² The method of competition was to stress cost, offering to supply houses at a charge lower than that made by the old companies. The Company's workmen frequently damaged lead pipes leading from the New River Company's services to customers' houses, this damage eliciting complaints in March, June and July 1810, and its frequency led to suspicions that it was not always accidental. In July 1810 the New River Company expressed concern at 'the extraordinary Conduct of the East London Water Company in their efforts to induce this companys Tenants to take that companys Water',³ and in February 1811 held a special meeting of Directors to consider measures 'to counteract the means now employing by the Proprietors of the East London Water Works to deprive this Company of their Tenants and which have already succeeded to a considerable extent'.⁴ The measures decided upon were to reduce rates to customers where the East London had made offers, to instruct collectors to canvass customers for support, and to advertise the Company by means of posters, handbills and the press.⁵ Despite these efforts, the New River Company lost many customers to the East London over the next few years, and the general level of charges in the area affected fell considerably. For example, until February 1812 a Mr Leary paid £10 a year for a supply to his twenty houses in New Inn Yard, Curtain Road; he then informed the New River Company that the East London had offered to supply him for £8, and the New River accordingly

1. ELWWC, 14 June 1809.

2. Ibid, 21 June 1809.

3. NRC, 12 July 1810.

4. Ibid, 21 February 1811.

5. Ibid, 22 February 1811.

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SIR,

BEING ordered by the NEW RIVER COMPANY to wait on you to counteract mis-representations that are industriously circulated to their prejudice, I take the liberty of requesting, you will have the goodness, if any applications should be made to induce you to change your supply of Water, not to consent thereto until I have had an opportunity of seeing you: I am directed also to say, that whatever apparent advantages may be held out to you, the NEW RIVER COMPANY are determined to make a sacrifice, and meet their opponents on any terms they may offer.

I am,

SIR,

Your obedient humble Servant,

Collector.

7th November, 1811.

reduced his charges to match.¹ Mrs Woodzell's rent of £6.14s for twelve houses in Shoreditch was reduced to £4 in April 1812,² and in July the New River Company reduced its charges for supplies to Broad Street Buildings by twenty per cent to counteract East London offers.³ By 1813, the East London Company was refusing to supply houses in the areas where it had an exclusive supply unless the owners agreed to take its water for any houses they owned in the competition area: in April 1815 it cut off the supply from four houses in Bethnal Green because the owner had changed to the New River Company in respect of fourteen tenements which he owned in Whitechapel.⁴ In general, great confusion was caused in eastern London by the competition. With both companies having mains in the same streets in many cases, customers were able to reduce their charges for water by constantly changing from one to the other, and sometimes were able to avoid payment of arrears each time.⁵

The New River Company experienced similar problems on the other side of its district in the West End. There the West Middlesex, Grand Junction and York Buildings Companies were all attempting to expand at the expense of the two old-established companies, using the same methods as did the East London. The West Middlesex was the greatest threat to the New River Company; once again, water charges had to be reduced to counteract the newcomer's offers, and 'accidental' damage to lead communication pipes was frequent. The New River Company's collectors were busy here too in visiting customers to seek their support; in September 1812, for example, a special effort was put into canvassing at Tottenham Court Road.⁶ More sinister methods on the part of the West Middlesex were also suspected. In March 1812 it was reported that West Middlesex workmen were breaking New River customers' lead pipes 'and leave them unrepaired for a fortnight, during which time the Tenants are without Water'; letters of complaint were sent to the Company.⁷ In September 1812 a West Middlesex plumber 'maliciously' stopped up the lead pipe serving 41 Middlesex Street with clay, and the New River Company felt it necessary to threaten prosecution.⁸ In January 1813 the New River Directors recorded their suspicions that the damage so often done to

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1. NRC, 13 February 1812.
 2. Ibid, 30 April 1812.
 3. Ibid, 16 July 1812.
 4. Ibid, 27 May 1813 and 20 April 1815.
 5. Ibid, 6 May 1813.
 6. Ibid, 3 September 1812.
 7. Ibid, 26 March 1812.
 8. Ibid, 10 September 1812.

their lead and wooden pipes by the West Middlesex workmen was intentional.¹ In February 1813 the New River turncock in Somers Town, it was reported, 'had done the Company great Injury with their Tenants in not well supplying them with water', and the New River inspector 'had reason to think he had been tampered with by the Servants of the West Middlesex Company'. The turncock was dismissed.² The West Middlesex Company was also in the habit of changing the supply to houses from the New River or Chelsea Company's mains to its own without the owners' consent (generally with the connivance of servants who were no doubt rewarded), then collecting water rents. The owners were thus presented with demands for payment from more than one company. Examples of this occurring were that of Colonel Mercer at 48 Queen Anne Street in February 1813 and that of Mr Grant at 15 Upper Gower Street in September. In Colonel Mercer's case, the servants refused to let the New River collector see the Colonel, increasing suspicions of their collusion.³ The West Middlesex Directors were entitled to record, in November 1813, that 'every exertion has been made against our opponents the New River Company'.⁴

The York Buildings Company, under its new ownership, was equally aggressive. Not only did its workmen damage New River pipes and illicitly change tenants' supplies to its own mains, but they resorted to a night shift for the purpose. In December 1811, for example, a New River collector saw York Buildings workmen changing the supply to 6 Craven Street, Strand before daylight, and 6 and 7 George Street were changed in the same way.⁵ On enquiry to the tenants, the New River Company established that no authority had been given for the changes, and the supplies were reconnected to the New River services. In August 1812 York Buildings workmen laying pipes in Blue Cross Street cut the lead pipe serving Mrs Hughes (a New River customer) and 'told her she should not have any water unless she consented to have it from their Company'.⁶ The New River Directors were constantly sending letters of complaint to the York Buildings about these incidents.

1. NRC, 21 January 1813.

2. Ibid, 11 February 1813.

3. Ibid, 25 February 1813.

4. WMWVC: Directors' Report to General Assembly, 2 November 1813.

5. NRC, 19 December 1811.

6. Ibid, 27 August 1812.

The Grand Junction Company also competed against the New River Company, which recorded in alarm in February 1817 that Grand Junction employees were canvassing as far east as Leather Lane and Saffron Hill,¹ and also against the Chelsea and West Middlesex Companies. The usual complaints were made against the Grand Junction of illicit changes of supply, for example at Piccadilly in August 1814 (New River), and Smiths Rents, York Street in July 1815. Although the Grand Junction was the latecomer, it had an advantage over the New River and Chelsea Companies in its 'high service' (in July 1814 it was able to offer supplies 'to the tops of the houses' in High Holborn at rates twenty per cent below the New River Company's existing charges²), and over all the other companies in its 'constant supply'. Throughout the period of the competition the Grand Junction was the only company to boast that its services, as well as mains, were always full of water so that its customers could obtain water at any time.

The established companies strenuously resisted the loss of their customers, and allegations of malpractice were not all one way. In May 1813, for instance, the West Middlesex Company protested that a New River collector had alleged to customers that the West Middlesex was insolvent, and that if the customers changed the New River would charge them double or treble rates when they had to change back. The New River Directors replied that no authority had been given to defame any other company, but 'They think that if the origin of these mutual complaints was looked out, it would not appear that the first cause of them was with the servants of the New River Company'.³ In April 1813 the West Middlesex complained that a New River turncock was following West Middlesex employees who were soliciting custom, 'shouting and using gross and insulting Language'⁴; in December 1814 they alleged that New River workmen had damaged a West Middlesex pipe in Seymour Place, causing no. 6 to be flooded.⁵ The most acrimonious exchange of correspondence occurred in January 1815 and began with a routine complaint that New River workmen had changed the supply to 74 Gower Street from the West Middlesex service to their own, without the consent of the owner, Mrs Lloyd. It appears from the subsequent exchange of letters that the rival companies' workmen had fought each

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1. NRC, 16 February 1817.
 2. Ibid, 28 July 1814.
 3. Ibid, 6 May 1813.
 4. Letter from M.K. Knight, West Middlesex Company Secretary, to New River Company, 28 April 1813.
 5. Letter from M.K. Knight to New River Company, 9 December 1814.

other in the street. The matter was eventually resolved when the West Middlesex Company's Secretary, M.K. Knight, personally called on Mrs Lloyd to ascertain her wishes, and she supported his version of events; the New River collector concerned was ordered to visit the West Middlesex offices to apologise, and relations between the two companies became more cordial.¹ The Chelsea Company attempted to stop the southward expansion of the Grand Junction Company by applying to the Lord Chancellor for an injunction restraining the Grand Junction from supplying 'any part of the City and Liberties of Westminster' with water. The Lord Chancellor heard the case in December 1814 and, after hearing evidence as to the relative cost and efficiency of the old and new supplies, refused the injunction and granted costs to the Grand Junction Company.² The Chelsea Company then tried persuading the St Mary's Westminster Paving Committee to prohibit the Grand Junction's breaking up the pavements for pipe-laying, 'but on the contrary one of the Committee expressed a wish that Westminster was better supplied as he had been eight days without a drop of Water from the Chelsea Company'.³ The expansion of the new companies into the Chelsea and New River districts continued unabated.

The effects of the competition on the established water companies were little short of disastrous. The number of houses supplied by the New River Company fell from 59,000 in 1809 to 54,000 in 1814, and the amount received in water rents fell from £81,000 to £64,000 over the same period.⁴ At the same time, the Company's expenses rose as it was necessary to start laying iron pipes in place of wood, work steam engines more frequently to keep up the high service in order to compete, and pay officials to canvass energetically, and the effect on dividends was catastrophic. During the period 1789-1810 an average dividend of £450 per New River share was paid each year. In 1812 only £220 per share was paid, in 1813 £113 and in 1814 £23: the result of this sharp fall was 'to reduce many of the proprietors to a state of the most deplorable indigence'.⁵ Chelsea Company dividends continued at the rate of 12s per share per annum, but the reserve of £40,000 which had been accumulated by 1810 had to be expended during the competition period as

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1. Letters from M.K. Knight to New River Company, 12, 18 and 28 January 1815.
 2. Morning Post, 21 and 22 December 1814.
 3. GJWWC-GA, 1 June 1815.
 4. 1821 Report, Appendices C and L.
 5. Letter to The New Times, 14 May 1819.

expenditure consistently exceeded income. The worst affected of the old companies was the London Bridge Water Works. In January 1812 the Secretary reported that 'within the last Six Months a considerable number of Tenants who had for many Years been in the habit of taking their Water from these Works had changed their Pipes to the East London Water Works, and he was fearful that Several more might be induced... to discontinue their Supply from these Works'. Handbills were circulated in the Bishopsgate area, asking for loyalty to the Company, but losses of custom continued.¹ The New River Company, it was noted in November 1812, 'have endeavoured in some measure to make good their loss, by attempting to seduce the Inhabitants of the internal parts of the City who take their Water from these Works to receive it from them, by Offers to Serve them at a lower Rate, whilst the East London Water Works are making similar Offers in the Out Parts'.² The 'most ungenerous Conduct' of the New River Company in this respect continued: in 1816 the London Bridge Committee recorded that 'through their misrepresentations they have in some instances been successful'.³ In 1812 the London Bridge Water Works found it necessary to reduce its annual dividend from £3 to £2.10s per share, and had to sell £5,000 worth of stock to meet current expenses.⁴

All the old companies, then, found the period of competition a financial strain. So did the new companies. The general reduction in the levels of water rents meant that they realised much smaller returns on their large capitals than had been anticipated, and all of them had seriously underestimated the amount of capital required to construct their works and lay their networks of mains and services. The West Middlesex Company's capital, originally fixed in 1806 at £80,000, had by 1813 increased to £340,000, the East London Company's reached £380,000, and the Grand Junction Company's, in 1811 fixed at £150,000, was increased in 1813 to £300,000 (of which £240,000 was actually raised). In all three cases the original proprietors confidently expected large and increasing dividends almost immediately, but in fact dividends were small and in some cases non-existent. The East London Company paid a 1% dividend in 1808, 4% in 1809, 7% in 1810, 1% in 1811, 2% in 1812, nothing in 1813-14, and 2% in 1815-16. The

1. LBWW, 3 January 1812.

2. Ibid, 6 November 1812.

3. Ibid, 15 November 1816.

4. Ibid, 18 September and 24 January 1812.

West Middlesex Company paid no dividends at all between 1810 and 1819, and the Grand Junction Company none from its foundation in 1811 until 1819. Share prices fluctuated according to the public perception of the companies' prospects. West Middlesex shares were sold at par until September 1809, then at premiums of £10-£45 up to March 1810, the prices rising to £125 premium by June 1810. They then began to fall in price, being down to £20 premium by December 1810 and back to par by July 1811. The fall continued to £15 discount in late 1811, £60 discount in November 1812, £74 discount in November 1813 and £88 discount - a selling price of a mere £12 for a £100 share - in early 1814.¹ The prices of the East London Company's shares showed a similar pattern: they reached £130 premium in 1810, then fell fairly steadily to a nadir of £45 discount by 1815.² The East London Company, which had suffered 'great and serious inconvenience' from persons 'who availed themselves of the Competition with other Companies to attempt to unduly lower the rates and in some cases evading payment for a long time',³ economised by dismissing their Superintendents of Turncocks (April 1813) and restricting the use of their steam engines for pumping.⁴ The West Middlesex Company's financial problems were more severe. Among its projects was an agreement concluded early in 1812 with the Commissioners of Woods and Forests for the exclusive right to supply the large number of houses to be built in Marylebone Park;⁵ part of the agreement was an undertaking by the Company to build an ornamental basin in the Park.⁶ By September 1812, however, the Directors realised that they could not afford the £18,000 which the basin was estimated to cost, and asked to be released from this clause. The Commissioners would not agree, and threatened that if the Company did not comply the Government would oppose its Bill (which sought powers to raise additional capital) in the next Parliamentary session. The Company had to accept this ultimatum, but when the new Act passed in 1813 and additional shares were offered for sale, no purchasers could be found at a price of more than £30 for a nominal £100 share. Only £74,000 of the intended £120,000 could eventually be raised, and plans to raise £20,000 more by loans

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1. These figures are taken from the Company's share transfer certificates.
 2. 1821 Minutes: evidence of Joseph Steevens.
 3. ELWVC, 17 October 1813.
 4. ELWVC-GA, 3 April 1812.
 5. Now Regents Park.
 6. WMWVC, 20 March 1812.

and mortgages failed. The Government eventually realised that the Company was incapable of fulfilling its engagement and released it from the ornamental basin contract in November 1813.¹ By 1814 the Company's outstanding debts reached £96,000, and although stringent economies succeeded in reducing them to £45,000 by the following May, in August 1815 it was calculated that debts exceeded disposable assets by £17,000.² The Directors, who had felt compelled to waive their fees in the interests of economy, were clearly right in their opinion as to the competition with the New River Company: in September 1815 they reported that 'little or no prospect whatever appeared of any real or substantial benefit being derived, while the two Companies remained in a state of hostile Competition'.³

The Grand Junction Company had special problems of its own, in addition to those suffered in common with the other companies. There was a long dispute with the Stone Pipe Company, which was concluded by the latter surrendering Grand Junction shares to the value of some £22,000 (out of a total of £33,000 expended on stone pipes), and this involved the resignation of two Grand Junction Directors who were also on the board of the Stone Pipe Company.⁴ The source of the Grand Junction's water supply also caused trouble. The Company had constructed a reservoir at Ruislip, fed by the Rivers Brent and Colne, whence the water was carried along the Grand Junction Canal to the settling reservoirs at Paddington. In December 1813 the Company assured the Commissioners of Hans Town, who were considering taking supplies from the Company, that 'The sources...afforded a conviction that the Grand Junction supply and that their means can never fail, that they must give to their Tenants an unceasing supply because the Pipes are always full, the Water is always on and as it is constantly coming in it must always be fresh'.⁵ In early 1814, however, a 'sudden irruption of foul water from Brent Feeder into the canal' discoloured the water, caused many complaints from consumers and effectively stopped the Company's expansion for a time by exciting prejudice among the public.⁶ No sooner had this problem been overcome than floods in

1. WNWVC, 30 September 1812, 27 January and 2 November 1813.

2. Ibid, 2 May and 16 August 1815.

3. Ibid, 5 September 1815.

4. GJWVC, 16 and 23 October 1812.

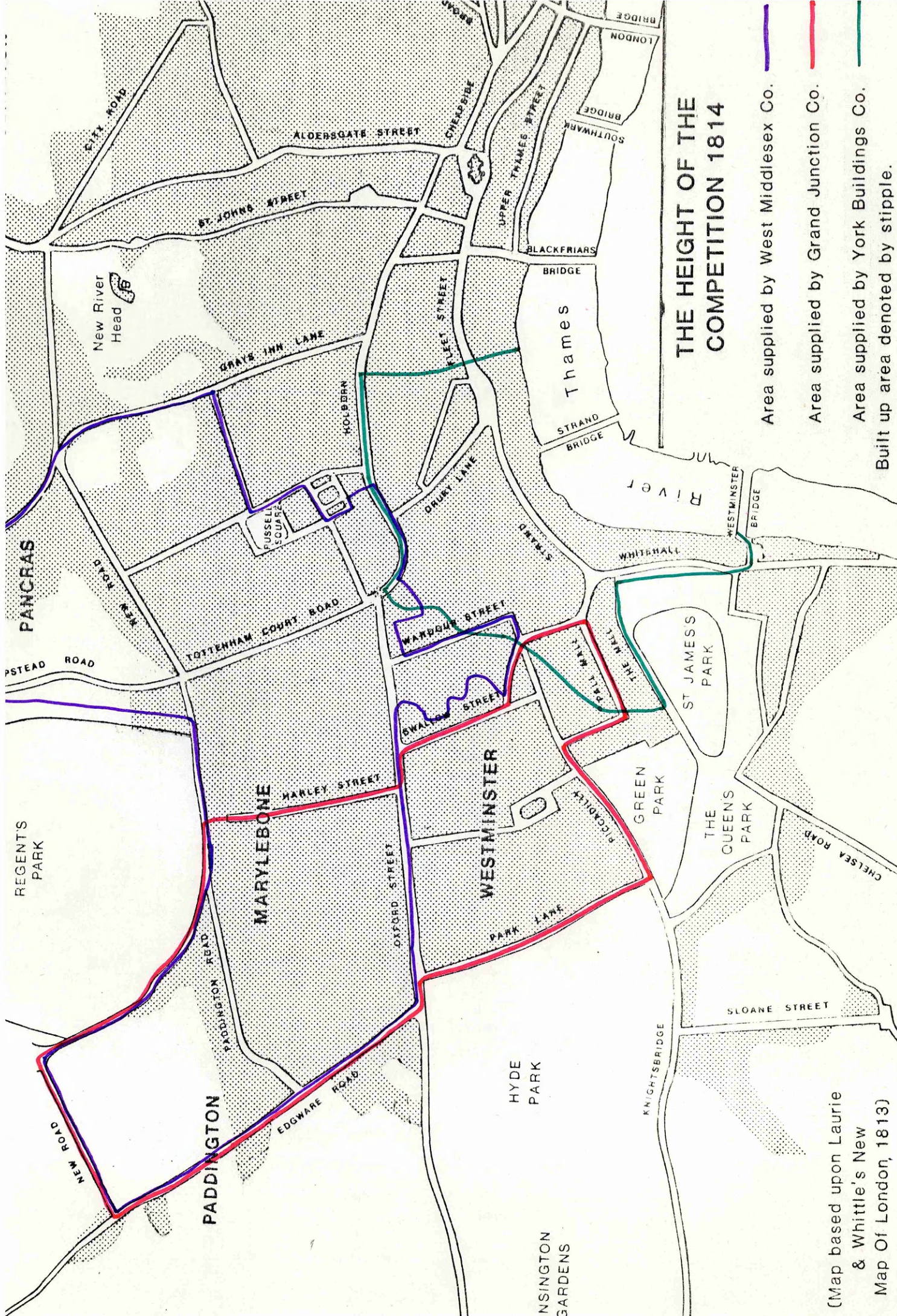
5. GJWVC-GA, 2 December 1813.

6. Ibid, 2 June and 1 December 1814.

1815 and 1816 caused further discolouration, and the Company even considered filtering its water.¹ This extreme step was found to be unnecessary, but the Company had to construct a new feeder to the Ruislip reservoir so that its supply came exclusively from the River Colne.² In the circumstances it is not surprising that the Company's expansion was slow, only 2,882 houses being supplied by June 1816. In that month the half-yearly General Assembly of proprietors was informed that the increase was very small, 'there having been for want of funds no extension of the Works since the last General Meeting'.³ The Company's income in that year was £4,625, which just balanced 'ordinary expenditure' but provided no return at all on the £240,000 invested capital.

By 1815 it was becoming clear to all the water companies that the competition was benefiting none of them, and that unless prompt action were taken to end it some at least of them would soon face financial collapse.

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1. GJWNC-GA, 1 June 1815, 6 June 1816 and 5 June 1817.
 2. Ibid, 4 December 1817.
 3. Ibid, 6 June 1816.



THE HEIGHT OF THE COMPETITION 1814

Area supplied by West Middlesex Co.

Area supplied by Grand Junction Co.

Area supplied by York Buildings Co.

Built up area denoted by stipple.

(Map based upon Laurie & Whittle's New Map Of London, 1813)

CHAPTER 4
AGREEMENT, 1815-1818

The eventual solution to the problems raised by the competition was reached between 1815 and 1818. The weaker companies went to the wall, while the others made a series of agreements leaving each with an exclusive area of supply. The first serious negotiations to this end were opened between the East London and New River Companies as early as May 1813, when the East London Directors pointed out to the New River Company that 'great advantage is taken by many persons residing in the District where the New River Company and this Company are in competition by frequently changing from one to the other, seeking unduly to lower the Rates, and in many instances evading the payment of them altogether'.¹ They suggested that a mutually agreed boundary between the two companies would be the answer, this proposal indicating that they already realised the impossibility of attaining prosperity through competition. The New River Company, however, was not yet prepared to abandon any part of its area and merely suggested that each company should ensure that intending customers were not in debt to the other before agreeing to give supplies. But shortly afterwards the New River Directors changed their minds and began negotiations with a view to drawing up a boundary.² Yet over two years of bargaining were still needed before agreement was reached, during which time active competition continued. Not until September 1815 were the details settled. The agreed boundary left the New River Company in possession of the entire City, together with Islington, Holloway and Stoke Newington. This secured Whitechapel, Wapping, Bethnal Green, Hackney, Homerton and Dalston to the East London. The line ran southwards along Kingsland Road as far as Shoreditch, then turned south-eastwards along Commercial Street, passing through the dock areas east of the Tower to the Thames. Counsel's opinion was taken as to whether a formal agreement between the companies could be made legal and binding, and as a result a Deed of Arrangement was drawn up and signed by the companies' Directors on 9 November 1815.³

This Deed not only fixed the boundary between the areas to be supplied but also included a covenant not to supply any houses in the other company's area, on penalty of double the water rates thus gained.

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1. NRC, 6 May 1813.
 2. Ibid, 6 and 20 May 1813.
 3. Ibid, 9 November 1815.

Each company relinquished ownership of the pipes which it owned beyond its boundary: the New River pipes thus abandoned, which were wooden, were valued at £1,704, while the iron pipes given up by the East London were reckoned to be worth £8,855. The New River Company agreed to pay £700 per annum for ten years as compensation.¹ The New River gained former East London customers paying some £1,000 per year, and the East London gained over 3,700 extra houses paying more than £4,000 per year. The exchange of tenants was completed by April 1816.²

The East London Company was very satisfied with its new monopoly, the outcome of a few years' competition. In October 1816 the Engineer reported that an increase of a thousand tenants a year for the next ten years could be confidently expected, from the great numbers of houses being built in the Company's exclusive area of supply, and in July 1817 he proposed that an additional steam engine should be erected at Old Ford and a new main laid thence to Whitechapel. The Directors thought that 'however proper the adoption of such improvements might have been during Competition they could not with uncertain prospects have recommended the same. But in consequence of the Arrangement... having given an immediate accession of Tenantry, the improving state of the Districts, the extreme low price of Iron and other materials including Labor, the great saving which will thereby be effected in the permanent expences, and lastly with a view of advancing the rates', the suggested measures could now be carried out. The consequent improvements in the service given to customers would, they felt, lead to the 'cheerful acquiescence' of the public in the proposed increased rates.³ A new Boulton and Watt engine was duly ordered and erected in an additional engine house. The Company's final verdict on the Arrangement was given by the Auditors' Report to the General Assembly of Proprietors in October 1818. Remember, said the Auditors, that 'from a variety of Causes, but principally from a ruinous competition with another company, not only was the Revenue so reduced, as if collected, not to be sufficient to pay a Dividend, but the collection itself was paralyzed by the operation of that competition...the corner stone of the Company's prosperity was laid by the Arrangement with the New River Company'.⁴

1. NRC, 28 September 1815.

2. ELWWC-GA, 1 February and 4 April 1816.

3. Ibid, 6 July 1817.

4. Ibid, 1 October 1818.

While the East London Company's problems were solved by their agreement with the New River Company, the latter still faced vigorous competition from the West Middlesex, Grand Junction and York Buildings Companies, and was left as the only competitor of the moribund London Bridge Water Works. Early in 1815 the New River Directors approached the West Middlesex Company, their most vigorous rival, with a view to reaching an agreement similar to that then being negotiated with the East London. Each company appointed a Committee of Directors, and the New River firstly suggested that a common schedule of rates should be agreed; the West Middlesex rejected this idea as it was using lower rates as the main means of gaining customers from its opponents. Then the New River proposed that the West Middlesex should agree to be bought out entirely, but this too was unacceptable. The New River Committee's third proposal was for a boundary to be drawn up guaranteeing to each company an exclusive area of supply, but the West Middlesex turned this down as well. The West Middlesex Committee's preferred solution was for a 'complete and perfect Union of the two Concerns' to be brought about, and after months of haggling the details of such a union were finally worked out in August 1815. The capital of the New River Company was calculated to be £750,000 and that of the West Middlesex to be £350,000, the incomes from water rents being £68,000 and £10,000 respectively. The New River Company estimated that £200,000 would have to be spent on 'turning wood into iron' in order to bring its existing mains network up to the standard of the West Middlesex. The New River Committee proposed a union on the basis of a 4:1 division of the combined profits, but the West Middlesex insisted on amending this to a 4:1 division for the first seven years and thereafter 4:1 for the first £600 per New River share and 2:1 for any profits above that. The Board of Directors was to consist of seven New River nominees and five West Middlesex. The public was to be protected 'against any effect from the Junction tending to a Monopoly' by limits on either rates or dividends.¹ A special General Assembly of West Middlesex proprietors was called in September 1815 and approved the action taken by its Committee.²

Active competition between the two companies ceased as soon as agreement had been reached, although an Act of Parliament would be needed to authorise their union, and both felt the benefits at once. As early as November 1815, the West Middlesex Engineer reported that

1. WMWVC, 9 August 1815.

2. Ibid, 5 September 1815.

'the regularity of the supply gives universal satisfaction to the Public', and the Directors recorded that the agreement had resulted in large arrears of rates being recovered which would otherwise have been lost. Over 400 houses had been added to the Company's supply during the past six months, despite the cessation of attempts to gain tenants from the New River Company.¹ The West Middlesex Company confidently anticipated that the proposed union would guarantee future prosperity for its shareholders, as its Secretary assured one of them in October 1815.² The York Buildings Company evidently thought so too, for in February 1816 it applied to join the impending union, only to be rebuffed by the New River Company.³

The Bill to authorise the combination of the New River and West Middlesex Companies was introduced into Parliament early in the session of 1816. Great opposition was encountered from the other water companies, the Vestries of parishes in the West Middlesex Company's district, and especially from the Grand Junction Canal Company, whose protégé the Grand Junction Water Works Company faced probable ruin if its two main competitors were allowed to combine. On realising the strength of the opposition, the two companies concerned withdrew the Bill to avoid fruitless expense.⁴ The Grand Junction Directors reported this happy outcome to their shareholders in June 1816, commenting that the Bill would have enabled the West Middlesex Company to take over all the New River tenants in the West End, 'and prevented that loss of Tenants which the New River Company are almost daily suffering for want of a more efficient service'.⁵

Immediately after the abandonment of their Bill, the New River and West Middlesex Companies began further negotiations aimed instead at maintaining their independence while agreeing a boundary between their districts. In May 1816 the New River offered to give up its tenants in the area west of Tottenham Court Road and west of Oxford Street in return for the West Middlesex giving up its pipes east and south of this line. The New River rental in the area to be handed over amounted to £7,132 per annum, while the West Middlesex rental for the area east of Tottenham Court Road was £2,618 (according to the New River Company)

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1. WMWVC, 7 November 1815.
 2. Letter from M.K. Knight to William Ford, 19 October 1815.
 3. NRC, 8 February 1816.
 4. WMWVC, 20 March and 7 May 1816.
 5. GJWVC - GA, 6 June 1816.

or £3,450 (according to the West Middlesex Company), but the West Middlesex valued its pipes to be relinquished at £43,000, a figure which the New River would not accept. No agreement could be reached on this point, but the two companies did agree to refrain from laying on supplies at reduced rates and from supplying or repairing tenants' lead pipes free of charge.¹ In August 1816 the companies reached an outline agreement that each would retire gradually within a mutually acceptable boundary,² and by January 1817 negotiations had been concluded and a boundary fixed along the Tottenham Court Road/Oxford Street line.³

By that time, complicated bargaining had been going on among all the water companies with a view to reaching a 'general arrangement' to end the competition. The New River Company's agreement with the East London had left the former opposed only by the London Bridge Water Works in the eastern part of its area, and the contest between the two proved to be very unequal. As Richard Till of the London Bridge Works later put it, 'the New River have the power of raising their water higher than we do; the manner in which houses have been built within thirty years, have carried up their cisterns and their water closets much higher, and from that we are much injured...We have no site to put a steam engine on, the neighbours would not permit it'.⁴ The New River Company, on the other hand, was already (since 1812) laying iron pipes, after an attempt to pump a high-pressure supply through its wooden mains and services which resulted in them becoming 'full of Leaks and Weeps',⁵ and was now able to offer supplies to the tops of houses. The London Bridge Managers therefore approached their powerful rival in March 1816 requesting 'an arrangement between the Collectors of the two Companies in those parts of the City where their Pipes come into contact so as to do away entirely the unpleasant misunderstanding and Warfare which at present subsists to the great detriment of both concerns'.⁶ The New River Company proved unreceptive, and the intro-

1. WMWVC, 29 May 1816.

2. Ibid, 14 August 1816.

3. Ibid, 1 May 1818; the negotiating Committee's report is dated January 1817 but was not entered in the Minutes until over a year later.

4. 1821 Minutes: evidence of R. Till.

5. Letter from J. Bailey (of the West Middlesex Company) to Messrs Rose, Booker and Webb, Scavengers of Marylebone, 9 November 1812.

6. NRC, 20 March 1816.

duction into Parliament of Michael Angelo Taylor's Metropolis Paving Bill, which would compel them to renew all their wooden pipes in iron, greatly alarmed the London Bridge Managers. The Bill failed in the 1816 session but was renewed in 1817, and threatened to involve the London Bridge Works in a capital expenditure of about £60,000 which could not possibly be raised.¹ The Managers petitioned the House of Lords against the offending clause of the Bill, and succeeded in amending it so that the Act as passed allowed wooden mains to be repaired, and existing wooden pipes to be replaced with wood if desired, while all new mains must be iron. This was a great relief to the London Bridge Managers.² By November 1817, however, the New River Company had laid iron pipes 'through every street in the City', and industriously canvassed every householder there, so that the London Bridge Works was rapidly losing tenants and its future looked very doubtful.³

The York Buildings Company, too, was in considerable difficulty by 1816. It had laid out £150,000 capital on a system of iron mains and services, but despite very active competition its annual income from water rents was only £3,730. The Directors decided, after the failure of the New River/West Middlesex union which they had hoped to join, to give up the unequal struggle, and in May 1816 an agreement was concluded with the New River Company. The New River was to purchase a 96-year lease of all the York Buildings pipes and works in return for two down payments of £5,000 each and an annual payment of £2,250.⁴ The arrangement was not finally signed until March 1818, and the York Buildings pipes were formally handed over on 25 November 1818, but the New River Company had been collecting the rents from York Buildings tenants since midsummer 1816.⁵ The York Buildings Company had effectively ceased to exist as a water undertaking from that date, although the Company existed until it was dissolved by Act of Parliament in 1829.⁶ The final Act provided for a payment by the New River Company of £250.18s.6d per annum to the York Buildings proprietors and their heirs, an obligation which was inherited by the Metropolitan Water Board in 1903.⁷

1. LBWW, 15 November 1816.

2. Ibid, 14 November 1817.

3. Ibid.

4. NRC, 21 May 1816.

5. Ibid, 10 March 1818.

6. David Murray, The York Buildings Company (Glasgow 1883), 111.

7. The Water Supply of London (Metropolitan Water Board, 1961), 12.

While the West Middlesex and New River Companies were negotiating their boundary, and the latter was taking over the York Buildings works, the Chelsea Company was approached to come into a 'general arrangement'. In May 1816 it received a letter from the West Middlesex proposing that 'some reciprocally beneficial Arrangement might be effected....as to the supply of Houses in those Districts where the Chelsea and West Middlesex Companies were alone in competition'.¹ The West Middlesex would give up its mains and services in Walnut Tree Walk, Seymour Place, Fulham Road and sixteen other streets, 'retiring wholly from Little Chelsea with their pipes' and giving up an annual rental of £130. In return, the Chelsea Company was asked to withdraw from Paddington and Marylebone, where it possessed about five miles of wooden pipes which were worth £4,000.² The Chelsea Company acceded in principle in July 1816, agreeing to 'a partial exchange of District', exchanging 'the pipes value for value, and the Rent, Rental for Rental', with any balance either way being made up in cash. The West Middlesex was to give up its pipes south and east of the Brompton Road, while 'The Chelsea Company proposes ceding all their pipes and Rental in such parts of the Parishes of Marylebone and Paddington, at the north of the New Road and retiring from that District for Ever'.³ The Chelsea Directors, while ready to cease opposing the West Middlesex, considered intensifying their efforts against the Grand Junction by laying iron mains in the parish of St George Hanover Square and around Grosvenor Square; they reluctantly decided, however, that the expense of £28,000 involved was beyond their means.⁴ Instead, they negotiated directly with the Grand Junction Company as well, and by March 1817 a general settlement had been agreed among all the companies concerned. The Chelsea Directors recorded that the present competition was 'particularly ruinous' to their Company as a result of the 'insurmountable difficulties this Company has to encounter in supplying the Upper District, so as to be able to contend with those Companies who from their local situation can there with ease afford a very superior and also a much cheaper service',⁵ and so they readily fell in with an offer from the Grand Junction. This offer restricted the Chelsea Company to a district comprising Chelsea proper,

1. CWWC, 30 May 1816.

2. Ibid, 27 June 1816.

3. Ibid, 11 July 1816.

4. Ibid, 7 August 1816.

5. Ibid, 17 March 1817.

Kensington, Westminster proper and areas between, and the Company would lose rents to an annual value of £5,285 from its tenants outside the district; it would gain £1,478 per annum from rents from present Grand Junction and West Middlesex tenants inside its allotted district, and the Directors calculated that it would save £2,647 per annum in the expense of maintaining its pipes.¹ They felt that 'in the event of possessing the above District, independent of all other Companies, a small Increase of Rent, perfectly consistent with the Service, would more than compensate the loss of £1,160'.²

On 3 July 1817 representatives of the New River, West Middlesex, Grand Junction and Chelsea Companies met to agree the final partition of the West End and the end of competition. The Chelsea Company secured a district approximately as had been agreed with the Grand Junction.³ The West Middlesex obtained confirmation of its agreement with the New River Company and was to supply an area comprising St Pancras west of a line from Fig Lane along Hampstead Road and Tottenham Court Road to Oxford Street, most of Marylebone (including the new Regents Park), part of Kensington and Hammersmith.⁴ The Grand Junction's allotted area included Paddington, Bayswater and the part of Westminster known as Mayfair: although relatively small, this area would produce water rents amounting to some £12,600 per annum.⁵ The New River Company, although giving up the right to supply large areas in the West End, was confirmed in its possession of the City and such prosperous areas as Bloomsbury and Holborn, while its impending purchase of the York Buildings works would secure Soho. The Companies were convinced of the necessity for this General Arrangement. The West Middlesex Directors reported to their shareholders that the only means by which the companies' losses could be ended 'without proving injurious to the public, was the concentration of the respective works...to prevent the sacrifice of Capital required by the new Faving Act, in substituting Iron Pipes for Wood'.⁶ The Chelsea Directors, on 16 October 1817, 'Resolved, That the Company do retire from such parts of their present Service as are inconvenient and expensive to them...whenever the other

1. CWWC, 17 March 1817.

2. Ibid.

3. Ibid, 10 July 1817.

4. WMWWC, 5 May 1818.

5. CWWC, 10 July 1817.

6. WMWWC, 5 May 1818.

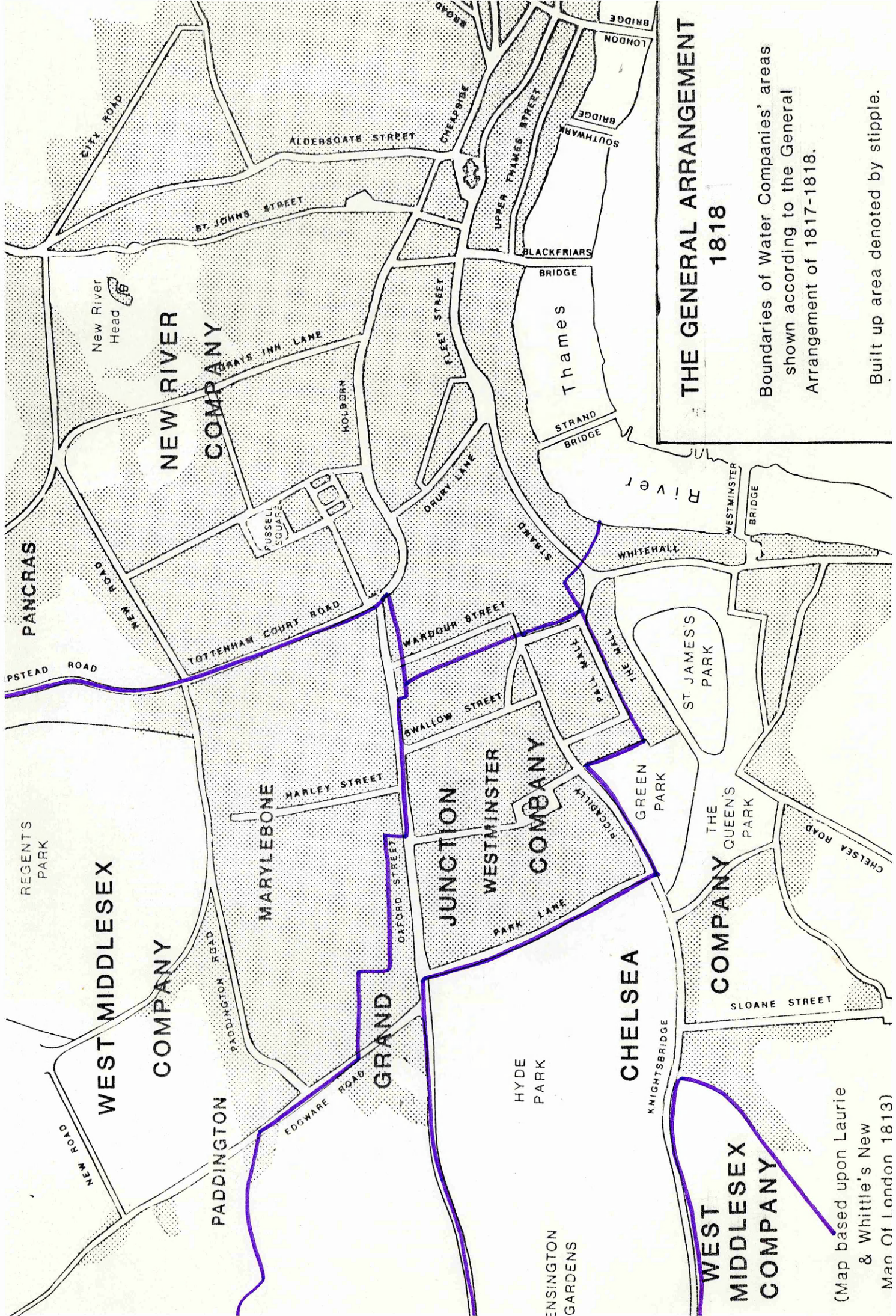
Water Companies shall proceed therein'.¹ Negotiations in respect of the sums owed for pipes relinquished by the Arrangement continued for some time, however, and it was not until July 1821 that the last exchange, of 239 yards of iron pipes belonging to the West Middlesex Company and valued at £52 for 203 yards of pipes belonging to the Chelsea Company and valued at £57.11s, was put into effect.²

Although the General Arrangement seemed to the companies to be generally beneficial to all of them and also to the public, the agreements could not be openly arrived at or put into the form of binding covenants, as had the East London/New River Company agreement. The Grand Junction and West Middlesex Water Works Acts contained clauses prohibiting those companies from selling or assigning any of their rights of supply, so there were grave doubts as to whether the present agreements were legal.³ For this reason, the public were given no inkling of the negotiations, and the unfortunate customers who were to change companies had no warning of that fact. At Christmas 1817, a large number of householders in the West End of London suddenly found themselves without a water supply, and some days later were presented with handbills informing them, with thanks for their support during the competition, that the Company could no longer afford the expense of supplying the area and had therefore withdrawn. During January 1818 those householders were canvassed by other water companies, those which had been guaranteed the exclusive supply of the area, for their custom. The competition was over.

1. CWWC, 16 October 1817.

2. Ibid, 26 October 1820 and 5 July 1821.

3. WMWWC, 6 May 1817.



**THE GENERAL ARRANGEMENT
1818**

Boundaries of Water Companies' areas shown according to the General Arrangement of 1817-1818.

Built up area denoted by stipple.

(Map based upon Laurie & Whittle's New Map Of London 1813)

CHAPTER 5THE QUESTION OF CHARGES, 1818-1821

In the early nineteenth century the parish of St Marylebone was administered by a Select Vestry which was among the most influential in the country. Established by an Act of 1768, the Vestry had 122 members, of whom normally only thirty were tradesmen, the rest being peers and gentlemen.¹ In 1819, the list of Vestrymen included nine members of the House of Lords and nine of the House of Commons.² The parish itself had, during the course of the eighteenth century, changed from a small village just outside London to one of the wealthiest and most prosperous parishes in the metropolis, and it was continuing to grow: its 1,499 acres held 63,982 people in 1801, 75,624 in 1811 and 96,040 in 1821.³ Much of the new building, including the elegant terraces of the new Regents Park development which had transformed the old Marylebone Park, was of the most fashionable kind. Such a wealthy area demanded an efficient local government system, and by the standards of the time it got one. The streets of Marylebone were better lit and more effectively watched than most, the parish fire-fighting service was also above average, and the regular paving of the parish's streets was the envy of those slipping in the mire of nearby Westminster.⁴

Marylebone had been the scene of the fiercest competition among the water companies between 1810 and 1817, with first the West Middlesex and then the Grand Junction Companies striving to oust the established Chelsea and New River Companies: it was one of the few areas which had as many as four companies competing for its custom. The large number of good quality houses made the parish of particular significance to companies hungry for water rents, and after the 'General Arrangement' the parish was to provide nearly the whole of the West Middlesex Company's income. The Grand Junction Company took only a small part of Marylebone, which nevertheless was expected to yield a significant portion of that company's revenues. The Select Vestry had previously clashed with the companies, firstly in 1809-10 when the West Middlesex

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1. F.H.W. Sheppard, Local Government in St Marylebone 1688-1835 (London 1958), 128.
 2. 1819 Minutes (appended list).
 3. R. Price-Williams, 'The Population of London 1801-1881', in Journal of the Statistical Society, vol 48 (1885).
 4. Sheppard, op cit, 131-163.

Company sought power to enter the parish, and later during the competition period when the various companies were constantly breaking up the paved streets in order to lay pipes and connect new customers to the services.¹ In general, however, the Vestry approved of the competition as it reduced the water rents and had induced the companies to water the streets free of charge.

The withdrawal of certain water companies from parts of their areas at the end of 1817 naturally created alarm and annoyance among their abandoned customers - particularly as there was a significant time-lag between the loss of the old supply and the provision of the new. John Thomas Hope, for example, who resided at 37 Upper Seymour Street and was a member of the Select Vestry, had a supply from the New River Company to his house and from the Chelsea Company to his coach-house. At Christmas 1817 he found that both companies had cut off the supplies, reducing his tenants who lodged above the coach-house 'to the necessity of going about begging for water wherever they could get it'. It was not until 18 January 1818 that the New River Company gave Mr Hope a notice that the supply had been cut off, and on 21 January he received a letter from the West Middlesex Company offering to supply him. He eventually applied to the latter company, but was then told that the letter had been sent to him in error and that he should apply to the Grand Junction Company. This he did, but it was not until midsummer 1818 that he again received a regular supply.² Many other customers were similarly treated, although some, such as John Richardson of Tichborne Street, were transferred from one company to another without even being aware of the fact until they received their next water rent demands.³ Several areas of London were affected, but Marylebone suffered particularly severely: there the competition had been most intense and the various companies' areas were most intermixed.

The most vociferous protests at the end of the competition came from Marylebone, and particularly from the Select Vestry itself. On 17 January 1818 the Vestry wrote to the four water companies concerned

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1. According to Sheppard, *op cit*, 194, the Vestry's Surveyor was in 1812 employing 81 men simply to repair the paving torn up by the water companies. The companies did, however, pay for the expense involved.
 2. 1821 Minutes: evidence of John Thomas Hope.
 3. *Ibid*: evidence of John Richardson.

Office of Chelsea Water-Works,

ABINGDON STREET, WESTMINSTER.

The DIRECTORS of the CHELSEA WATER-WORKS having for a long time served their tenants with Water at Rates insufficient to meet their increased and increasing Expences; and, being further called upon, by a late Act of Parliament, to substitute Iron for Wood Pipes, heretofore used by the Water Companies, a new and most heavy expence, which they cannot possibly sustain without the assistance of their tenants, they are compelled to make a general Increase of their Rents; and they are fully persuaded not an unreasonable one, when the quantity of Water consumed, and the great Convenience afforded, are taken into consideration:—they beg, therefore, to inform you, that the Rent you are to pay from Lady Day 1818, is £

By Order of the Court of Directors,

Henry Secretary

'to inquire whether they are not withdrawing their supply of water from the parish of Mary-le-bone, or whether it is the intention of the companies to supply the inhabitants as heretofore, and at the same rates, or what the companies propose doing; in order that their answer may be laid before the parishioners, who have expressed the greatest alarm and apprehension on this important and serious subject'.¹ The companies responded by suggesting that their representatives should meet with a committee of the Vestry, and the meeting was held on 3 February. At this meeting the West Middlesex deputation assured the Vestry that their company was well able to give Marylebone a much better supply of water than it had previously enjoyed, but that it could not be expected to continue such an improved supply without raising charges to the levels which had applied before the competition began. Although the West Middlesex and Grand Junction representatives stated that they did not intend to raise their charges immediately, they also said that such an increase would in due course be necessary, and that additional charges would be made for 'high service', over and above the old rates. The most the New River Company would concede to the Vestry committee was that it would retain the physical power to re-enter the parish should this appear to be of advantage to the company in the future, and that an emergency service from the Tottenham Court Road main could be given in the event of serious fires or other calamities. The Vestry committee quickly grasped the realities of the position, and reported to the Vestry that 'the competition, which was the foundation of the West Middlesex and the Grand Junction companies application to Parliament for their acts, and which induced Parliament to grant them, is now completely done away, and the parish is not only deprived of that advantage, but is left exposed to all the uncertainty, and the numerous evils, such a situation subjects them to'. The committee indignantly pointed out that the many parishioners who were without water must apply to whichever company had arbitrarily taken control of their area, and must pay the cost of connecting their houses to that company's services. It was felt that the Vestry must 'prevent, if it be possible, the parish being delivered over to the mercy and discretion of perpetually fluctuating boards, who may make such exorbitant demands, that will materially deteriorate the property of this parish'. To this end, the committee recommended that the Vestry should consider setting up a parochial water works, to be funded by a combination of loans and rates in the same way

1. 1821 Report, Appendix A: also WMWVC, 23 January 1818.

that £200,000 had been raised and paid off for paving the streets. On 14 February 1818 the Vestry Board approved the committee's report, and resolved to carry its recommendation into effect.¹

The water companies soon learned of the Vestry's resolution, and were extremely alarmed. This proposal threatened to overthrow the whole basis of the 'General Arrangement', which depended upon the West Middlesex Company's possession of the lion's share of Marylebone. A parochial water works, even if not entirely successful, would effectively renew the competition in Marylebone and probably ruin the West Middlesex Company, while if the project were successful the company's main assets, its mains and services throughout Marylebone, would become valueless. All four companies concerned agreed to oppose the Vestry's application to Parliament.² The support of George Byng, MP, who had been of great assistance to the West Middlesex Company in 1810, was also enlisted against the Vestry.³ The West Middlesex Directors, in a state of panic, rashly wrote to the Vestry on 19 February promising 'that no advance will be made in the rates until the parishioners are indemnified for the expense they have incurred in the change from the old works, nor will any advance whatever be made for the usual supply of water, beyond what the inhabitants paid to the old companies in the year 1810'.⁴ The Company noted the resentment among the public at having to pay a connection charge on being transferred from one company to another, and resolved that in future such charges would be waived. Those customers who had already paid the cost of making good the paving disturbed in making connections would be reimbursed.⁵ Despite these placatory efforts the Vestry remained indignant, and determined to proceed with its scheme for a parochial water works. On 26 February the West Middlesex Directors learned that a Vestryman, Sir James Graham, had alleged that their activities since 1810 had involved the Vestry in expense amounting to £50,000 for repairing paving damaged during mainlaying, and they promptly wrote pointing out that the Company had always reimbursed the Vestry for such expense. Nevertheless, on the same day that the Vestry received this letter, it resolved unanimously to apply to Parliament for power to construct its own water works, and also for power to contract with

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1. 1821 Report, Appendix A: also WMWVC, 6 February 1818.
 2. WMWVC, 6 and 18 February 1818.
 3. Ibid, 24 February 1818.
 4. 1821 Report, Appendix A.
 5. WMWVC, 24 February 1818.

any water company for a supply to the parish, as an alternative.¹ The Vestry then wrote to the New River, Chelsea, West Middlesex and Grand Junction Companies, requesting that their representatives attend a meeting on 4 March, 1818.

At that meeting the various companies put their points of view to the Vestry committee. The New River stated that it had already lost large sums in supplying the parish during the competition period, and could not afford to maintain such a competition. It was satisfied that the West Middlesex and Grand Junction would deal fairly with the parishioners, but would undertake to negotiate with the Vestry to provide a supply 'if the companies in question make immoderate demands upon the parish'. 'But until it shall appear that the West Middlesex or Grand Junction companies refuse to treat upon moderate terms, and attempt to abuse their situation, the New River company decline to enter into such a treaty'. No definitions of 'moderate terms' or 'abuse' were given, so it appeared that the New River's undertaking was valueless. The Chelsea Company merely said that it had no proposals for supplying Marylebone, 'the company having already lost a considerable sum of money therein'. The Grand Junction gave its view that its portion of Marylebone could be served in return for an overall charge of £3,000 per annum, including high service. The West Middlesex, after taking two days to calculate its figures, wrote to the Vestry on 6 March alleging that it had spent £250,000 on supplying Marylebone, that its annual expense in respect of supplying the parish amounted to £5,000, and that it considered an income of £17,500 per annum to be necessary in order to cover that expense and provide a fair return on capital. The Directors estimated that return as 4% after allowing for 'extraordinary expenses'.²

The Vestry, which detected a conspiracy aimed at extorting immoderate charges from the parish, was not at all satisfied with these answers, and demanded that the companies undertake to supply the parish at rates 10% below those of 1810. This demand appeared not unreasonable in view of the general fall in prices and wages since that date, but it took no account of the improved methods of supply which were now in use, at great expense to the companies. All the companies refused to undertake to supply the parish on these terms, and the West Middlesex moreover withdrew its rash promise not to advance beyond the 1810 water

1. 1821 Report, Appendix A: also WMWWC, 26 February 1818.

2. 1821 Report, Appendix A: also WMWWC, 4 and 6 March 1818.

rates. The company now undertook only to 'investigate the existing rates, and equalize them on a just and reasonable scale, according to the nature and extent of the supplies required, in order that such a moderate advance only, as may be found absolutely just and necessary, may be determined'.¹ On 2 May 1818 the West Middlesex and Grand Junction Companies put to the Vestry their proposals for increasing their charges which were calculated as follows:

<u>Rates charged in 1809</u>		<u>Rates charged in 1817</u>	
New River	£11,182.2s	New River	£5,648.3s.6d
Chelsea	£ 2,205.18s.6d	Chelsea	£1,177,12s.6d
Total	£13,388.0s.6d	West Middlesex	£3,286.18s.6d
		Grand Junction	£ 871.10s
		Total	£10,930.4s.6d

The companies proposed to increase the rates for 'ordinary supply' to a level 25% above the 1809 rates, that is to a total of £16,735.0s.7½d, plus £2,500 to allow for houses now in supply which had not then existed, and additional charges for 'high service'. They pointed out that the parish now received far more water than previously (they estimated four times as much), and that the existence of iron mains, permanently charged, all over the parish afforded an unprecedented security against fire. 'In consequence of the abundant supply, superior attention, and accommodation now existing, the habits of the parishioners are naturally changed; so much so, that nothing short of a continuance of this supply and attention will now be satisfactory to them'. The companies submitted that they had 'a fair and irresistible claim for the before-mentioned advance, and which they hope will be readily allowed them'.²

The companies' hopes proved to be vain. The Vestry immediately petitioned Parliament for leave to bring in its Bill, which was read a first time on 6 May.³ The companies enlisted their parliamentary supporters, who now included Sir James Graham and Michael Angelo Taylor, to oppose it, and the latter agreed to introduce a Bill on behalf of the companies to give them statutory authority to fix charges. They also obtained petitions against the Vestry's Bill signed by many parishioners who feared a great increase in the parish rates. The Vestry's Bill failed to progress further in the 1818 session.

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1. 1821 Report, Appendix A: also letter from West Middlesex Company to Marylebone Select Vestry, 28 March 1818.
 2. 1821 Report, Appendix A: also GJWWC - GA, 4 June 1818.
 3. WMWWC, 8 May 1818.

After the withdrawal of the Marylebone Select Vestry's Bill the ill-feeling against the water companies appeared to have subsided. In November 1818 the West Middlesex Directors reported to their shareholders that the work of changing consumers' supplies in Marylebone to the Company's pipes had been completed, and that the consumers appeared to be satisfied with the supply. In addition, 'the prompt and abundant supply of water, at several recent Fires has fully demonstrated the power of the Company to afford ample protection, and its disposition to apply that power, on any emergency, to the public benefit'.¹ The Grand Junction Directors similarly reported in December 1818 that many fewer complaints were now being received from consumers.² In the summer of 1818 the two companies had given notice to their customers, by printed leaflets, that their charges were to be increased: the Grand Junction's leaflets said that the increased charges would be collected at Lady Day 1819, and the West Middlesex's stated that they would be collected at Christmas 1818.³ When the companies started to collect the increased rates, early in 1819, many customers were startled and enraged to find that the increase was back-dated to the previous Michaelmas or mid-summer, and that in many instances the new rate was very much more than the old. The companies had first calculated the water rent which was, or would have been, payable for each property in 1810, then increased that by 25%, then added charges for high service on top; the effect in some cases was to double or treble the amount charged in 1817. Dr Robert Masters Kerrison of New Burlington Street, for instance, paid £2.2s per annum to the New River Company until 1813, then changed to the Grand Junction at £2; from Michaelmas 1818 his rate was increased to £6.16s.6d, much of the increase being due to the charge for high service.⁴ Mr William Harris, of Norton Street, paid 30s to the New River Company in 1810 and subsequently had his rate reduced to 24s; from Michaelmas 1818 the West Middlesex Company demanded 37s a year.⁵ The first result of these increases was that the Select Vestry again applied to Parliament and brought in a new Bill for its parochial water works. The West Middlesex and Grand Junction Companies proposed that they and

1. WMWVC, 3 November 1818.

2. GJWVC - GA, 3 December 1818.

3. 1821 Minutes, evidence of W. Coe and M.K. Knight.

4. Ibid, evidence of Robert Kerrison.

5. Ibid, evidence of William Harris.

the Vestry should jointly promote a Bill to limit any increases in charges to a level 25% above the 1810 rates, but the Vestry refused this offer and persisted with its own scheme. The two companies then prevailed on Michael Angelo Taylor to introduce a Bill into Parliament on their behalf. This Bill sought to limit water charges to 25% above the 1810 level, for the 'ordinary service', but would permit additional charges for 'high service' and trade use.

The water companies again opposed the Vestry's Bill in the Commons, and it failed to gain a second reading. The companies' Bill, however, passed through the Commons without difficulty and was referred to the Lords. The Vestry petitioned the Lords against it, and the Vestry's Counsel delivered a bitter attack on the companies before the Lords Committee. He accused the companies of having raised and expended far more capital than was really required for their primary purpose of supplying water: 'Joint Stock Companies', he said, 'though excellent servants, are the worst of all masters; and that if unfortunately they are allowed to...raise capitals infinitely beyond their wants, there will be sure to succeed pompous establishments, and prodigal expenditure'.¹ The Secretaries of the West Middlesex and Grand Junction Companies were strongly pressed to give details of the 'General Arrangement' among the companies, but stoutly professed their inability to do so, maintaining that the negotiations had not been minuted. The Secretaries also denied that the Arrangement excluded companies from one another's districts; it was merely a matter of convenience, they said, that each company should serve only the areas nearest to its works.² Counsel for the Vestry, however, was unconvinced, alleging that the Arrangement was 'as unquestionably a conspiracy as ever was the subject of Indictment before a Court of Justice'. He also pointed out that the rates charged by the New River Company in 1810 had been the highest ever charged, having been increased between 1805 and 1807 from an average of two guineas per annum to an average of 50s for properties in Marylebone, and maintained that the companies could easily afford to supply the parish at lower rates. In support of his assertion he produced Peter Potter, an engineer who had been engaged by the Vestry to design its parochial water works. Potter gave details to the Committee of his plan for supplying 9,000 houses and 80,000 people with 720,000 gallons of

1. 1819 Minutes: speech of Jackson.

2. 1819 Minutes: evidence of W. Coe and M.K. Knight.

water per day, at a total cost of £107,105.9s.2d. The Vestry proposed to pay for this by a 6d rate producing £13,606.2s.6d a year for 18 years, then a 3d rate thereafter to pay maintenance costs.¹ When Counsel for the Bill showed Potter's qualifications for designing water works to be nil, the Vestry brought in Ralph Walker, previously Engineer to the West Middlesex and East London water companies, to support Potter; it was then pointed out that Walker had produced over-optimistic estimates for water works in the past. The final assertion made by the Vestry was that the water companies had incurred unnecessary expense through indulgence in wasteful competition, and were now seeking to recoup their losses by charging unjustifiably high rates.²

Opposition to the companies' Bill did not come only from the Vestry. The Lords Committee heard from various fire agents who asserted that less water was now available for fire-fighting than had been during the competition period, from disgruntled consumers whose charges had been increased, and significantly from James Weale, a Government office-holder, resident of Marylebone and hater of water companies. Weale's opposition centred on his allegations that the West Middlesex Company had been a speculative swindle from start to finish, and that the present Directors of that company were seeking Parliamentary sanction for further plundering of the public. At the same time, the Vestry stirred up agitation against the water companies, holding meetings, posting placards throughout the parish and even on church doors, and distributing handbills urging consumers not to pay increased water charges.³ The result of the Vestry's pressure was eminently satisfactory to it, for the Lords Committee eviscerated the companies' Bill. As it was returned to the Commons, it restricted the high service charges, gave consumers a right of appeal to Quarter Sessions against any charges, and limited the ordinary charges to those of 1810. Michael Angelo Taylor withdrew the Bill on its return to the Commons.⁴

The Vestry followed up its success by once again seeking to introduce a Bill empowering it to construct a parochial water works. The companies meanwhile collected their increased charges from most of their customers, but although nine-tenths of the West Middlesex Company's

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1. 1819 Minutes: evidence of Peter Potter.
 2. Ibid: evidence of Pollock.
 3. Sheppard, *op cit*, 197.
 4. Ibid, 198: also GJWWC - GA, 1 July 1819.

customers had paid by midsummer 1819,¹ a violent agitation against the companies was renewed during the autumn of that year. The leading spirit in this agitation was James Weale, who founded the Anti-Water Monopoly Association in October 1819 and wrote many pamphlets attacking the companies. The Vestry encouraged Weale's activities: according to the West Middlesex Company Secretary, 'papers were sent into every house in the parish, not only by the committee called the Anti Monopoly Association, but also the vestry in their collective capacity, papers signed by the vestry clerk by order of the vestry...all of them calculated to excite the greatest discontent, most of them containing misrepresentations of fact, and inclosing papers identifying the vestry to a great extent with the proceedings of the association'. The Company pointed out the great influence which the Vestry had in the parish: 'these documents, in which the inhabitants generally were informed that they were paying an enormous rate that could not be legally justified, would make a very great impression on the parish...coming as it did from ...the select vestry of the parish, composed of noblemen and gentlemen; and it is not to be wondered at that complaints of the increase began to be heard'.² Weale did not confine his activities to Marylebone, but distributed leaflets and held meetings in St George's Hanover Square, St Pancras, Paddington and St James's. The policy of members of the Association was to refuse payment of increased charges, tendering instead the rates charged in 1817. Their avowed aim was to induce the companies to prosecute them for payment, thus establishing a legal precedent one way or the other, but the companies refused to oblige and instead cut off the water from the recalcitrant consumers. On 22 April 1820 William Freemantle, MP, Chairman of the Association's General Committee, wrote to the Grand Junction Company offering to recommend those customers whose supplies had been cut off to pay their charges in full, provided that the Company would agree to refund any excess if a court decision subsequently fixed lower rates. The Company replied with dignity that 'it could not in any way recognise this self-constituted body who acting in no corporate capacity and possessing no legal rights were incompetent to bind any individual for whom they assumed to act'.³ The Company's view of the Association was of 'A few individuals...who

1. 1821 Minutes: evidence of M.K. Knight.

2. Ibid.

3. GJWWC - GA, 1 June 1820.

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We are all combined to raise the price of this Necessary Article - So down with your Cash, or I'll cut your Water off.

For God's sake don't cut it off! I shall certainly die for want of it - I'll pay any thing in reason to keep it on!

Your father had better agree to our terms, before my boys are there to rub him all over. What's the done if I cut it off? You can't make Water, can you?

It's a hard case to pay so very dear for Our Water works. I'm determined to protect my husband's Cash - You want cut it off? I can help it so long as I can reach.

Ditch Water

O Dear! to be cut off!

Oh! Tom's back!

Get him from the back!

All the people to address themselves to the Water Works, and not to the Ditch Water, and to check the Company of the Water Works.

John Bull's WATER WORKS! or Unfeeling Speculators threatening to cut off one of the Necessaries of LIFE!!

seem to believe that they can compel the Company to afford a supply of Water to the Inhabitants at any price they themselves chuse to fix and who...have by the circulation of inflammatory papers and hand Bills so poisoned the minds of many of the Inhabitants as to have induced them to with-hold the payment of the Rates'.¹ The Association was most active in late 1819 and early 1820, but by the middle of 1820 it was losing support and the companies were benefiting by their assiduous efforts to explain their position by leaflets and personal visits to customers. The Grand Junction Company was able to record in June 1820 that 'the numbers of the Company's opponents have been considerably diminished', its explanation to the public of the basis of charge having counteracted 'the false statements and wilful misrepresentations of certain persons'.² The Company felt that the dispute could best be solved by a Parliamentary Committee investigating the question fully. The Association, in an effort to bring about its own prosecution, applied for an injunction to prevent the companies cutting off supplies from its members, but the Lord Chancellor refused to grant this. By the end of 1820, in the view of the Grand Junction Directors, its activities were 'becoming every day of less importance'.³

Similar agitation occurred elsewhere in London, although hardship suffered by the teeming poor of the East End naturally attracted less attention than did higher rates charged to the nobility and gentry of Marylebone. From the end of 1815 the East London Company had possessed an effective monopoly in its district by virtue of its agreement with the New River Company, and in 1817 increased its charges. The increase was based not on a percentage of the rates charged before the competition began (in much of the district there had been no piped water supply previously) but on the principle of 'equalisation' - upwards. During the competition the Company had been so eager to obtain tenants that it had accepted customers' own assessments of future demand when calculating charges, its main aim in the competition area being to undercut the New River Company. Now it carried out a survey and found that many premises which had formerly been rated as private houses were in fact used for trade purposes, while many other houses were charged less than similar houses nearby. The Company therefore evened out its charges, increas-

1. GJWWC - GA, 1 June 1820.

2. Ibid.

3. GJWWC - GA, 7 December 1820.

ing its income from rates from £16,843.6s.11d in 1816 to £21,874.4s in 1818. Agitation similar to that in Marylebone followed: petitions were presented to Parliament by various groups of inhabitants. One, from the inhabitants of the Finsbury and Tower divisions of the City, alleged that they received a 'very insufficient supply of water', that Parliament's intention of promoting competition by authorising the East London Company had been defeated by the companies' combination, and that 'the charges already exorbitant were considerably increased'. Another, from various East End parishes, sought power to establish a new water company in order to overcome the evils of monopoly. The petitioners pointed out that 'a considerable proportion of the inhabitants are in indigent circumstances' and were unable to pay the 'exorbitant and increasing rates imposed upon them'. Both petitions laid stress on the danger of fire, particularly great in an area where most houses were wooden, and complained that the East London Company was insufficiently attentive to this danger. Examples of individuals' water rates being increased by up to 400% were given. Both petitions also complained that the Company cut off the supply to properties on which arrears were due, instead of prosecuting the defaulting tenant, so that the owner was forced to pay arrears before he could obtain a new tenant.¹

The East London Company did its best to allay this discontent. Its Chairman attended a public meeting in October 1818 which he 'addressed... at considerable length, and was very much interrupted', but the agitators would accept no compromise.² The Chairman was greeted at first with 'a profound and ambiguous silence', then with 'universal and violent hissing'.³ The Company then prepared a counter-petition to Parliament in which its case was set out. It pointed out that a capital of £380,000 had been invested, on which a fair return was sought. No increase in rates had been made until two years after the agreement with the New River Company, and the increases then made averaged only 25%. It denied the allegations made in the application for power to set up a new company, which 'abounds with the grossest misrepresentations... the Cases of fire are some of them untrue and the rest exaggerated and distorted'. The instances of enormous increases in charges were individually dealt with: Mr Talbot, for example, complained that his rates had

1. ELWMC - GA, 12 February 1819.

2. 1821 Minutes: evidence of J.B. Sharpe and J. Davies.

3. The Times, 31 October 1818.

been increased from £4 to £16 per annum, but the Company pointed out that 'he keeps a receptacle for deranged persons consisting of several hundreds all requiring from the nature of their situation an abundant supply'. Mr Nathan's rates had been increased from 50s to £10 a year, but the Company had discovered that he was a publican whose house was now on the main road from the City to the docks, and that he charged for watering 'hundreds of cattle' there daily.¹ The Company's case was successful, and the applications to Parliament were not pursued.² There was no agitation against the New River Company, which refrained from increasing its charges pending the outcome of that against the other companies.

The Anti-Water Monopoly Association appeared by the end of 1820 to have reached an impasse. Many of its members and supporters were now without piped water supplies, having refused to pay increased charges, and it had been unable to provoke the companies into prosecuting them. It apparently decided that the best way of settling the matter was to do what the Grand Junction Company had previously suggested, that is to seek a Parliamentary Select Committee to investigate the whole question of London's water supply. Early in 1821, therefore, William Freemantle MP, a leading member of the Association, moved for the appointment of such a Committee.³

1. ELWVC - GA, 12 February 1819.

2. ELWVC - GA, 1 April 1819.

3. GJWVC - GA, 7 June 1821: also The Times, 7 February 1821.

CHAPTER 6

THE PARLIAMENTARY SELECT COMMITTEE OF 1821

The Select Committee appointed by Parliament on 6 February 1821 was instructed to 'inquire into the past and present state of the supply of Water to the Metropolis, and the Laws relating thereto, and to report the same, together with their observations thereupon, to the House'.¹ The Committee's appointment followed a brief debate in which the main speakers were William Freemantle, one of the water companies' foremost opponents, and Michael Angelo Taylor, a former critic of the companies but now one of their supporters. Freemantle's involvement with the Anti-Water Monopoly Association and Taylor's promotion of the Metropolis Paving Act have been mentioned above: Taylor, although MP for Durham, was prominent in London affairs. His hostility to the water companies had arisen from their too-frequent breaking up of paved streets to lay and repair pipes, and had been overcome by the passage of his own Act (which ensured that all new mains and services would be iron rather than wood) and by the general reduction in main-laying activities which followed the end of competition. When Freemantle spoke in the Commons of the water companies having 'a monopoly, grievous beyond all former precedent', Taylor therefore rose to defend them. He proposed that they should be allowed to fix their charges at a rate 25% above the present level, and, referring to his West Middlesex Waterworks Bill of 1819, 'observed that since his bill had been thrown out of the other house, a water fever had raged through the metropolis, which it was impossible to allay'. Taylor volunteered to serve on the Committee, which consisted of 27 Members and was chaired by Freemantle.²

The Committee commenced hearing evidence on 16 February 1821 and continued until 30 March, sitting on three days per week. In all it heard 43 witnesses, of whom 20 were officers of the various water companies and one was Chairman of the East London Company. Most of the others were opponents of the companies, including several members of the Anti-Water Monopoly Association, so the witnesses were more or less evenly divided between employees and critics of the companies. The great concern of the companies' witnesses was to show that the companies had acted fairly, that they had not sought to 'oppress the public' by

1. This chapter is based almost entirely on the 1821 Minutes and Report. I have not given detailed page-references throughout the chapter.

2. The Times, 7 February 1821.

levying unreasonably high charges, and that no undue profits had been made. They were incidentally anxious to show that the hostile witnesses were activated by motives of spite or were just wrong in their facts - but in view of the identity of the Committee's Chairman they had to be careful in this. The anti-company witnesses were mostly householders who considered that they had been overcharged or otherwise unfairly treated by the companies. A few, however, were acting out of a belief that the companies were more sinister, and controlled by men guilty of a conspiracy to defraud the public on a grand scale. Prominent among these witnesses was James Weale.

The Committee began by calling a series of water companies' officers to establish the facts about the current state of London's water supply. These witnesses were closely examined and required to give figures of the number of houses supplied, the amount of water put into supply, and details of the machinery and other capital equipment used. Sometimes they showed embarrassing ignorance: William Chadwell Mylne, engineer to the New River Company, for instance, was unable to give figures of the amount of water supplied by his company. To the Committee's incredulous question 'Do you mean to say that the company are ignorant of the quantity of water supplied from their works?' he could only answer 'They know nothing more than what the river produces'. Again, Mylne was asked how many houses were supplied by his company, and answered 'I cannot give it directly; 52,000 tenants were supplied since the year 1817, and they cannot have varied much'. The combined evidence of the engineers and secretaries of the companies, however, effectively showed that far more water was now supplied to most parts of London than had been before 1810, and that 'high service' was now much more common. The first six days of evidence were occupied by witnesses from the companies, together with statements from officials of the Court of Sewers as to the extent to which the flow of water into the sewers had increased since 1810.

The Committee's third week opened on 2 March with the redoubtable James Weale being called. Weale's evidence occupied the whole of the session of 2 March, and most of that of 5 March, and consisted largely of a diatribe against the companies in general. The West Middlesex Company was singled out for special opprobrium, but the other new companies were also abused with vigour and venom. Weale's target was the whole principle of having water, 'one of the elements necessary to existence, the same as light and air, and not merely an article of subsistence like corn', being supplied by joint-stock companies whose

principal concern must always be their own profits rather than the welfare of the community. He considered that the supply of water should be 'profuse, rather than merely sufficient, and gratuitous to the poor'. 'The costs of the works required to provide the supply', Weale believed, 'and the expenses attending the delivery of it, should be defrayed out of a local revenue, in the same manner as the expenses of the pavements, drains, police &c are, raised by an equitable assessment on the property of the district; and the management of such an establishment should be placed in the hands of commissioners, under the like regulations as the commissioners of sewers'. Weale's thinking is thus shown to be ahead of his time: he aimed to place the water supply of London in the hands of a public body such as the later Metropolitan Water Board. He also gave closely reasoned arguments against allowing the present companies, if they were to continue in existence, any increase in charges above the levels of 1810. He quoted at length from the publicity material distributed by the West Middlesex and Grand Junction Companies in their early days, promising abundant water at high pressure and low cost, and argued that they should now be compelled to perform as they had promised.

Weale was followed by a series of witnesses who complained of excessive charges levied by the companies, and the Committee recalled officers of the companies concerned to answer the complaints. Shirley David Beare, for example, was a partner of Mr Hatchett, a hotel-keeper in Piccadilly, and testified that until 1814 they had paid a total of £11.4s in water charges, £9.2s to the Chelsea Company and two guineas to the New River. The Grand Junction Company had then solicited their custom, offering to supply the hotel for £6 per annum, and stating that as the supply would be constant Mr Hatchett 'might confidently do away with many cisterns which were then necessary as reservoirs from the two former companies'. From late 1818, however, the supply became intermittent as well as 'scanty', and in 1820 the charges were increased to 25 guineas per annum, the increase being back-dated to Michaelmas 1818. William Anderson, engineer of the Grand Junction Company, explained that the Company had employed one of the waiters in the hotel as a spy to ascertain the amount of water used, and had based the increased charge on the number of times the water-closets were flushed. He attributed the inconvenience suffered by the hotel when the supply became intermittent to a lack of proper cisterns, and justified the increased charges by pointing out that the Pulteney Hotel and the Duke of Wellington each paid £25 a year. It became evident that Beare's

recollection of events and conversations differed from Anderson's, and such discrepancies between customers' and officers' statements were apparent throughout the evidence heard. It did emerge from this case, however, that the Grand Junction Company had, in 1818, suddenly and without notice ceased the constant supply which had previously been its major advantage over its rivals and adopted their intermittent system.

The Committee, having heard a great number of complaints and the companies' answers to them, went on to examine the financial bases of the companies. Statements were taken from the company secretaries as to the amount of capital raised and expended and the fluctuations of share prices, and calculations made as to the running expenses and profits of the companies. Matthias Koops Knight, the Secretary of the West Middlesex Company, was subjected to particularly searching questioning in view of Weale's allegations against his company's proprietors, and was able to satisfy the Committee that there had been no impropriety in the financing of the Company.

Having completed its evidence, the Committee then took six weeks to draw up its report, which was presented to the House of Commons on 18 May 1821. The Committee found that each of the 'old' water companies, namely the London Bridge, New River and Chelsea, had each possessed an effective monopoly in its own district, and that these monopolies had been overthrown by the establishment of the East London, West Middlesex and Grand Junction Companies. 'The principle of the acts under which these companies were instituted', considered the Committee, 'was to encourage competition; and certainly in this as in other cases, it is only from competition...that a perfect security can be had for good supply'. Nevertheless, 'from the peculiar nature of these undertakings, the principle of competition requires to be guarded by particular checks and limits in its application to them, in order to render it effectual without the risk of destruction to the competing parties, and thereby ultimately of a serious injury to the public'. The Committee thus recognised that the capital assets of water companies consisted of their pipes and machinery which were merely the means of delivery for a commodity which in itself had no market value, making the companies capital-intensive. In these circumstances, where a genuine competition was carried on it could be only at the cost of failing to obtain any reasonable return on the large capital invested, and would eventually result in ruin. The 'General Arrangement' among the companies and the buying-out of the York Buildings and London Bridge Works, then, 'carrying with

them so much appearance of a combination against the public', appeared to have been 'measures of self-preservation'. The Committee was therefore satisfied that the alarm and agitation which had been excited against the companies from early 1818 onwards was unjustified, albeit understandable.

The Committee went on to consider the question of the reasonableness or otherwise of the companies' charges. Firstly, they stated that the supply of water to London had undoubtedly improved in respect of quantity, regularity and reliability, 'with the further benefit that the security against fire is increased, and that by the establishment of communications between their works, the powers of the companies may be brought in aid of each other, in case of emergency'. They were of the opinion that 'the present supply of water to London is very superior to that enjoyed by any other city in Europe' - high praise for the companies. However, the report went on to consider the allegations that the new companies had expended capital far more prodigally than had been necessary, and were now seeking to obtain a return on that excessive capital by levying exorbitant charges. The Committee did not feel themselves competent to judge whether the new companies' works might have been constructed more cheaply; 'it could not be safely decided, so as to justify an interference of the Legislature affecting private property, without the assistance of very skilful and experienced engineers, unconnected with the parties concerned, and having the opportunity of an actual survey...to guide their judgements'. Nevertheless, on the basis of the figures given to them, they did not agree with the companies' critics that the old levels of charges would give an adequate return. They were, however, disturbed by the untrammelled power which each company possessed to fix its own level of charges, although they recognised that 'though the experiment of competition...has failed, the present situation of the companies is such, that a considerable practical check against abuse...may be expected from the apprehension of its renewal'. They therefore proposed that a Bill should be introduced into Parliament to fix the maximum charges for water supply at a level 25% above that of 1810 for the 'ordinary service', 'leaving high and extra services as matters of agreement between the parties, but defining the one and the other'. The Bill should be limited to four years, and the whole question reconsidered at the end of that time after careful examination of the companies' books.

The findings of the Committee were therefore generally favourable to the companies, even though the Chairman had been one of their leading opponents. In the event, although Freemantle did introduce a Bill to regulate charges for the next four years it failed to obtain a second reading.¹ The companies remained within their agreed boundaries, although expanding their districts to keep pace with the outward growth of London, and retained the power to fix their own levels of charges. Several other Parliamentary Committees and Royal Commissions inquired into the water supply of London over the next thirty years, but no general Act was imposed on the companies until the Metropolis Water Act of 1852 - and that Act, being concerned mainly with water quality, did not even mention the level of charges.

1. The Times, 15 June 1821.

CHAPTER 7

FRAUD AND INVESTMENT: THE MEN BEHIND THE COMPANIES

The projectors and proprietors of the new water companies were not, by and large, men who have left a mark on history. They must have been men of substance to have bought £100 shares, even by instalments as was the usual method, but they seem to have been mainly London-based merchants and tradesmen rather than landed gentry or 'gentlemen of fortune'. Of the 137 proprietors of the West Middlesex Company who received its first dividend in 1810, 90 can be identified with reasonable certainty: only 14 of these are accorded the title 'Esquire' by the London and Court directories. They included one peer, one peer's son and four naval officers, but no fewer than 70 were tradesmen of various kinds, among them merchants, lawyers, chemists, linen-drapers, weavers, dyers and the truss-maker to the New Rupture Society. They were no doubt prominent in their own world of business, but they were not men in public life and it is therefore difficult to identify their interests and analyse their motives. In a few cases, however, we know a little more than the names, addresses and professions of these people.

Perhaps the most important single individual in this episode was Ralph Dodd, the north country engineer who was instrumental in founding the South London, West Middlesex and East London Companies. His early career and activities up to his dismissal from his posts as Engineer to two of those companies have been mentioned in Chapter 2. Dodd's claim to notice rests on his having seen the possibilities for companies located on the outskirts of London and supplying water to the growing suburbs and semi-rural areas beyond the city, a vision which he published in 1805.¹ Despite his lack of experience with water works, his practical involvement up to that date having been with canals, all the companies which he projected were actually established and indeed lasted for a century, eventually supplying water to far larger areas and on a much greater scale than he could have imagined; but he had no part in their long-term success. As noticed above, he was dismissed by the South London Company's Directors in August 1805, a bare month after the Company's Act had passed, and by the East London Company in August 1807, even before that Company's Act had become law. The West Middlesex Company's original Engineer, his son Barrodale Robert Dodd,² received

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1. R. Dodd, Observations on Water (London 1805).
 2. The younger Dodd was generally known as Robert, signing himself B.R., R. and Robert Dodd on different occasions. This has led to confusion of him with his father: for instance H.W. Dickinson, in The Water Supply of Greater London (London 1954) misnames Ralph as Robert.

the same treatment from the Directors, who picked a quarrel with him and dismissed him in November 1806. Thus, only two years after the publication of the schemes for new water works, three companies had been established but all three had expelled the Dodds.

At the same time as Ralph Dodd was founding new water companies in London, he was also active in promoting the construction of bridges over the Thames, with the same lack of personal success. In 1806 he was engaged as engineer on the Vauxhall Bridge project, but was dismissed from this position in 1809, being eventually replaced by his rival John Rennie. Dodd also projected water works in Kent (1809, based in the Deptford/Greenwich area), Birmingham, Colchester and Manchester and Salford, but by 1810, although the companies were progressing, he had been squeezed out of all of them. Clearly, either his ambitions and ideas were not matched by his abilities as an engineer, or he had some character defect which made him difficult to work with. Support for the second alternative is found in a report of a hearing at Chelmsford Assizes in 1810, when Dodd was convicted of assault on the clerk to the Colchester Water Works Company. He had formerly been employed as Engineer by the Company's Directors, 'but for very good reasons they thought it proper to dismiss him'. The assault occurred when the clerk refused to let the ex-Engineer have the key to the works. Dodd's Counsel said that he was 'an irritable man'; no doubt by 1810 he had reason to be irritable with water companies.¹ Earlier, in 1808, an information had been laid against him in respect of his proceedings in projecting various joint stock companies, it being alleged that he had acted in breach of the 'Bubble Act' of 1720 in raising capital without first obtaining parliamentary authority. The case was heard in the Court of King's Bench in May 1808, and excited public interest as being the first prosecution under the Bubble Act for 88 years. Lord Ellenborough gave judgement in Dodd's favour because the Act had been generally disregarded ever since 1720, and because 'it is a prosecution instituted by a person not injured or defrauded, the immediate object of the Statute being the protection of the unwary'.² Nevertheless, despite the failure of the prosecution Dodd had clearly broken the Act, and the fact that it was made indicates that some at least considered him dishonest rather than merely incompetent. Prior to this, in September 1807, the East

1. The Times, 16 August 1810.

2. The Times, 31 May 1808. The records of the case held in the British Museum were destroyed in an air-raid in 1940.

London Company's Directors thought it necessary to advertise in the London Gazette that Ralph Walker was now the Company's Engineer and Ralph Dodd had no connection with the concern,¹ and Robert Buck, soliciting employment with the Company in October 1807, stressed that he had no connection with Dodd. Buck felt that he should make the point because 'such a Character would tarnish that of any other person who might be considered to coincide with him'.² As early as 1802, before he had any connection with water works companies, Dodd had been dismissed from his position as an engineer on the Grand Surrey Canal.³ Unfortunately, the reasons for Dodd's many dismissals are never specified, but he can scarcely have been either a capable engineer or a trustworthy financier.

After his sad experiences between 1805 and 1810, Dodd gave up water works companies, turning instead to bridges and steam engines. He had patented a fire-proof bridge in 1808, and worked with George Stephenson in patenting a steam locomotive in 1815. From 1814 he pioneered steamboats, and his death in 1822 followed an accident in which the boiler of a steamboat burst. His activities cannot have been profitable, for he died in poverty.⁴ Of his sons, who had worked with him, George died of drink in 1827, while Barrodale Robert lived on until 1837 without achieving anything. Ralph Dodd's career was rather spitefully summed up in 1815 by his far more successful rival, John Rennie: 'With respect to Mr Dodd....I do not know a work he has successfully executed, but I know several in which he has completely failed'.⁵ To the Editor of the Mechanic's Magazine (1828), Dodd was 'a very ingenious schemer without any practical talent whatever';⁶ but if he had no practical talent it is surprising that he was able to find employment with successive companies and in different engineering fields. His claim to fame is undoubtedly his initiation of a new style of water company: his shortcomings were apparently many and serious, but he left flourishing water companies in London and other parts of the country as his memorial.

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1. ELWWC, 1 and 15 September 1807. In the event, the advertisement appeared without the reference to Dodd.
 2. ELWWC, 14 October 1807.
 3. C. Hadfield, British Canals (6th Edn, London 1979), 157.
 4. J.G. James, 'Ralph Dodd, The Very Ingenious Schemer', in Transactions of the Newcomen Society, Vol 47 (1974-6), 161-178; also Annual Biography and Obituary (London 1823).
 5. Quoted in James, loc cit, 161.
 6. Ibid.

A very different character was George Boulton Mainwaring, son of William Mainwaring who was Tory Member of Parliament for Middlesex from 1784 to 1802 (described by George Rudé as 'the corrupt old manipulator of the local bench'¹). George Mainwaring defeated Sir Francis Burdett by five votes in the famous Middlesex election of 1804, and in 1806 his help was requested by the projectors of the East London Water Works Company in piloting their Bill through Parliament.² Although he lost his seat in October 1806, and was therefore unable to be of much assistance, he took a very active part in setting up the Company and indeed took the chair at the first meeting of the Directors in August 1807.³ William Mainwaring acted as Treasurer of the concern.

Under its Act of 1807, the East London Company was empowered to raise £100,000 in £100 shares, with the proviso that no individual was to hold more than 20 shares. By the end of 1807, although all shares had been taken, only £15,000 had actually been paid as instalments. In December 1807 it became apparent that considerably more capital would be required if the Company were to purchase the West Ham and Shadwell works from the London Dock Company; Ralph Walker, the Engineer, valued those works at £60,000. The leading role in negotiating with the London Dock Company was taken by George Boulton Mainwaring, who on 15 December informed the Directors that the asking price was £130,000, that the vendors would not reduce that price at all, and that a definite answer was required by 17 December.⁴ The Directors were 'greatly surpriz'd and disheartened by the enormity of the sum'; they felt that the proprietors would not agree to take on the responsibility for as many new shares as would be needed. There were 120 proprietors at the time, so each would be called upon to subscribe £1,000 on average, over and above the calls to which they were already committed. The possibility of extending the body of proprietors by making shares generally available to the public does not seem to have been considered. On 17 December, Mainwaring informed the Directors that 'he had applied to several most opulent and respectable friends of his', and these had agreed to take on the responsibility for 400 shares, 'under the express condition that such shares

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1. G. Rudé, Hanoverian London 1714-1808 (London 1971), 249.
 2. PRO, Chancery Records, Division II, Winter, Johnson and Turton; Bundle 636 (East London Water Works Company v Hubbard); Bundle 645 (East London Water Works Company v Mainwaring).
 3. ELWWC, 18 August 1807.
 4. As note 2; pleading by Counsel for the plaintiffs.

should not be disposed of to prevent any depreciation in the value of such shares'. This meant that Mainwaring's friends agreed to subscribe £40,000, and the Directors, relieved, decided that they would take 300 more of the new shares, leaving 600 to be divided among the proprietors at large. It was regarded as particularly important that shares should not be sold on the open market, since such sales could well lead to share prices being manipulated by speculators, resulting in unrealistic increases in value being followed by collapse - the 'bubble' effect. The Directors' proceedings were reported to a General Assembly of the proprietors on 7 January 1808. It quickly became apparent that the proprietors, far from being unwilling to take on responsibility for more shares, suspected the Directors of trying to secure an undue proportion of the expected vast profits of the Company by reserving so many of the new shares to themselves.¹ The Assembly did not approve the reservation of 300 shares to the Directors, and would have disallowed the allocation of 400 to Mainwaring and his friends had he not pleaded that 'he had entered into an absolute promise and pledge to his said friends that such 400 shares should be so appropriated to them and that his honor and character were pledged to them'. He also pointed out that 'the opulence and weight of his said friends would make their Patronage and support as Proprietors very desirable to the Company, and that the Honor and propriety of their character would secure the performance of the said Condition not to sell the shares'.² The Assembly then decided to permit the arrangement, so Mainwaring was allotted 400 shares and the remainder were divided equally among the proprietors. At the next General Assembly, on 8 April 1808, the Directors were commended for their 'very able and judicious management', and Mainwaring for his 'very able, upright and impartial conduct'.³ The Company duly obtained its second Act, empowering it to raise £130,000 in £100 shares and raising the limit on individual share holdings from 20 to 50.

During the next few months, disquieting reports reached the Directors from the Secretary that some of the shares allocated to Mainwaring and his friends had in fact been transferred to outsiders, and at a considerable premium. The deposits on the shares had been paid in the names of Samuel Gurney, Thomas Richardson, William Prescott, George Grote, John Masterman, Daniel Mildred and William Hubbard; Hubbard was

1. Ibid: also ELWVC - GA, 7 January 1808.

2. Ibid.

3. ELWVC- GA, 8 April 1808.

an 'opulent merchant' and all the others were rich and well-known bankers, so the Directors were very surprised that they should have found it necessary to dispose of their shares. In June 1808 the Directors conveyed their 'disapprobation' to Mainwaring, but shortly afterwards fifteen of Masterman's shares were transferred. The Directors' disquiet increased, as they knew Masterman to be very rich and respectable: he 'could not need the money, and would not deceive'.¹ They therefore decided to investigate the relationship between Mainwaring and his alleged friends. One of the proprietors, Joseph Pattison, called on the bankers and found that none of them considered himself to be a proprietor of the Company. Gurney, Richardson, Mildred and Masterman had agreed to have shares registered in their names but only as a convenience to Hubbard, who remained the owner, while Prescott and Grote knew nothing of the transaction at all. It became apparent that the arrangement set up by Mainwaring, with Hubbard's connivance, was a subterfuge intended to evade the statutory restriction on shareholdings.

The matter was reported to a General Assembly of Proprietors on 6 October 1808, by which time 181 of the 400 shares had been resold at premiums of between £50 and 70 guineas per share, a profit of between £10,000 and £12,000 'which may be fairly presumed to have passed through the hands of the said George Boulton Mainwaring and William Hubbard or one of them'. The bankers were exonerated of all blame, as being unaware of the purpose behind Hubbard's request for the use of their names; they had evidently been imposed upon by Mainwaring and Hubbard. The Assembly resolved to take action in equity for the recovery of the shares improperly allocated and the profits improperly made. Mainwaring and Hubbard should be allowed to retain only the 50 shares each which had been registered in their own names.²

George and William Mainwaring resigned from their positions as Director and Treasurer respectively of the East London Company in November 1808. At the next General Assembly of proprietors, on 17 November, it was reported by the Directors that Hubbard and Mainwaring had attempted to dispose of still more shares but that the Company had refused to register the transfers. Counsel's opinion had been obtained, to the effect that 'the mode by which the appropriation of the 400 shares was obtained was a gross fraud on the Company and the said George Boulton Mainwaring and William Hubbard will not be suffered to retain

1. East London Water Works Company v Mainwaring, loc cit.

2. ELWVC - GA, 6 October 1808.

any benefit from the transaction'. The bankers, however, 'have been deceived and imposed upon...and thereby induced to lend their names... they have been perfectly innocent of the least dishonorable Intention'.¹

The Company's suit against Hubbard, Mainwaring and four of the bankers (those who still retained shares registered in their names) was heard by the Lord Chancellor on 20-21 March 1809. Counsel for the plaintiffs put the Company's case with some strength, and Mainwaring then replied, alleging that he had acted throughout in the best interests of the Company. He denied that he had undertaken not to resell any of the shares taken by himself and his 'friends', whom he knew only through Hubbard, not personally. He asserted that in December 1807 the high price demanded by the London Dock Company had so depressed him about the East London Company's prospects that he had sold five of his shares. It had appeared to him that the only way of placing the Company on a sound basis was to obtain rich backers, and on meeting Hubbard on 16 December he had asked him to take on the responsibility for 350 shares. Later, in January 1808, he had asked Hubbard for the names of six wealthy friends in whose names 50 shares apiece could be registered. Hubbard's answer to the Company's suit was a frank admission that he had taken 350 of the 400 shares, 50 in his own name and 300 held 'in trust for him' by the bankers. He had initially been unaware of the statutory limitation on individual shareholdings, and of the restriction on reselling shares imposed by the Company. He had made a profit of about £8,500 by reselling the shares, and thought that he was entitled to retain this. The Lord Chancellor, however, ruled that the six bankers were not bona fide proprietors of the Company, and that Hubbard and Mainwaring were thus not entitled to more than 50 shares each. He gave judgement in the Company's favour, Hubbard being ordered to repay £8,564.8s.4d and Mainwaring to repay £550. The bankers were to restore their remaining shares to the Company. Hubbard, Mainwaring and the Company were each to bear their own costs.²

Mainwaring appears to have been the leading light in this attempted fraud, even though Hubbard made vastly greater profits: during the hearing it was suggested that Hubbard had agreed to make some of his profits over to Mainwaring, but this was denied by both. In the event, both of them made not inconsiderable profits out of selling

1. ELWWC - GA, 17 November 1808.

2. East London Water Works Company v Hubbard and Mainwaring, loc cit; also ELWWC - GA, 6 April 1809.

the 50 shares each which they were allowed to have, so all was not in vain from their standpoint. Mainwaring was certainly not disenchanted with water companies, for in 1811 he reappeared as one of the original Directors of the Grand Junction Water Works Company, only to be compelled to resign in 1812 because of his association with the Stone Pipe Company.¹

One of the leading supporters of George Boulton Mainwaring at the crucial General Assembly of 7 January 1808 was Thomas Lumley, a merchant of Gutter Lane in the City, who described Mainwaring as 'the Corner Stone of the said Undertaking'.² Lumley was an active proprietor and promoter of the East London and West Middlesex Companies, being a Director of both and, from 1809, Chairman of the latter. Equally prominent in both companies was George Watts, a chemist in the Strand, who had led the agitation in the East London Company against Mainwaring. Mainwaring, indeed, told the Lord Chancellor that Watts had tried to buy some of the 400 disputed shares from him at an early stage, and that his refusal to sell was 'the cause of the dissatisfaction which the said George Watts hath since affected and pretended on the subject of this Defendant's Conduct'.³ In November 1809 Lumley and Watts were on a committee of West Middlesex Company Directors negotiating for the purchase of the York Buildings water works.⁴ The asking price was £26,000, and as the West Middlesex offer was increased only to £22,000 the negotiations failed. Almost a year later, in November 1810, it emerged that a group of West Middlesex Directors, including Lumley, Watts and two other members of the negotiating committee, had purchased the York Buildings works and were actively engaged in expanding its operations. This came out at the meeting of proprietors on 6 November, when Lumley complained that 'the Character of himself and some of his Colleagues in the York Buildings Water Works, also Directors of this Company, had been aspersed out of Doors in consequence of his and their purchase of the York Buildings Water Works'. He asserted that the West Middlesex Company could not have effected the purchase without an Act of Parliament (although this had not been mentioned a year before). The meeting seemed to find it highly suspicious that the Company's committee should have put through the purchase on their own account on the very next day after declining on cost grounds to buy on the

1. GJWWC - GA, 3 December 1812.

2. East London Water Works Company v Mainwaring, loc cit.

3. Ibid.

4. See Chapter 2, above.

Company's behalf. Although another proprietor, George Clay, proposed a motion that it was highly desirable for the two companies to have directors in common in order to co-ordinate their activities, an amendment was put that no Director of the West Middlesex Company should also be a Director of a competing concern, and that the appointments of Lumley and his colleagues as Directors should cease forthwith. This amendment was declared carried on a show of hands, but a ballot was demanded, which defeated the amendment by 142 votes to 120.¹ Lumley and his friends were thus saved from ignominious dismissal, but they had obviously lost the confidence of many of the proprietors.

Lumley, Watts and five other Directors (more than half the Board) resigned with effect from 10 December 1810. Immediately afterwards, Lumley wrote to the West Middlesex Company proposing a friendly arrangement concerning areas of supply, but on 3 January 1811 the new Directors resolved that 'no treaty' should be made with the York Buildings Company. They then demanded that the latter should entirely exclude itself from the area supplied by the West Middlesex Company, which demand was not accepted.²

Lumley therefore left the Board of the West Middlesex Company under a cloud. His departure from the direction of the East London Company was similar: in April 1810 he resigned, with another Director, due to 'aspersions' cast on his conduct by a General Assembly of the proprietors. Unfortunately these aspersions were not minuted so we do not know their nature, but they were probably due to the extreme fluctuations in share prices.³ The evidence for this is to be found in the report of the Company's Audit Committee in 1812, which 'endeavoured to trace the excessive elevation that took place while the Works were yet unfinished, and the depression that followed after their completion'. The 'prodigious rise', thought the auditors, was due to 'the very injudicious and rapid increase of Shares and the mode of appropriation recommended by the Directors', assisted by the practice of declaring dividends out of capital at a time when no net profits had been made. The auditors were disturbed to find that 'the whole of the Directors who have retired from that situation, with one single exception, have secured to themselves and families very large sums of Money by the sale of their Shares and Appropriations', and had therefore taken Counsel's opinion as to

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1. WMWVC, 6 November 1810.
 2. WMWVC, 3, 17 and 23 January 1811.
 3. ELWVC - GA, 5 April 1810; ELWVC, 11 April 1810.

whether these former Directors could be prosecuted. Although no such legal action was thought practicable, the conduct of the former Directors was condemned, and the present Directors were required to prepare full half-yearly accounts and submit them to auditors, in order to avoid any repetition of that questionable conduct.¹ It seems clear from this that Lumley and his friends were suspected of being speculators whose main interest in the Company was to make quick profits by reselling shares.

The group of West Middlesex Company Directors who took over the York Buildings Water Works in late 1809 spent the next few years in raising £150,000 capital and expending it in efforts to compete with the other water companies, including the West Middlesex. As noted in Chapter 4, these attempts ended in complete failure with the works being bought out by the New River Company. Lumley and his associates had expected to make large profits out of increased rental, but these hopes were not realised: 'they never received a dividend out of any profit whatever: from 1810 they paid two dividends, of £1 a share each, but it was out of the capital'.² This last proceeding, of paying dividends out of capital in order to give possible investors a false idea of the company's profitability, had previously been carried out by the same men in the East London and West Middlesex Companies. Lumley apparently did not make any long-term profit out of his involvement with water companies, for he was declared bankrupt in 1813.³ Presumably, any profit which he made out of share dealings with the West Middlesex and East London Companies was sunk in the York Buildings works.

George Boulton Mainwaring, Thomas Lumley and their friends seem, then, to have been speculators rather than bona fide company projectors. Suspicions about the motives of many of the early Directors of the East London and West Middlesex Companies were voiced at the time, and were vigorously revived in 1819 by James Weale of the Anti-Water Monopoly Association. Speaking before the Lords Committee considering the West Middlesex and Grand Junction Water Works Bill, he alleged that 'several of the original subscribers to these works advanced their money...from a deliberate design to make the undertaking...a means subservient to their dishonest schemes for plundering unwary and credulous persons'. Referring particularly to the West Middlesex Company, he said that 'many

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1. ELWVC - GA, 4 February 1812.
 2. 1821 Minutes: evidence of James Dupin.
 3. The Times, 16 August 1813.

of the original subscribers, who had promoted this scandalous fraud... sold their shares and retired from the concern', whereupon share prices collapsed.¹ Weale's allegations are borne out by the West Middlesex and East London Companies' share price fluctuations in 1809-11, the accusations made against Lumley and his associates in 1810, and the East London Company auditors' report in 1812 (of which Weale was probably unaware). The allegations were not answered in 1819, but when Weale repeated them before the 1821 Parliamentary Select Committee he did provoke a response. This time he described the original projectors of the West Middlesex Company as 'a set of city speculators', and compared the undertaking to Law's Mississippi scheme, on which he had written a book.² The new companies were set up, he alleged, 'without any permanent regard to the public benefit, but merely to promote...speculation in the shares of the companies; that they looked to profit from increasing the market-price of the shares which they possessed, and realizing the premiums which they could obtain upon a transfer of those shares'.³ The reply to these accusations came from M.K. Knight, Secretary of the West Middlesex Company, who maintained that 'a more unfounded assertion was never thrown on any man or body of men'. He pointed out that in 1812 shares in the Company were held by 224 individuals, of whom only 84 had since sold out, some at a considerable loss, while 210 proprietors had since bought in. Knight had examined the share transfers between April and June 1810, the period of sharpest rise in price, and found that only three individuals had bought low and sold high, none of them having any connection with the direction of the concern. Knight took this as conclusive evidence that Weale's allegations were unfounded.⁴ He omitted to mention, however, that some of the original proprietors, who had bought at par, had sold their shares at a premium in 1810; among these was Thomas Lumley, who sold three shares at £50 premium in August, five at £20 premium in November and five at £12 premium in December. At that time premiums were falling and the Company was discouraging sales as being likely to depress share values further, so Lumley's action is surprising if he had the best interests of the Company at heart.⁵ Knight himself, indeed, had appeared less convinced of the Directors'

1. 1819 Minutes.

2. The Mississippi scheme was the French equivalent of the South Sea Bubble: fantastic increases in share prices were followed by a catastrophic fall. Law had to flee the country after the collapse.

3. 1821 Minutes: evidence of James Weale.

4. 1821 Minutes: evidence of M.K. Knight.

5. These figures are taken from the incomplete surviving share transfer certificates of the West Middlesex Company.

innocence when he wrote to a proprietor in 1815 of 'the system of Delusion which, unfortunately for many, was practised by some of the Parties who had the conduct of this Undertaking'.¹ He can only have meant Lumley and his friends.

Some of the leading spirits in the new water companies, then, were probably speculators whose main concern was to make quick profits, although in Lumley's case it seems that he later lost those profits in another water company. The ordinary investor makes no such dramatic appearances in the records: his complaints at General Assemblies of Proprietors are briefly referred to or glossed over in the Minutes, and any correspondence he had with the companies has generally not survived. Perhaps more typical than men such as Lumley, Mainwaring and Watts was William Ford of Edinburgh, who in 1810 bought five £100 shares in the West Middlesex Company, and in 1815 wrote to the Company Secretary to enquire why he had had no return on his investment. M.K. Knight's reply was a masterpiece; perhaps the letter owes its preservation to his satisfaction with it. He explained that Ford, far from being entitled to any dividend, should forfeit £60 which he had paid as instalments on a sixth share because he had been tardy in paying the balance of £40. However, Knight undertook to persuade the Directors not to insist on forfeiture in this case, provided that the £40 was now promptly paid. He was also pleased to inform Ford that as new nominal £100 shares were being issued to existing shareholders for only £30 each, Ford's new investment would entitle him to three of these shares - the odd £10 would have to be written off.² The gullible Ford paid not only the £40 but also an additional £20 which entitled him to a fourth new share, but evidently required some further explanation, for Knight wrote to him again a month later, urging him to buy still more shares. 'The only way of retrieving your property, now, is to take as many Shares at the reduced price as you may obtain'.³ A month later still, Knight wrote again, explaining:

'The Capital expended in this concern being upwards of £350,000, the Difference between the Shares at par and the present value (£30) has been lost by somebody. As matters at present stand you are one of the Losers.... According to my Calculation you ought to possess at

1. M.K. Knight to William Ford, 28 August 1815.

2. Ibid.

3. M.K. Knight to William Ford, 20 September 1815.

least 19 Shares to reimburse the loss on the first or high-priced Shares: I do not hesitate, therefore, to recommend you to subscribe for the 10 Shares you propose'.

He ingeniously explained the benefits of buying even more:

'divide the capital, say £360,000...by 7,400 - the total Number of Shares raised and to be raised, it shows the average value of each Share to be about £40. If you take as many of the new Shares as will reduce the average price of your Shares to that sum, you cannot lose. All below that will be profit'.¹

There is no record of whether Ford actually did buy more shares, but if he did he no doubt regretted it, for no dividends were paid by the Company until October 1819, and that was only 15s per share.

These, then, were the men behind the new water companies. They seem to have consisted mainly of well-to-do merchants and tradesmen with a few hundreds to invest, looking for a long-term investment which would show a steady dividend, but they undoubtedly included a minority of 'get-rich-quick' speculators whose involvement in the companies' early days intensified, if it did not cause, the tremendous fluctuation in share values. M.K. Knight may be permitted a sardonic comment on their activities, in conclusion: in 1814, writing to a proprietor who had missed the General Assembly, he said

'There was little Novelty at the Meeting on the 1st Inst unless the judicious determination of the Directors and the proprietors, not to pay a Dividend until they could pay one, bona fide, may be deemed a Novelty'.²

1. M.K. Knight to William Ford, 19 October 1815.

2. M.K. Knight to John Daniel Hose, 9 November 1814.

CHAPTER 8

OVERVIEW, AND THE WAY AHEAD

As I have attempted to show in Chapter 1, the circumstances of London's water supply during the first decade of the nineteenth century were very favourable to the establishment of new concerns. The standard of service given by the New River and Chelsea Companies was not at all adequate for the new demands. The growth in habits of cleanliness, the greater emphasis on washing both of the human body and of clothing, the spread of the water-closet and fixed bath, and above all the continued growth of London's outskirts, all increased demand to the point at which the existing water companies were unable to meet it. Investors had become accustomed to buying and selling shares in concerns such as canal and dock companies, and misconceptions as to the profitability of the old water companies led many to believe that great profits could quickly be made by new ventures. The 72 New River Company shares, each worth some £10,000 in the early nineteenth century, were wrongly but widely believed to have been originally £100 shares, and since they regularly produced dividends of £400 to £500 annually the Company was thought to make huge and unwarrantable profits.¹

The general economic position of England between about 1805 and 1810 also favoured the establishment of joint stock companies. The increasing domination of Europe by France and, from 1806, the progressive closure of European ports to British trade, led to a diminution of trade and the consequent channelling of investment into projects at home.² From the middle of 1808 onwards, however, events abroad (the Spanish rising of 1808 which opened South American markets to Britain, the expulsion of the French from Portugal in 1809 and again in 1811, and the French attack on Russia in 1812) resulted in a revival of foreign trade which even the outbreak of war with the United States in 1812 could not halt.³ One could thus expect to see increased investment at home up to about 1810, and a gradual falling-off thereafter until 1815. This is amply borne out by the experience of the new water companies established

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1. See, for example, the letter from 'Aquarius' to The Times, 11 March 1816. Also, James Dupin told the 1821 Select Committee that the group who took over the York Buildings Company in 1809 acted from 'a mere idea that they could make a fortune, as the New River company had done' (1821 Minutes).
 2. W.W. Rostow, British Economy of the Nineteenth Century (Oxford 1948), 16; P. Mathias, The First Industrial Nation (Longman 1973), 493-5. Mathias gives the value of British exports to Europe as £9m per annum in 1807-8, and £28m in 1814.
 3. Rostow, op cit, 16.

in London during the period. The East London Water Works Company, for example (the largest of the new companies), attracted subscriptions of some £3,000 in 1806, £12,000 in 1807, £111,000 in 1808, £92,000 in 1809, £88,000 in 1810, £54,000 in 1811, £7,000 in 1812 and £6,000 in 1815.¹ The West Middlesex Company's pattern of investment was similar, rising from a modest start of £20,000 in 1807 to a peak of £68,000 in 1812 and then falling to £26,000 in 1815, £16,000 in 1816 and £10,000 in 1817.² The fall in investment was not due to lack of need for more funds, for during the whole period the Company was frantically seeking more investment in order to extend its system and thereby compete with its rivals. The capital available had been diverted into more attractive alternatives abroad.

Circumstances after about 1805 were thus conducive to the incorporation of new water companies, in many parts of the country as well as in London. Between 1805 and 1811 no fewer than five water companies commenced operations in the London area alone (the South London, West Middlesex, East London, Kent and Grand Junction Companies), and at the same time the old York Buildings and Borough water works were revitalised by injections of new capital. Altogether, about one and a half million pounds had been invested in these concerns by 1815. These new companies brought with them a new standard of service, for to compete with their rivals they offered a pumped supply at relatively high pressure instead of the old gravity system of wooden pipes, using steam engines and iron pipes. Many areas on the outskirts of London received piped water supplies for the first time, and in London proper the Chelsea and New River Companies were belatedly forced to adopt their rivals' methods in order to keep their customers. Both these companies had to replace their entire wooden distribution systems with iron pipes so as to give an improved 'high service', and to provide water at more frequent intervals. Prior to the competition, for example, the Chelsea Company purported to charge each service with water three times per week, but often failed to give a supply for a week or ten days together; by 1821, however, the Company turned on its supplies four times weekly in some areas, and every day in others.³ Again, in 1810 the New River Company did not

1. 1821 Report, Appendix F.

2. 1821 Report, Appendix G.

3. See the complaints given in the 1810 Minutes, and the 1821 Minutes, evidence of J.C. Lynde.

deliver water higher than the ground floor level in any part of its district, and could not have pumped into its wooden distribution system to give a high-pressure service.¹ By 1821, 'the old cisterns have been raised...for the convenience of a shop, every man endeavours to get his cistern up stairs if he can',² and the Company had been compelled to give a high-pressure supply to meet these demands. The widespread use of iron pipes not only made possible a higher pressure supply but greatly increased the regularity with which a supply could be given: 'There is no comparison in the supply derived through wood and iron; one is extremely uncertain, and the other is as certain as the day comes', because iron distribution systems were not afflicted by the constant leakages which were inevitable where wooden pipes were used.³ In accounting for the increased amount of water used by 1821, one water company official referred to 'the luxury of the times; there is a vast number of water closets that are used below, that never were used in 1810',⁴ while another pointed out that 'there is an additional quantity of water used from the additional state of luxury introduced into houses; a great many baths; a great many families brew and wash at home, and that all adds to the consumption'.⁵ By 1821 nearly all houses in London, even the poorest, had access to a piped water supply, whether by a direct connection to the companies' services or by a common standpipe in a court. The quantity of water supplied certainly had increased; in 1809-10 the London water companies supplied some 92,000 houses with an average of about 17 million gallons per day, whereas in 1820 they were supplying nearly 121,000 houses with over 22 million gallons per day.⁶ Although the quantity per house, at about 185 gallons per day, is very little different at the two dates, when allowance is made for the great reduction in wastage consequent on the adoption of iron pipes it is apparent that far more water was actually received by the consumer by 1820. At the time of the Parliamentary inquiry in 1821, then, London's consumers were in receipt of a water supply which was far superior in quantity, regularity and mode of delivery to any which had been given previously.

Despite all this, the new water companies did not prosper in terms of dividends and the old companies saw their profits much reduced, while

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1. 1821 Minutes: evidence of W.C. Mylne.
 2. Ibid.
 3. Ibid.
 4. 1821 Minutes: evidence of W. Anderson.
 5. 1821 Minutes: evidence of W.T. Clark.
 6. 1821 Report, Appendix L.

bitter complaints of overcharging were made by many customers. The events of the competition period, when successive reductions in charges were followed by increases calculated to provide the companies with a 'fair return' on their invested capital, must be taken together with price movements generally in order to explain this paradox. The new companies expended their capitals during the period starting in 1806, reaching their maximum expansion between 1815 and 1817. Most of their materials and contractors' costs were, therefore, paid for during the war years which, in general, tended to be years of high prices. The Rousseau price index, for instance, shows general prices at 206 in 1809 compared with 189 in 1808, falling slightly in 1810-12 but recovering to 203 in 1813 and 202 in 1814 before falling steeply to 164 in 1815, 160 in 1818, 147 in 1819, 132 in 1820 and 121 in 1821. The trend shown by the Rousseau index of industrial product prices is still more marked, a level of 229 in 1809 contrasting with 136 in 1816 and 134 in 1819.¹ Money wages were some 12% higher in 1810 than in 1820,² while coal and iron prices fluctuated in line with prices generally.³ The companies therefore had to pay high prices for the large quantities of bricks and iron they needed to construct their works and the coal which their steam engines consumed. Up to 1818, the competition prevented them from recouping their expenditure by increasing their charges. When they did raise their rates, after the 'General Arrangement', consumers saw wages and prices everywhere falling but water charges greatly increased, and naturally felt that the companies were taking advantage of their new monopoly position to make extortionate profits at the expense of the public; dissatisfaction and conflict inevitably followed. In 1821 James Weale, the leader of the companies' critics, pointed out that since 1810 the value of the currency had increased by at least 20%, so that 'To recur them to the rates of 1810, will alone be a grant to them of an additional remuneration of twenty per cent'.⁴ The view of some consumers that the companies were rapacious exploiters, if not outright swindlers, is understandable: but so, too, is the companies' viewpoint that a reasonable return must be obtained on their invested capital, and that the public must pay for the convenience of improved piped water supplies.

1. B.R. Mitchell and P. Deane, Abstract of British Historical Statistics (Cambridge 1962), 471.

2. Ibid, 343.

3. Ibid, 479-82, 492.

4. 1821 Minutes: evidence of J. Weale.

The conflict of 1819-21 was the first of several during the nineteenth century in which the companies were threatened with ruin, statutory control or outright abolition. Although the 1821 Parliamentary Select Committee in effect recognised the companies' right to exist and to make fair profits (resisting the incipient arguments for 'public control' of water supply put forward by Weale and the Marylebone Select Vestry), it did recommend some statutory control. The failure of the legislature to follow this recommendation with action was typical of the general Parliamentary lack of interest in social matters during the period. From 1827, however, the companies began to come under increasing criticism in respect of poor water quality, a factor hardly mentioned before that date. A Select Committee reported in 1834 but was not followed by action. From 1842, Edwin Chadwick and the Public Health movement took up the cudgels against the water companies, and his agitation resulted in the first statutory controls being imposed on the companies by the Metropolis Water Act of 1852. The Richmond Royal Commission later led to the Metropolis Water Act of 1871, which made constancy of supply mandatory, and in 1902, after two further Royal Commissions, the companies were bought out by the Government and the Metropolitan Water Board established in their place. By then the companies' areas extended from Chigwell in the north to Sevenoaks in the south, and from Sunbury in the west to Dartford in the east; they provided a constant, high-pressure supply of filtered purified water which was stored in covered reservoirs, and had started the great programme of constructing huge storage reservoirs around London, in the Thames and Lee Valleys, which was to be continued through the twentieth century.¹

The achievements of the London water companies in the nineteenth century, in the face of much hostility and periodic attempts to restrict or abolish them, were therefore considerable, and the foundations for those achievements were laid in the few years up to 1821. In those years reservoirs were constructed (some, such as the West Middlesex Company's reservoir on Campden Hill, Kensington, are still in use today), some of the most powerful steam engines in the country were applied to raising water,² and a comprehensive system of iron pipes was laid throughout

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1. For Chadwick and events to 1852, see S.E. Finer, The Life and Times of Sir Edwin Chadwick (London 1952) and R.A. Lewis, Edwin Chadwick and the Public Health Movement 1832-1854 (London 1952); for events after 1871 see A.K. Mukhopadhyay, 'The Politics of London Water', in The London Journal, 1975.
 2. The East London Company, for instance, installed two 55 horsepower Boulton and Watt engines at Old Ford in 1809, and in 1817 added a 76 horsepower engine. The York Buildings Company installed a 62 horsepower engine in 1810. Dickinson, *op cit*, 89.

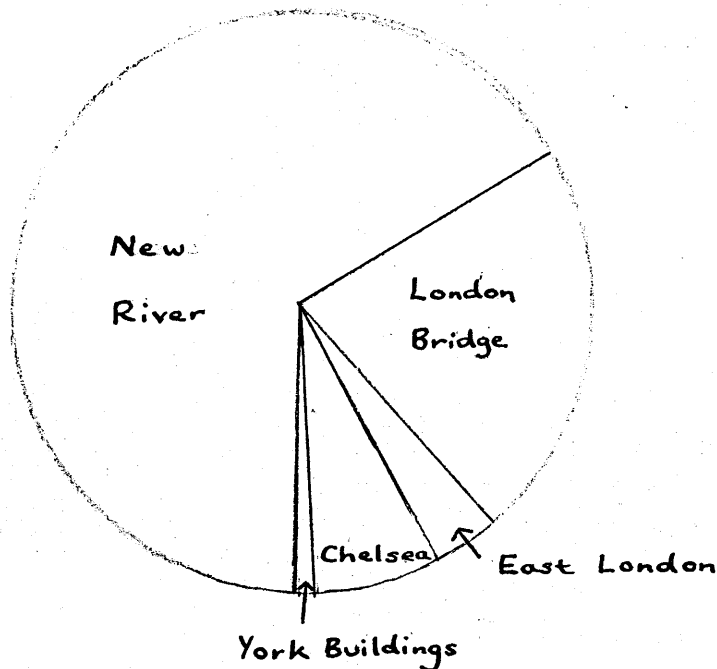
London: all in a fifteen year period. The period between 1805 and 1821 is therefore one of particular significance in the history of London's water supply, not least because it was then that the water companies came to be seen as undertakings which did not operate in the public interest, a view which persisted for the rest of the century and has since been echoed by the majority of historians. Historians have tended to emphasise the conflict while ignoring the achievements,¹ but Londoners should be aware of the debt they owe to the projectors of the early nineteenth-century water companies.

1. For example, Lewis, Finer and Mukhopadhyay (op cit), F. Sheppard, London 1808-1870: The Infernal Wen (London 1971), and T.F. Reddaway, 'London in the Nineteenth Century, The Fight for a Water Supply', in The Nineteenth Century and After, 1950, whose title is suggestive.

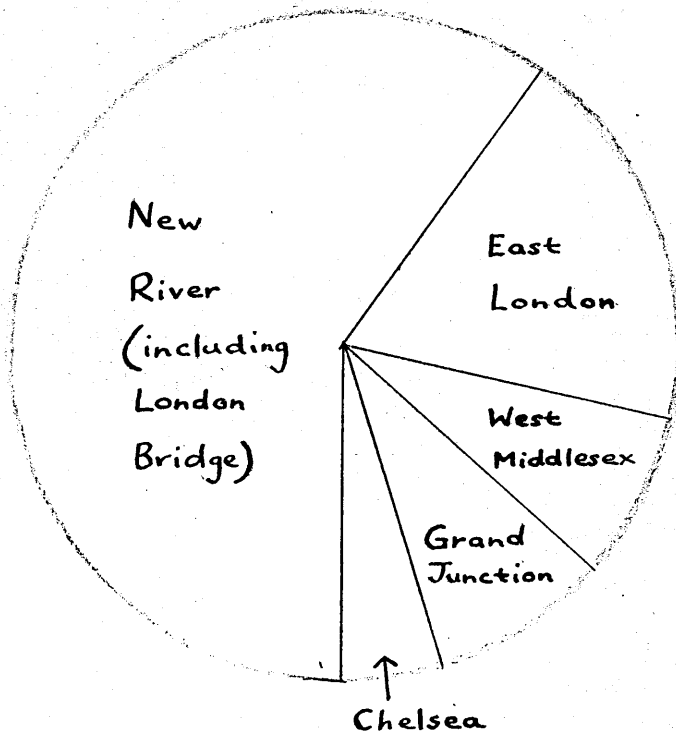
WATER SUPPLIED IN 1809-10

Figures in millions of gallons per day.

New River Company	11.2	London Bridge Works	3.75
Chelsea Company	1.25	East London Company (Shadwell and West Ham)	0.6
York Buildings Works	0.15	Total	16.95



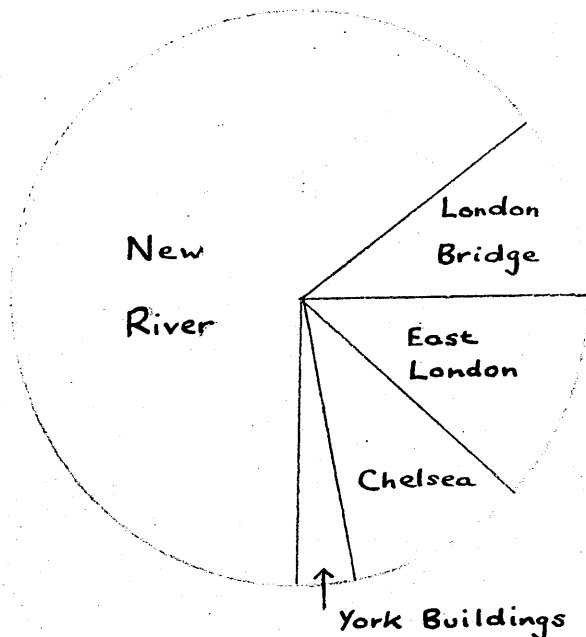
WATER SUPPLIED IN 1820



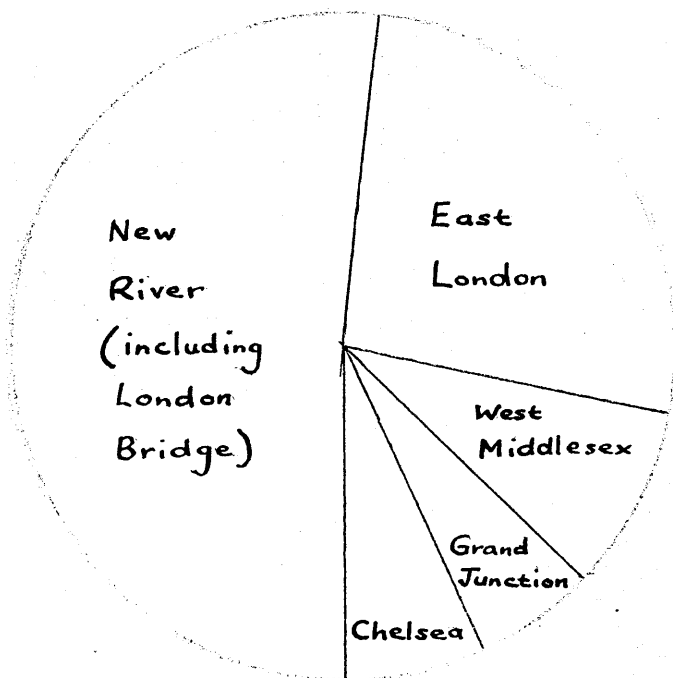
New River Company/London Bridge Works	13.15	East London Company	4.25
Grand Junction Company	1.85	West Middlesex Company	1.75
Chelsea Company	1.00	Total	22.2

HOUSES SUPPLIED IN 1809-10

New River Company	59,058	East London Company (Shadwell and West Ham)	10,739
London Bridge Works	10,317	Chelsea Company	9,477
York Buildings Works	2,250		
		Total	91,841



HOUSES SUPPLIED IN 1820



New River Company/London Bridge Works	62,499	East London Company	32,071
West Middlesex Company	10,350	Chelsea Company	8,632
Grand Junction Company	7,180	Total	120,732

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Minutes of the Meetings of the Directors of the West Middlesex Water Works Company, 1806-1821.

Minutes of the Meetings of the Directors of the East London Water Works Company, 1807-1821.

Minutes of the General Assemblies of the Proprietors of the East London Water Works Company, 1807-1821.

Minutes of the Meetings of the Directors of the Grand Junction Water Works Company, 1811-1821.

Minutes of the General Assemblies of the Proprietors of the Grand Junction Water Works Company, 1811-1821.

Minutes of the Courts of Directors of the Chelsea Water Works Company, 1805-1821.

Minutes of the Courts of Directors of the New River Company, 1805-1821.

Minutes of the Meetings of the Directors of the Lambeth Water Works Company, 1805-1821.

Minutes of the Meetings of the Directors of the Kent Water Works Company, 1809-1810.

Minutes of the Meetings of the Committee of Managers of the London Bridge Water Works Company, 1805-1821.

The Thames Water Authority also holds the Letter Books, Dividend Books and some of the share transfer certificates of the West Middlesex Water Works Company for this period, and two books of press cuttings apparently compiled by that Company.

Another manuscript source held by the Thames Water Authority is:

Minutes of Evidence before the Lords Committee considering the West Middlesex and Grand Junction Water Works Bill, 1819.

These Minutes do not appear to have been printed, presumably because the Bill failed.

The Thames Water Authority no longer employs an archivist, and the records dating from this period are very incompletely catalogued.

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House of Lords Committee Books 51, 52 and 53 (1806-7), containing evidence concerning the original plans for the West Middlesex and East

London water works, held in the House of Lords Record Office, and the pleadings in the case of the Company of Proprietors of the East London Water Works vs George Boulton Mainwaring and others (1809), held in the Chancery Records of the Public Record Office.

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Sisley outlines the development of the London water companies in the light of the current controversy between them and the London County Council. He gives some useful details concerning the competition period, including an account of the Pocock's Well incident.

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Shadwell defends the companies against contemporary criticism. He writes patronisingly of the early nineteenth-century companies that they did their best, and that their level of service was acceptable to a public which had never known anything better. His main point is to show that the companies had developed a satisfactory system without control by local government.

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