CHAPTER 5

DRINK AND PUBLIC HEALTH

In this chapter, one of the key issues explored is the connection between the consumption of alcoholic drink by the poor and the lack of safe drinking water. One reason why the working class poor drank beer was because they had a dietary need for healthy liquid and they must have known from experience that beer made from fermented hops would not lead to the disease and illness in some way linked with an inadequate and unsanitary water supply. There is a causal link between the need to avoid drinking polluted water and the consequent consumption of alcoholic drink made through a process that rendered its water content safe and tasty.

Historians have made this connection before. Brian Harrison did so when he answered the question: 'Why was drinking so widespread in the 1820s (and, by extension, later in the Victorian decades) among those social groups who could least afford it?' He argued that:

> 'Alcoholic drinks were primarily thirst-quenchers. Even in the countryside drinking water was unsafe and scarce, and when population concentration further contaminated supplies, it was natural for town-dwellers to rely increasingly on intoxicants whose water had been pumped from deep wells, or on beverages whose water had been boiled. London's problems in the 1820s epitomise those facing all rapidly growing towns … So difficult was it for a Londoner even to find drinking water in the 1820s that its scarcity created the profession of water-carrier … In the 1840s Chadwick's inspectors were ridiculed by London slum dwellers for supposing that the local water could ever be safe to drink … Even in upper-class households in the 1850s mains supplies were intermittent … In the 1870s many Londoners still believed that water should not be drunk until purified with

spirits … In 1871 Shaftesbury claimed that there was scarcely a pint of water in London which was not distinctly unhealthy, and … a great deal was positively unsafe'.[1]

Richard Wilson also noted that 'beer drinking (was) … a time-honoured thirst quencher' and acknowledged causes for high levels of alcohol consumption other than 'the handiness of pubs and the force of custom and celebration'. These included 'water supplies … remaining hazardous to health before public health measures made an impact in the 1870s'.[2] Nevertheless, I will argue that the significance of the connection between inadequate, unhealthy water supplies and the proliferation of urban drinking places needs even more emphasis, not least because it remained largely unacknowledged during the Victorian period by those outside the Temperance movement. An exploration of an area in which contemporaries were blinkered can be revealing.

The general issue of drink and public health in Norwich, together with the specific issue of the link between the intake of alcoholic drink and the lack of safe drinking water, need to be analysed within the wider framework of the national picture. Brian Harrison's outline above of the water supply problems of London is common to urban centres across Britain in the nineteenth century. The pattern of water supply in Portsmouth, for instance, is typical: improvements in the supply of water remained restricted to those who could afford the price. By 1811 there were two companies building separate waterworks, one on Farlington Marshes, the other on Portsea Island, to serve those prepared to pay for piped water. Technical advances had produced more reliable, durable pumping-engines and standardised cast-iron pipes that together seemed to make a piped water supply economically viable, even though the water was 'still occasionally unfit to use'. The growth in numbers and the prosperity of at least some businesses and professional men also looked likely to provide both the capital and the market for a convenient new service. Modest traders like butchers, bakers, drapers, plumbers and carpenters were included

among the first customers; the Portsmouth breweries, too, were important investors in this new service and by 1830 ten of the sixteen listed brewers were purchasing piped water, the other six relying solely on their own water supplies.[3]

Yet for most of the population of Portsmouth these developments were immaterial. By 1840, the two rival water companies had merged but this new waterworks company was meeting less than 10 per cent of the estimated total demand in 1850. In Portsmouth, as elsewhere, there was as yet little recognition of the relationship between the poor quality of water from public wells and the deteriorating health of the town since, with population densities increasing and with the absence of proper drainage, such wells were liable to pollution by sewage seeping through the subsoil.[4] Even when these issues became the subject of national debate – for instance, with the publication of Edwin Chadwick's *Report on the Sanitary Condition of the Labouring Population* (1842) – long-settled towns like Portsmouth (and Norwich) were resistant to its conclusions.[5] Both cities opposed the Health of Towns Bill in 1847 on the dual grounds of resistance to state encroachments of their own liberties and because of the increased costs to the urban ratepayers.[6]

The working-class majority in Portsmouth, as in Norwich and all other urban centres, faced similar difficulties. All such groups depended upon urban elites having the private conscience and the political will to address the degrading and unsanitary conditions in which most citizens lived. In these circumstances, each central government commission and report from Westminster and each piece of public health legislation, albeit permissive rather than mandatory, was a lifeline for the masses. Such measures provided further opportunities for a change of outlook, a shift in the 'structure of feeling'. [7] Without this shift, a radical pressure for change from below might have been more evident.

In Portsmouth, the urban elite did eventually begin to develop more sense of communal responsibility. By the mid-1870s, it seems that the Borough of Portsmouth Waterworks Company, formed in 1858, was providing a piped supply of water for almost all the inhabitants.[8] The shift towards a greater sense of responsibility came in Norwich, too, but even more slowly. By the first decade of the twentieth century, a change in the way the powerful were making sense of the world was observed by one of its leading citizens. In 1910, Sir Peter Eade, a Norwich physician and moderate supporter of temperance, yet still one of the leading members of the urban elite as town councillor, sheriff and three times mayor, and now in his eighties, was able to write:

'There may be noted the increasing feeling of the whole country of the duty of those in authority to supplement, when necessary, the means of those in the lower classes of life …'

He cited free Board Schools, free breakfasts, and free boots – and continued:

'"Socialism", as it is called, undoubtedly demands better conditions for the poorer classes of all classes and the result of investigation into the present condition of any of these fully justifies many of the ends for which socialism is aiming and agitating ... The rapid increase of population (and) the growing scarcity of work and employment, are intending the poverty of large numbers of the working classes with the necessary consequences of home privation and enfeebled health to all, but especially to the young. [9]

Sir Peter Eade had not only noted the shift in the 'structure of feeling' of the period but also itemised those 'present conditions' observable in 1910 that in his mind justified intervention. The irony is that even worse conditions were evident throughout the Victorian period in Norwich and the urban elite proved slow to act effectively to improve matters.

Evidence from the period between 1845 and 1850 is striking in its cataloguing of deprivation. In 1845, the Royal Commissioners charged with investigating the state of

Norwich had concluded that the working classes faced poverty, filthy living conditions and 'want of water':

'Neglect and decay are now conspicuous in the streets and quarters occupied by the working classes … narrow streets and lanes where courts and yards were linked by a single opening or doorway … The system of building outside the town … has proved … most prejudicial to public health. Here is a concentration of all the evils that can afflict the manufacturer: want of employment and its consequent poverty, crowded and badly constructed habitations, filth, want of sewerage and drainage, an impure air, and want of water. It is here that epidemics … prove the most severe; here also that all other forms of disease appear in their most aggravated forms'.

In 1849, the living conditions survey in the *Morning Chronicle* reports gave details of nine families living in the city, north of the Wensum, all suffering appalling living conditions. One, a female gauze weaver living in White Lion court in the parish of St. Paul, saw herself as a 'privileged person'. Usually unemployed for at least four months a year, she still maintained her four children at school. The court contained twelve houses with a common privy; the soil from this privy drained into the court and 'after rain sometimes oozed through walls since the floor of the houses was a foot lower than the ground outside'. In 1850, William Lee's eight-day survey in May presented a similar picture. He was particularly concerned that the city's defective water supply and bad drainage were the causes of disease. He concluded that 'the city is almost entirely dependent upon a polluted river, polluted wells, and utterly inadequate public works for its supply of water'. [10]

These three contemporary sketches of working-class deprivation in Norwich match the devastating eyewitness account of the living conditions for the working class in Manchester given by Friedrich Engels in his *The Condition of the Working Class in England in 1844*. Engels, in concluding, addresses the reader:

'On re-reading my description (of the Old Town of Manchester) … I must admit that … it is by far not nearly strong enough … to convey vividly the filth, ruination, and uninhabitableness, the defiance of every consideration of cleanliness, ventilation, and health that characterise the construction of this district, which contains at least twenty to

thirty thousand inhabitants. And such a district exists in the very centre of the second city of England, the most important factory town in the world.' [11]

Stephen Marcus has argued that it was around this mid-century period that some within the middle class – and he takes Engels as a radical example – began to be conscious that 'millions of English men, women, and children were virtually living in shit'. [12] This was the reality that those unfortunate millions had to make sense of; it also presented significant problems for the privileged few. Urban elites during the Victorian period did gradually become more conscious of such appalling conditions, one might say more moved by conscience, but within Norwich, despite Sir Peter Eade's sense of a change in outlook, the shadow of the courts and yards stretched further into the twentieth century.[13] It was true that an Act for the Better Sewering of Norwich had been passed in 1867, and that the first Medical Officer of Health had been appointed in 1873, following the Public Health Act (1872), but John Pound was still able to conclude:

'… the very poor, at least, were affected peripherally, if at all, by the improvements in the city's public health between 1850 and 1900 … the city had to wait until the twentieth century, and wholesale schemes of slum clearance (in the 1920s), before anything like a satisfactory system was to emerge'. [14]

Why had this change of outlook taken some three generations? To understand fully how Victorian – and Edwardian - elites adjusted to the poverty that had been produced by industrialisation and urban growth may still present problems for the critical imagination of historians today. Nevertheless, studies of how particular urban elites responded to national initiatives such as commissions, reports and legislation can provide a key to such an understanding. In the case of Norwich, that key opens up the issue of resistance: how backward were the powerful in Norwich in addressing the problems of poverty, and if so, for what reasons? In considering these questions, the importance of alcohol as a drug, as well as a thirst-quencher, will be examined. How tolerable would the conditions of life

have been for the majority without the palliative of the pub and the pint? [15] Such a question invites another that will also be examined. How instrumental were brewers in determining the political responses of the urban elite in Norwich?

The connections between local and national political elites, brewers and water supply, and a working class whose thirst was quenched and distress assuaged by beer are complex and to a degree speculative. On occasion, however, the link is clear. Brian Harrison noted that in the 1810s:

'London brewers, anxious to prevent their own wells from drying up, opposed the sinking of deep wells for public supply; and London publicans were often the only slum-dwellers possessing their own water supply'. [16]

It seems likely that brewers elsewhere, including Norwich, would have behaved in a similar fashion. But for how long were brewers still seeking to limit and control water supply in the second half of the century? Unfortunately, there seems to be a lack of evidence; the research remains to be done. Historians have been aware of the brewer's role as local politician and member of the urban elite performing time-consuming and important civic duties that on occasions doubtless enabled him to act in the interests of the brewery, say in preserving licences. However, the brewer's role as a councillor using civic power to help shape water policies and political responses to the poverty of the urban masses has received less attention.

It is a fact that water supplies for drinking were hazardous to the health of a large part of the nation's population during a period when breweries were extracting safe and tasty water supplies for their own production of beer. Any adequate explanation for this seeming paradox is bound to be multi-dimensional but the connection between brewers and water supply does seem to offer particular insights. Brewers did have a vested interest to protect.

They enjoyed, in effect, a monopoly right to act as national ‘thirst quenchers’. They manufactured and supplied, for profit, the dietary liquid needs for a rapidly expanding population at a time when the alcoholic content of the drink served as a vital ‘panacea’ for ‘physical and psychological pressures in a harsh new urban and industrial world’. [17] Brewers were serving two important social needs: one dietary, one emotional, and it was vital that both were adequately satisfied if those who held power and wealth in Victorian society were not to be confronted with urban unrest.

Brewers were, of course, interested in making profits, but they were also in a position to see themselves – and be seen by others across the divide of classes – as the friends and support of the working class family. Sir Harry Bullard, for one, did in Norwich and was so billed in election material.[18] Apart from some in the temperance movement, it did not seem to occur to people – perhaps not even to the brewers themselves – that continuing to limit water supplies and failing to improve living conditions further increased the dependence on drink as well as being contrary to one interpretation of Christian moral teaching. The presence and actions of brewers in a local government that took so long to demonstrate an effective sense of responsibility for all the community suggest a measure of self-interest and hard-edged business acumen, conscious or not.

The analysis that follows of how the urban elite in Norwich dealt with the issues of water supply and sewage disposal, and the associated housing and living conditions of the working-class majority of the city’s population, will suggest a collective failure of imagination. There seems to have been for much of the Victorian period an inability to grasp with sufficient strength the nettle of reform and extend local government powers, erode the individual interests of some Norwich ratepayers and, crucially, increase

sufficiently the income raised from the wealthy minority to address the needs of the Norwich poor. It does seem significant that some of the key figures within this urban elite, exercising power and influence within the council and its committees, were prominent Norwich brewers.[19]

It was not, of course, simply the brewers' vested interest in limiting and controlling the water supply to the city that explains the response of the urban elite. That would be too crude. Rather, it is to argue that the general outlook of the wealthy and powerful in Norwich was at one with the mind-set of the leading brewers. Such traits as civic pride and a resistance to outside interference are evident; so, too, is the businessman's concern to limit expenditure.[20] Also present – and this is more difficult to understand and analyse – is a reluctance to accept the degree of poverty and deprivation experienced by the poor in Norwich. Here is the collective failure to accept the detailed case that was being made by the minority of Victorians who can be grouped together as the Temperance interest.

In part, this inhibited outlook of the Norwich urban elite may be explicable in terms of the polarisation that developed between the temperance and the brewing interests. Once the Temperance movement was active from the 1830s, both nationally and locally within Norwich, the brewing interest then adopted a defensive and conservative position.[21] This is evident within the Town Council and its Committees, as well as within such a trade body as the Licensed Victuallers Association.[22] Such a polarisation led to the practical denial of the human needs of the city poor. Yet the reluctance to expend money on an adequate water supply or in other ways recognise and address the crisis of poverty in Norwich could always be fudged and excused – although never publicly – by the knowledge that over 600 public houses were providing their own municipal supply of liquid, in the form of beer, to

the working class. Thirsts could still be slaked and misery depressed; alcohol rather than religion was arguably the real 'opium of the people'.

The need for social control seemed imperative. Faced with the unprecedented increase in urban populations in the nineteenth century and the consequent threat to order, the wealthy and powerful held control in a society that seemed at times ready to spiral into disorder. The fear of revolution was apparent; Engels' tour of Manchester in 1844 helped lead him to the conclusion that:

'It is too late for a peaceful solution … soon a slight impulse will suffice to set the avalanche in motion'. [23]

If Engels had toured Norwich, he would have seen similar conditions and perhaps drawn the same conclusion. The Norwich urban elite was certainly mindful of the threat. From 1836, the Norwich police force had been developed as an agency through which that elite could seek to control the 'lower orders'. [24] Once Edwin Chadwick's *Report on the Sanitary Condition of the Labouring Population* had entered the public domain in 1842, the pressure for a legislative response from central government mounted.[25] Helped by an outbreak of cholera, the Public Health Act (1848) was passed. It created a General Board of Health in London and Local Boards of Health with potentially wide powers to enforce standards of public hygiene where the death rate exceeded 23 per 1,000 or where 10 per cent of ratepayers petitioned for a local board.[26] Within Norwich, however, opinion was divided as to how far the city should adopt its measures – and the discord centred on the issue of water supply.

William Lee's *Report* in 1850 had drawn particular attention to the defective water supply in Norwich.[27] It had actually been written for the General Board of Health set up in London under the terms of the 1848 legislation and was published in 1851 by the HMSO.

Lee had been favour of taking the water supply under the control of a local Board of Health and was opposed to a profit-making scheme. Such municipal control would no doubt have found favour with Edwin Chadwick who was serving as a commissioner on the General Board of Health in London until he was forcibly retired in 1854 due to resistance to just such inquiries as Lee's. However, for most in the Norwich urban elite, municipal control meant the unacceptable: a sharp rise in rates and control from London through the inspectorate.

Moreover, it seemed that water, as well as beer, had its vested interests. The directors of the new private water company that was set up in Norwich were members of its urban elite and most of these twelve men were councillors and members of those sub-committees concerned with water, sanitation and health. One, H. P. Morgan, was a brewer. As individual shareholders, they stood to make a pecuniary gain from keeping the water supply privatised and out of municipal control.[28] By 1851, the new private Norwich Water Company was in operation, its three steam engines pumping water to serve the needs of 38,000 of the around 70,000 citizens of Norwich.[29] This still left around 46 per cent of the population of Norwich dependent on the river and wells – or alcoholic drink.

The deficiencies of the water supply in Norwich had been a focus for public scrutiny since 1848. The passing of the Public Health Act, the fear of approaching cholera, and, no doubt, revolution in Europe and Chartism in Britain, all helped concentrate minds. Many of the poor were obtaining their water from the polluted Wensum, five of the city's ten public pumps were situated close to adjourning church yards with their decomposing bodies, and the previous private water company that supplied the city took its water from a polluted section of the river.[30] In these circumstances, the formation of a new water company sited

further upstream at a less polluted location and serving the needs of more residents was something of an advance. But it did not meet the needs of the numerous poor.

By 1871, the Water Company claimed that it was supplying three-quarters of the 80,000 citizens of Norwich. This was a significant improvement, but one that still left 25 per cent of the population without a connection to a tolerably safe water supply.[31] Moreover, the situation was made worse for those without access due to the steady increase in the number of factories after 1850 (an expansion that the 1845 Commissioners had not anticipated). In 1864, White's *Norfolk Directory* recorded factories for dyeing and finishing manufacturing goods, as well as several iron foundries, tanneries, breweries, maltings, soaperies, chemical, brick and tile works. The residue from these industries poured into the Wensum.[32] Another pollutant of the river was the discharge from 120 sewers between the New Mills and Carrow that emptied the contents of the 3,000 houses in Norwich that had water closets in 1864. [33] This still left around 83 per cent of the 18,000 houses in Norwich dependent on other means of removing human excrement.

The institutional means to address these public health problems did not exist. When Chadwick's General Board of Health was abolished in 1858, the initiative for improvement passed to Local Boards of Health who were subject to vested interests and did not necessarily act for the better health of the working classes. In Norwich, the Local Board of Health had been established in 1850, that is to say the Town Council and its relevant committees acted as the local board. In time, the need for a return to more centralised control over local authorities became a national concern; the passing of the Public Health Act (1866), was followed by consolidating Acts in 1871 and 1875, the latter compelling local authorities to appoint a Medical Officer of Health and take action to improve the

sanitary conditions of their districts. However, the conservative and protectionist stance that had been moulded in the decade or so of virtual autonomy had long-lasting effects.

The survival of traditional conservative thinking on issues of sanitation is perhaps most revealingly illustrated by the one medical authority, interviewed by William Lee in 1850, who did *not* argue strongly that unsanitary conditions necessarily led to more disease. He was Thomas W. Crosse, a surgeon, who served as a councillor and therefore as a member of the Local Board of Health for some twenty years before resigning in January 1873. The occasion for that resignation was nothing less than Crosse's taking up of his appointment as the first Medical Officer of Health for Norwich. In this capacity, Crosse was a dominant and conservative influence on issues concerning the health of Norwich citizens until his death in 1892. The views on sanitation he had held as a young man in 1850 were out of kilter with his colleagues even then; over twenty years later those views seem to have changed little in essence and yet Crosse was appointed to the most influential office concerned with public health in the city and for two more decades his views held sway. [34] It is scarcely an exaggeration to suggest that the outlook of the brewers, most of the councillors, and the Medical Officer of Health were broadly at one in Norwich for around four decades. During this time, but especially in the two decades of his office, the public health of the city did not receive the degree of expertise and attention it required.

When in January 1873 the Norwich Town Council agreed to elect its own Medical Officer of Health, the brewer-councillor John Youngs was very much in favour. The council could have made an appointment under the authority of the national Local Government Board – which would have led to the State meeting half the costs – but Youngs was suspicious of intervention from the Board. He claimed that, if he had thought 'Norwich was negligent as

regards sanitary matters', he would not have hesitated to work with the national Board – but Norwich, he insisted, could not be described as 'negligent'. [35] Crosse was of a similar mind. In his first annual report as Medical Officer of Health in 1874, he explained that the large number of children dying under one year of age in Norwich, as in other towns, was a serious matter. However, his explanation reveals a mind-set from nearly twenty-five years earlier:

'It does not appear to depend so much upon any deficiency in sanitary arrangements (although doubtless in some parts of the District over-crowded dwellings greatly prevail), but seems rather to arise from the ignorance among the poorer classes of the proper way to rear their infants'. [36]

Crosse remained attached to these limited and conservative views until his death in office some twenty years later.[37]

Thomas William Crosse (1826-92) was an integral part of the upper echelons of the Norwich urban elite. He was the son of John Green Crosse (1790-1850), a distinguished Norwich surgeon and author who was one of the three hundred original fellows of the Royal College of Surgeons in 1843. [38] However, William Lee's treatment of the younger Crosse in 1850 had been caustic and perhaps even served to consolidate his prejudices. [39] Within the confines of Norwich society, Thomas W. Crosse could enjoy the advantages of a social position that protected his reputation. It is no surprise to find him receiving the deferential accolades granted to any dignitary in Victorian public life. But one source does suggest that not all shared his conservatism:

'Since his appointment many sanitary improvements have been effected, the need of them being explained by the facts and conclusions being presented in his reports. Two or three 'rookeries' have been swept away before the expression of public opinion, backed up by the authoritative voice of the Officer of Health. No doubt the public who look to the ideal, as well as Mr. Crosse, would like to see more thorough sanitary improvements effected, but the citizens have only to recall the incidents of various schemes carried through the council to see that private interests often stand in the way to remedial measures being applied at a cost which shall not grieve the ratepayer'. [40]

The cost of Thomas Crosse's conservatism could be high too. In his own annual report for 1885, he noted with respect to infant mortality figures for Norwich:

'This is the first time I have been able to report any material improvement under this head, and it is very satisfactory to notice an alteration in the unenviable notoriety Norwich has hitherto enjoyed in this direction.[41]

In Norwich, private interest, considerations of short-term expense, and outmoded medical ideas were still winning out in a conflict between two different value systems: one entrenched in early Victorian attitudes that defined the poor and poverty as problems to be contained at minimum expense and explained away as consequences of personal failings and an unavoidable part of God's design; the other, more liberal and moved by a sense of the poor sharing a common humanity, that saw the need for political and social action against poverty and its causes. But the views of medical men such as Crosse, and others of his generation like the brewers, were increasingly anachronistic. The death of Crosse in 1892 marked a sea change in sanitation policies in Norwich. His successor as Medical Officer of Health, Harry Cooper Pattin, set a different tone, more in keeping with the new, more liberal value system.[42]

Yet the early-Victorian mind-set had survived until almost the end of the reign. The minutes of the various sub-committees of the Norwich Board of Health reveal numerous instances when the members remained reactive rather than proactive, even in times of urban crisis such as a cholera epidemic. The impression is of gentlemen overwhelmed by the scale of the urban problem confronting them. Their bureaucratic organisation was both inadequate for the task of managing a city like Norwich and open to a degree of behind-the-scenes manipulation as a number of instances from the minutes of the Board of Health indicate.

Evidence of inadequate management is especially clear in relation to the disposal of human excrement. In 1853, the Sanitary Purposes Committee – formed for the purpose of carrying out the provisions of the Nuisances Removal and Diseases Prevention Acts (1846, 1849) – recommended to the Paving, Sewage, Cleansing and Lightings Committee:

'…an increase in the pay of the Scavengers employed in the City for a short period upon condition that they gave all their time to cleansing and removing the filth and Soil not only from the Streets but from the various Courts and Alleys in their respective districts'. [43]

The councillors were at that time responding to the imminent threat of a cholera epidemic. However, such evidence of ineffective cleansing reoccurs regularly in the minutes of various committees concerned with public health for nearly forty years. For instance, in 1876, the Executive Committee of the Sanitary Authority, with the brewers Mr. Youngs and Mr. Morgan playing a prominent part, noted with concern 'the neglect of the emptying of bins (of night soil) by the contractors' and determined to deduct 3s from their payment for each bin reported un-emptied.[44] Thomas Crosse, through his annual reports as Medical Officer of Health, continued to express his less-than-justified belief that the bin system was working efficiently; Norwich did not need an extension of the more expensive water closet method.[45] It was left to Cooper Pattin to point out the dangers to health and the degradation of the bin system, to record the £6,000 a year cost of the scavenging system, and to advocate the 'prudent economy' of the water closet.[46] Finally, in May 1894, the corporation accepted the recommendation of its own Chief Sanitary Inspector's report, abandoned privatised contracting and accepted municipal control.[47]

Behind-the-scenes manipulation, by definition, is not easy to establish. However, on one occasion such interference with the course of local government became public since the Clerk had felt obliged – or been so instructed – to consult Counsel on the subject. Some member or members of the elite were determined that a decision taken by a committee of

the Corporation would not necessarily be final. In March 1873, the ten or so regular members of the Sewage and Irrigation Committee, including John Youngs and Henry Morgan, had met and attempted to bring to an end a year-old dispute with Harriet Martineau and her solicitor over the leakage of sewage into a well at the 'Pine Apple' public house in Trowse. The new sewerage system for Norwich, built in the late 1860s and probably under-funded, was already causing major problems. After a division, the Clerk at the meeting had been instructed to assent to the terms set out in the latest letter from Miss Martineau's Diss solicitor. A week later, the Clerk stated that he had instead consulted counsel who had advised that 'It would be suicidal to agree to the terms unless the Corporation was certain of curing the defect in the well' and that, even if the costs of the Chancery suit went against the Corporation, the bill would probably not exceed £100. On hearing this, the Committee then backtracked and decided the matter should remain in abeyance for the present.[48]

In this one instance, some of the critical problems facing local government for much of the Victorian period are represented. Members of the urban elite in Norwich, like brewers, solicitors, industrialists, and physicians, would not necessarily have the expertise or experience to be able to make informed decisions on the unprecedented issues facing urban society. Yet they lived surrounded by deference and at times with a provincial suspicion of the initiatives from Westminster. They were fearful of spending too much money and often lacked the political imagination to realise the consequences of spending too little. In addition, their underlying fear of social disorder served to distance many of them from the realities of working-class life and to stifle any serious effort to understand the causes of its poverty. For many of the rich and powerful, the 'lower orders' were typecast as the 'poor' and assumed to be in some sense responsible for their own fate. A routine, tribal opposition

to the Temperance interest blinded many in the urban elite to the truths in that movement's social analysis. Such attitudes needed to change if social order was to be maintained and a decent standard of public health achieved, and by the early 1890s a new professionalism was manifest in local government in Norwich. The days of the brewer-councillor were in effect at an end. The structure of feeling was taking a new shape.

Harry Bullard was the last in the substantial line of such brewer-councillors in Norwich. Within his own terms, he no doubt believed that the performance of his public duties was helping shape Norwich for the better, just as his role in the Bullard brewery helped increase its profitability.[49] Yet his unseating as the elected Conservative M.P., after the 1885 election and the Liberal petition alleging electoral corruption, was symptomatic of his association with the discredited practices of the past.[50] The future belonged to a new generation of local politicians.

After 1892, local government in Norwich seems different. The minutes of the Health and Sanitary Committee from 1892 to 1900 indicate that the direct brewing influence is absent; no brewer appears among the active committee members.[51] Cooper Pattin was elected by this committee to perform all the duties prescribed in the Local Government Board regulations of 1891 for the Medical Officer of Health of an Urban Sanitary Authority; there is now a sense that central direction from Westminster and the increasing flow of mandatory national regulation had irrevocably tilted the balance against local vested interests.[52] There is still, however, a reminder of local pride, if not defensiveness, in the decision by the Committee not to submit the appointment of Cooper Pattin for the approval or sanction of the Local Government Board.[53]

In this changing social and political climate, health and sanitation moved closer to the top of the political agenda. By July 1898, the full council had resolved unanimously that:

'… provision of the Public Health Acts be rigidly enforced as regards:-
a) Insufficiency of Water supply.
b) Insufficiency of Closet or Privy and Ash Pan accommodation.
c) Insufficiency of Drainage'.

In the following months a study was made of the duties of the Health Committee that resulted in a private and confidential report in January 1899, read and recommended to the Council in February. In themselves, the proposed changes were minor, the most significant being that there were to be more inspectors with increased pay; the fundamental shifts in policy were still in the future. But the report did signal a new approach, as well as providing powerful evidence of the scale of the sanitation problem in Norwich at the end of a century that had been marked by brewing influence and less than progressive local government. The report observed that the Night Soil Inspector who was 'in charge of 30 night carts and 30 employees of the Corporation … is lame, is about 70 years of age, and is in receipt of 28s per week'. (He was replaced and given lighter employment at 18s per week.) It seemed that each week there were, on average, sixty complaints about bin collection and thirty fever cases reported. The city of Norwich still had nearly six hundred courts and yards, and there were still about 16,000 people who obtained their water supply from pumps and wells.[54] The reason why this health crisis had not become a health disaster was due, at least in part, to the existence of over six hundred pubs and beerhouses.

Alcoholic drink had been traditionally associated with health but the reasons emphasised were other than that it provided a safe means of satisfying the dietary need for water. Victorians, at least outside the Temperance Movement, believed as their predecessors had done that 'generally intoxicants were important aids to physical stamina, virility and health'. [55] Although those supporting the Temperance cause tended to the view that drink

had no place in a proper diet, modern nutritional knowledge would on balance refute this extreme position. Aside from the critically important water content, beer does have considerable food value: '… a pint of beer having a calorific value of between 200 and 400 depending on the strength of the brew'. [56]

Nevertheless, the assessment of the role of drink in Victorian working-class diets remains 'extremely difficult', not only because the reliability of the data is suspect but also because the historian can approach the issue from alternative positions. On the one hand, as Dingle established: '… in families where income was either inadequate or barely adequate to provide for the maintenance of "merely physical efficiency", drink could be purchased only at the expense of essential foodstuffs'. On the other hand, drink did have its calorific value, and, at least until the greater range of foods and drink became available towards the end of the century, it could serve as an escape not only from the hardship of life but also from 'a monotonous diet'. [57]

In this examination of the Victorian working-class diet, the importance of tea drinking needs to be assessed. Tea made using boiled water provided an alternative to beer as a safe liquid to satisfy dietary needs. To what extent did the working class become tea drinkers? It seems likely that the consumption of tea would have been associated with 'respectability' and only those who aspired to middle class customs and who could afford the associated costs would have drunk tea. However, the price of tea remained relatively high. Not until Thomas Lipton, the prototype of the modern multiple-grocer, began to deal in tea in 1889 and offered it at 1s 7d a pound was there a significant reduction in price. Before then, no tea had sold under 2s 6d a pound.[58] Throughout most of the first half of the century, tea consumption had remained exclusive and remarkably stable at around 1¼ lb

per head a year. Only in the decade 1841-1850 did it reach 1½ lb per head a year, despite a sharp fall in prices following the opening of the China trade to free competition in 1833, and by 1850 some of the working class were evidently drinking tea. [59]

Tea consumption, like that of beer, did rise sharply from the 1850s to the 1870s, and then continued a smooth upward trend for the rest of the century.[60] This increase must have been due in part to more members of the working class drinking tea. The growth of the temperance movement had produced, according to one calculation, around 3 million abstainers by the end of the century; many of these were likely to have been tea drinkers.[61] However, members of the British Association for the Advancement of Science made a calculation in 1881 of how much the population spent per head on food and drink that indicates the continuing primacy of beer and spirits over non-alcoholic drinks such as tea and coffee. Beer (1.4d) and spirits (0.75d) accounted for more than 2d (22 per cent) of the 9½d that was the average daily expenditure on all articles of food and drink. Tea (0.29d) and coffee, including cocoa (0.05d) took only just over a farthing (3.5 per cent) of this daily expenditure. [62] If these figures could be adjusted to indicate expenditure within the working classes alone, the primacy of beer would be even more marked. More tea was drunk by the working class in the last two decades of the century as the standard of living rose, but the general picture of the dominance of beer as the staple liquid to satisfy dietary needs in the Victorian period remained largely unaltered. Rowntree and Sherwell calculated that 20 per cent of working-class family income in 1899 was spent on alcohol.[63]

Table 5.1 Annual per capita tea consumption (in lb.), 1837-1902

1837	1.19
1842	1.38
1847	1.66
1852	1.99
1857	2.45
1862	2.69
1867	3.65
1872	4.01
1877	4.50
1882	4.69
1887	5.02
1892	5.43
1897	5.79
1902	6.07

Source: B.R. Mitchell, *Abstract of British Historical Statistics* (Cambridge, 1962), pp.356-357.

(Adrian – if you would convert this into a graph, it might look better. Vertical axis: 0-6 lb;

horizontal axis: 1837-1902.)

Drink, however, was not a cheap source of liquid, although it may have been a significant one. If the brewers could comfort themselves with the thought of the good health their beer was bringing, their business accounts showed its profitability. For all those in the working class whose incomes were initially only just above the 'poverty-line', expenditure on drink could push them below it. If a person or family could no longer afford to buy food they would otherwise have purchased, their calorific intake was bound to fall below minimum requirements – hence the conclusion of Booth and Rowntree that expenditure on drink was a cause of "secondary poverty". Yet, as A.E. Dingle has argued, the 1880s and 1890s did witness a change. Whilst the U.K. expenditure on drink as a percentage of total consumer expenditure remained between 12 and 13 per cent, the remaining 87 per cent of purchasing power was buying more in real terms as prices fell. After 1900, with the age of "high mass consumption" firmly established, the total amount spent on drink fell, and by 1910 it was between 8 and 9 per cent. [64]

Although expenditure on drink had fallen, it still remained substantial, and within some of the households of the poor the amount spent on drink was likely to have been a bigger percentage of total expenditure. Nevertheless, the impression in Norwich was that the last decade of the nineteenth century did see the beginning of a new degree of moderation in the consumption of drink. Hawkins (1910) noted that:

'Social workers in Norwich, comparing the conditions of the present with 20 years ago (1890) are unanimous that there has been a great improvement in the conduct and sobriety of boot operatives'.

He explained this as a consequence of new methods of production and greater efficiency. Previously, the system of out-working had meant that Monday was often kept as a holiday and there were long periods of enforced idleness anyway. As a result, drinking had been encouraged 'among the weaker sort of men'. [65]

Drinking to excess was condemned by those following the Temperance cause and frowned on by those supporting the Drink interest; for them, drunkenness could only represent adverse publicity. Evidence of drunkenness was always the Achilles heel of a brewing interest keen to minimise its significance, as Harry Bullard, for instance, demonstrated in Norwich in 1879.[66] The Drink interest understood that the Temperance movement's concern to highlight the dire consequences of drinking to excess threatened its business foundations. There may also have been some grasp that the Temperance mind was working out a prescription for an alternative re-ordering of industrial society, freed from the 'support system' provided by the legalised drug of alcohol and the securities offered by the publican and the public house and its beers and spirits. This was a conflict of ideologies and interests within the elite at Westminster and within urban elites in the rest of the country. For the Prohibitionists who pressed for the passing of the Permissive Bill from the late 1850s, drink was seen 'as the root cause of most social ills'. Dingle's explanations for this perspective captured the absolute divide between the views of the extreme Temperance supporter and the brewer or publican:

'Because the nation was becoming morally corrupt, a 'modern Babylon', a dose of abstinence was needed to rejuvenate it. The experiment in political democracy could not work while people were in a drunken and degraded state. Self-interested drink manufacturers and religious apathy were sowing the seeds of social catastrophe … If left untouched the 'drink curse' would lead to class conflict by creating (in Cardinal Manning's words) "a heaving, seething mass of discontented, disaffected, moody passionate socialists … ready to bury the social edifice in ruins". [67]

Such sentiments were a world away from those expressed in the undated Norwich election poem, extolling the virtues of Harry Bullard as the friend of the poor and the bountiful philanthropist. [68]

In conclusion, it seems that many of the poor, for a variety of reasons, may have begun to drink slightly less by the end of Victoria's reign. For many in Norwich, though, the

necessity of drinking a measure of beer was taken-for-granted. On balance, even allowing for the medical dangers of excessive drinking, public health had almost certainly been improved by beer consumption; in the absence of adequate supplies of safe drinking water for so many, such a conclusion is hard to resist. Brewers had therefore served a public need in supplying their product. However, those same brewers had been in the forefront of a system of local government that at least until the 1890s had proved incapable in the face of an urban public health crisis that had brought death and sickness to the poor for over three generations.

Footnotes to Chapter 5

[1] *Drink*, p.38 and p.292.
[2] *British Brewing*, pp.31-32, 34.
[3] Mary Hallett, *Portsmouth's Water Supply 1800-1860* (The Portsmouth Papers, No.12, 1971), pp.5-15.
[4] Hallett, *Portsmouth's Water*, pp.9, 21-22.
[5] Hallett, *Portsmouth's Water*, p.22. See also M.W. Flinn, *Readings in Economic and Social History* (London, 1966), pp.305-309, for an analysis of the background and significance of Chadwick's *Report*, as well as details from its pages.
[6] Hallett, *Portsmouth's Water*, p.22. The grounds for opposition were that: '1. If passed into law it would materially interfere with all local management, and tend to increase Government patronage at the expense of Rate-Payers; 2. It would entirely supersede all existing locally elected Representative Boards'. There were similar arguments expressed in Norwich and, in 1850, the Sanitary Committee issued a protest to William Lee, who was conducting an official investigation (see below, p.154), claiming that 'the application of the costly process of the Health of Towns Act is not called for, but that the sanitary requirements of the city may be efficiently met at a much less expense'. (W. Lee, *Report to the General Board of Health on a Preliminary Inquiry into the Sewerage, Drainage, and Supply of Water, and the Sanitary Conditions of the Inhabitants of the City of Norwich* (HMSO, London, 1851), p.13.
[7] Raymond Williams, *The Long Revolution* (London, 1961) was the first to use the expression 'structure of feeling' in an attempt to analyse both continuity and change in the history of culture. He argued: One generation may train its successor, with reasonable success, in the social character or the general cultural pattern, but the new generation will have its own structure of feeling … the new generation responds in its own ways to the unique world it is inheriting, taking up many continuities … yet feeling its whole life in certain ways differently, and shaping its creative response into a new structure of feeling.' (p.65).
[8] Hallett, *Portsmouth's Water*, p.24.
[9] Sir Peter Eade, *Autobiography* (Norwich, 1916), p.191.
[10] Second Report of the Commissioners for inquiring into the state of Large Towns and Populous Districts, *PP*, (1845) XVIII.1.299, Appendix: Norwich; *The Morning Chronicle Reports*, The Rural Districts: Norfolk, Suffolk and Essex, Letter XVII, 15 December 1849; Lee, *Report*, pp.25, 61. Summaries and extracts from all three reports are in John Pound, 'Poverty and Public Health in Norwich 1845-1880', pp.47-71, in Christopher Barringer (ed.), *Norwich in the nineteenth century* (Norwich, 1984).
[11] F.Engels, *The Condition of the Working Class in England in 1844*, cited in Stephen Marcus, *Engels, Manchester, and the Working Class*, (New York, 1974), p.192.
[12] Marcus, *Engels*, p.184.
[13] Mabel Clarkson's election address in 1912 – she stood as a Liberal but moved to Labour after World War 1 – indicated the continuing problem: 'Those of us who care for the purity of our homes, for the right of little children to opportunities of health and development, for the prevention of infantile mortality, and of all the unnecessary sickness and suffering caused by overcrowding and bad housing, are bound to make every effort to get rid of the slums … the Courts and Yards in our poorer districts … are a disgrace to this city' – see Frank Meeres, *A History of Norwich* (Chichester, 1998), pp.179-180.
[14] Barringer, *Norwich*, pp.70-71.
[15] A.E. Dingle, 'Drink and Working-Class Living Standards in Britain, 1870-1914', *Economic History Review*, 25 (1972) made a strong case for the social utility of alcoholic

drink: 'Temperance reformers and other middle-class critics of the working-class in Victorian Britain had a valid case when they pointed to drink as an important threat to the material well being of the workingman. But … they failed to ask why man drank … It was left to socialists to point out that much drinking was a response to a squalid environment rather than a cause of it … If the ameliorative and recreational roles of drink are considered, the case against drink in the nineteenth century is by no means overwhelming. Without (it) … the pressure for change from below might have come sooner and more insistently than in fact it did in Victorian Britain (p.622)'.

[16] *Drink*, p.392.

[17] *British Brewing*, p.34.

[18] *Lines upon Harry Bullard*

'Vote for Harry Bullard, for he is one of the best;
He always lends a helping hand, and by the poor he's blest.
When poverty overtakes you, and your heart is full of care,
He'll give you clothes and money too, and plenty of good fare ...'.

(NRO, MS 12858/84, 31F2, B.R.A.833 – undated, but from the other verses evidently post-the Norwich flood of 1878, so possibly the election of 1885 when Harry Bullard was returned as a Conservative M.P. for Norwich only to be unseated following the Liberal petition – see below, pp.336-337.)

[19] In the 1850s, John Youngs and Richard Bullard sat on the Paving, Cleansing, Sewerage and Lighting Committee of the Board of Health, a committee of the Town Council. (NRO, N/TC 4/14-15) In the 1860s, A.J. Morgan and J.B. Morgan were prominent within the Sanitary Purposes Committee of the Board of Health, as was John Youngs. (NRO, N/TC 4/12) In the 1870s, Harry Bullard, John Youngs and Arthur Morgan were active in the Sewerage and Irrigation Committee of the Board of Health. (NRO, N/TC 4/22-23) The Special Committee of twelve members set up by the Corporation in April 1876 to consider the Artisans Dwelling Act (1875) included four brewers: Henry Morgan, Harry Bullard, Arthur Morgan, and John Youngs. (NRO, N/TC 5/7)

[20] See above, pp.86-87 for Daunton's analysis of the crisis in local government finance as the pressure rose for increased public expenditure. Wealthy businessmen, such as brewers, who were also local councillors elected by rate-payers, were generally intent on limiting expenditure and reducing as far as possible the demand on rates. Their own self-interest would also have tended to make them resistant to any proposals to rationalise the financing of local government through the introduction of new taxes on business turnover.

[21] See below, pp.266-267, 279-280.

[22] See below, pp. 230-245.

[23] Quoted by Asa Briggs in *The Age of Improvement* (London, 1959), p.301.

[24] See below, pp.182-183.

[25] Chadwick's *Report* is indicative of both the Evangelical conscience and a Benthamite philosophy. The latter is evident in his insistence that 'the expense of public drainage, of supplies of water laid on in houses, and of means of improved cleansing would be a pecuniary gain, by diminishing the existing charges attendant on sickness and premature mortality' – see M.W. Flinn, *Readings*, p.308.

[26] *Public Health Act*, 1848, (11 &12 Vic. c.63).

[27] See above, p.154.

[28] NHC, N.628.1 (043), *Press cutting* (un-ascribed), showing the capitalisation of the City of Norwich Waterworks Company, 3 August 1850. The capital was set at £60,000; 6,000 shares at £10 each were to be offered. The twelve directors were: Samuel Bignold (Chairman), John Sultzer, Richard Noverre Bacon, Henry Chamberlin, George Durrant, William Geary, Charles Thomas Lucas, John Brandon, Herbert P. Morgan, Joseph

Underwood, William Wilde, and Henry Woodcock (the Mayor). One other leading councillor, Arthur Dalrymple, was the Company Secretary. See also Brian Gibson, 'Water, Water, Everywhere' (B.A. dissertation, Norwich School of Art and Design, 1996), p.94.

[29] NRO, MS 10845, 'New Mills Arbitration – Manager's evidence on 3 February 1872', New Mills Miscell. Papers, 1845-92.

[30] Barringer, *Norwich,* p.58.

[31] See note 29 above. According to John Ayris, the Manager, the Company was able to serve the needs of this increased number of customers because it had obtained an Act of Parliament in 1859 that gave them control over the private water fittings of the inhabitants. 'The company at once acted to stop the great waste of water that had been allowed to go on in the city'. However, W.A. Armstrong, *The Population of Victorian and Edwardian Norfolk* (Norwich, 1999), p.48, noted that 'the new sewers of 1871 were inadequate in design and construction material' and observed that 'the city's infant mortality rate was signalled out for criticism by the Registrar-General'. In 1873-75, it stood at 183 deaths per 1000 live births, a figure substantially higher than that of Portsmouth (146) or London (159). The poor still lacked a safe water supply. See also Idem, 'The Peopling of Norwich c.1695-1951' in Carole Rawcliffe and Richard Wilson (eds.), *A History of Norwich* (forthcoming). Armstrong records that the infant mortality rate in the period 1896-1900 remained virtually unchanged at 182, but by 1906-1910 had fallen sharply to 127.

[32] Barringer, *Norwich,* pp.62-63.

[33] Norwich City Surveyor's Report in *NC,* 3 Sept. 1864, quoted in Barringer, *Norwich,* p.63.

[34] See below, note 39, for the early views of Crosse. The Council had accepted his offer of resignation, without fine, on 21 January 1873. In this letter, Crosse wrote that his retirement was 'necessitated by the appointment I am now seeking of Medical Officer of Health for the City'. (NRO, N/TC 1/23) Crosse's successful candidature was never likely to have been in doubt. However, his early career had been less auspicious. Muncaster recorded his failure to be elected to an Assistant Surgeoncy at the Norfolk and Norwich Hospital in 1847 and for the next three years he had assisted his father in private practice. Crosse was trained as a surgeon but did not have a medical degree, unlike his successor as Medical Officer of Health, Cooper Pattin. Muncaster established that 'Whereas less than 10 per cent of all Norfolk doctors who qualified between 1815 and 1850 did so by achieving a medical degree, during the first decade of the twentieth century over 63 per cent had been taking the M.B. or an initial qualification.' (M.J. Muncaster, 'Medical Services and the Medical Profession in Norfolk: 1815-1911' (unpublished Ph.D thesis, UEA, 1976), Vol. I, p.228, Vol. II, p.49) More expertise and more professionalism did eventually emerge.

[35] *NM,* 1 Jan. 1873.

[36] NHC, L362.1, *First Annual Medical Report of the Medical Officer of Health for Norwich,* 1874, p.5.

[37] See the *Annual Medical Reports* produced by Thomas Crosse from 1874 to 1892 for a fuller picture of his achievements as well as further evidence of his limited vision. (NHC, L362.1)

[38] Muncaster, 'Medical Services', II, p.48.

[39] 'Mr Crosse differs materially from his more experienced brethren … his opinions (on the effect of water supply upon health) differ from those of all other medical men I have met with in nearly fifty similar enquiries …' (Lee, *Report,* p.32.)

[40] NRO, MC 79/ Fol. 38, *Press cutting,* un-ascribed and un-dated.

[41] NHC, L362.1, *Annual Medical Report,* 1885, p.7.

[42] This is immediately apparent in Cooper Pattin's first *Annual Medical Report* in 1893, (NHC, L362.1): 'Among conditions powerfully affecting the Public Health and actually existent in Norwich, a population of some 20,000 to 25,000 people dependent upon wells for drinking water constitutes a source of solicitude to the Sanitary Authority; for pure drinking water is always the sanitarians first line of defence'. (p.10) Cooper Pattin's figures represent 19 to 24 per cent of the approximate population of 103,000 in 1893; in 1871, two years before Crosse's appointment, the figure had been 25 per cent. There had been little improvement in those twenty-two years, far less than the 21 per cent improvement effected between 1851 and 1871. (See above, pp.160-161.)

[43] NRO, N/TC 4/1, 'Sanitary Purposes Committee minutes book', 16 Sept. 1853.

[44] NRO, N/TC 5/8, 'Sanitary Executive Committee minutes book', 18 Jan. 1876.

[45] NHC, L362.1, 'It may be stated that the present system of emptying bins is working very well, and the contractors are most efficiently doing their work. I should be glad to see the whole corporate district placed under similar provisions …'. (*Annual Medical Report*, 1883, p.8)

[46] NHC, L362.1, *Annual Medical Report*, 1897, Preface.

[47] NRO, N/TC 15/4, 'Health and Sanitary Committee minutes book', 16 May 1894.

[48] NRO, N/TC 4/22, 'Sewage and Irrigation Committee minutes book', 8 May 1872; 3 July 1872; 25 Sept. 1872; 29 Jan. 1873; 31 Jan. 1873; 12 Feb. 1873.

NRO, N/TC 4/23, 'Sewage and Irrigation', 5 Mar. 1873; 12 Mar. 1873; 19 Mar. 1873. Three years later, after the repair of the city's sewers, Miss Martineau's solicitor reported that she was ready to accept £100 in settlement of her claim and her tenant would accept £115 15s in respect of his. (NRO, N/TC 4/23, 8 Mar. 1876)

[49] NRO, N/TC 5/10, 'Sewage and Irrigation', 3 Nov. 1880, 18 Feb. 1884. When the Executive Committee of the Sanitary Authority elected Harry Bullard, then deputy mayor, as chairman in 1880, he thanked them, stating that: 'He had belonged to the Committee for many years and that one and all having the same object in view, namely the Improvement of the City of Norwich he looked forward to working together with them'. He was still taking the chair in the final meeting recorded in February 1884.

[50] See below, pp.336-337.

[51] NRO, N/TC 15/5, 'Health and Sanitary'. There was an occasional attendance by a member of the Morgan family in 1896.

[52] J.A.Tarn, 'The Housing Problem a Century Ago', *Urban Studies*, 5 (1968), note 24, p.300, made the point that for much of the Victorian period: 'The powers in Public Health Acts, the Nuisance Removals Acts, and the Building Acts were very often adoptive rather than compulsory'. Armstrong, *Population*, p.67, noted the significance of the Norwich Corporation Act (1889) that 'regulated every aspect of public administration and conferred on the council new powers of borrowing'. New water supply and sewerage arrangements were in place from the mid-1890s. Armstrong, in Rawcliffe and Wilson, *Norwich*, observes that by 1896, 84 per cent of the city's population enjoyed piped supplies and 98 per cent by 1908. As late as 1893, one quarter of the city's population had still depended on wells for water – see note 42 above.

[53] NRO, N/TC 15/4, 'Health and Sanitary', 7 Feb. 1893.

[54] NRO, N/TC 15/4, 'Health and Sanitary', 14 Feb. 1899.

[55] D.J. Oddy, 'Food, drink and nutrition' in F.M.L. Thompson (ed.), *The Cambridge Social History of Britain, 1750-1950* (Cambridge, 1990), p.264. See also, *Drink*, pp.39-40, and Dingle, 'Drink and Working-Class Living Standards', pp.612-622.

[56] Dingle, 'Drink and Working-Class Living Standards', pp.612-613.

[57] Dingle, 'Drink and Working-Class Living Standards', p.613.

[58] John Burnett, *Plenty and Want: A social history of food in England from 1815 to the present day* (third edition: London, 1989), p.127.
[59] Burnett, *Plenty and Want*, pp.14-16.
[60] See below, p.171, Table 5.1.
[61] Joseph Rowntree and Arthur Sherwell, *The Temperance Problem and Social Reform* (ninth edition: London, 1901), pp.2-7. Also see above, pp.61, 63.
[62] Burnett, *Plenty and Want*, pp.112-113.
[63] See above, p.63.
[64] Dingle, 'Drink and Working-Class Living Standards', pp.611, 614-615, 621. Also see above, pp.95-96.
[65] *Hawkins*, pp.24-25.
[66] See above, p.41, note 7.
[67] A.E. Dingle, *The Campaign for Prohibition in Victorian England* (London, 1980), p.19.
[68] See above, p.176, note 18.