

Chapter 2

TOXI-CITY: Protecting World-Class Drinking Water

Emma Jones

Abstract In 1938, the UK's first purpose-built laboratories for water quality examination were unveiled in central London as part of the Metropolitan Water Board (MWB) estate. Now a block of luxury flats, this chapter explores the building's conception in the modern, industrial age of urban water production, and its collision with the psyche of water scarcity during natural droughts and the effects of the Second World War on the city. Between 1934 and the post-War era's propaganda about water use/waste, a shift is traced from a MWB public relations strategy focused solely on the *quantity* of water that might be wasted to one that employed a more nuanced, scientific perspective on water *quality* in which the laboratories featured, and therefore drinking water specifically, in such communications. Considering London's water metabolisms of the mid-1930s to the late 1940s, this chapter proposes that the communication about water by the industry during that period is a continuing trope of urban water systems and the interplay between producers and consumers, which we might do well to examine, and challenge, in the context of water as a general product but also as an essential ingredient of our daily diets.

2.1 Introduction

Historians and social scientists would do well to reintegrate ordinary goods like water into the study of consumer society (Trentmann and Taylor 2006).

Walk along any London street, and you may unknowingly step on a cast iron plate embossed with the acronym 'MWB'. These modest metal plates are in fact entry points to a vast subterranean water infrastructure, one that local turncocks knew by heart as employees of the Metropolitan Water Board: London's municipal water manager from 1903 until 1974. More bombastic architectural remnants of the MWB's reign can be found, even if their use has changed, such as the strikingly

E. Jones (✉)
Queen Mary University of London, London, UK
e-mail: emma.jones@qmul.ac.uk

curvaceous red-brick ‘Laboratory Building’, as it became known, on Rosebery Avenue in Clerkenwell, just northeast of central London. Now a block of flats, this former municipal building is elegantly recessed from the street and embraces a very civic-looking lawn. From 1938, it housed purpose-built laboratories for the MWB’s Department of Water Examination, a leading national and internationally-renowned unit of scientific expertise in water chemistry, microbiology, and treatment (Chevalier 1953; Jones 2013). Yet today, on a side-street off Rosebery Avenue the modest brushed-steel sign that announces ‘Laboratory Building’ in an elegant Art Deco font is the only clue to its former use. ‘A laboratory for what?’ a passer-by may well ponder.

Quite apart from the Laboratory Building’s functional role in London’s water supply, its representation in public relations about water consumption in the context of ‘droughts’, saw a new trope in the water industry’s rhetoric about waste: one in which *quality* was promoted alongside the more prominent issue of *quantity* as a driver for ‘behaviour change’. Through the lens of London’s water industry of the 1930s and 1940s, and the role of this intriguing building within the discourse about water conservation, my intention is to trace some of the continuities and discontinuities in urban water metabolisms, specifically in producing drinking-grade water (Fig. 2.1).



Fig. 2.1 ‘The Laboratory Building’, Rosebery Avenue, London EC1, 2012 (Photograph by Emma Jones)

The history of drinking water is important to distinguish from general water histories, as I have previously discussed, because of its particular focus on the body and health (Jones 2013). Much has been written about water's role as a drink and key ingredient in the sanitation revolution of the nineteenth century, both academically and in popular non-fiction (for example, Hardy 1984; Halliday 1999; Hamlin 1990; Johnson 2006), while much less material is available for the twentieth century, with some notable exceptions (Burnett 1999; Hassan 1998; Jones 2013; Penner 2013; Salzman 2014). In the twentieth century story of drinking water in London, the MWB was a central driver in the UK's contribution to world water science, in particular for its creation of the country's first Department of Water Examination. Alexander Houston (later Sir) headed its laboratories from 1905 and he was afforded luxurious research time, which led to the publication of evidence, for example, about the impact of time on water storage for natural processes of water purification – still a central tenet of water science the world over (Jones 2013). Houston also introduced systemic chlorination into London's arsenal of water treatment in 1916, when the pressures of war led to treatment economies.

2.2 1930s: The Laboratory Building Is Conceived

The Department of Water Examination operated from makeshift laboratories in a former nineteenth century water company building (Metropolitan Water Board 1939) until the 1930s when the Laboratory Building was built, but sadly not in time for Sir Alexander Houston to enjoy. He died in 1933, but certainly because of his work, and that of his colleagues, London's tap water could be taken for granted as bacteriologically safe during the inter-war era. The first real rupture in the calm of water security during this period was a severe drought in 1921.¹ In response, the MWB encouraged its customers to voluntarily reduce their consumption by having, for example, more modest baths of five inches deep (Taylor et al. 2009). Later, the need for the MWB to ramp up its public relations on the topic of water consumption was further stimulated by subsequent droughts, officially announced in 1934, 1944, and also in 1949. 'Drought' is now a somewhat contested term for its implicit suggestion that the causes for water shortages are entirely natural rather than systemic, or indeed socio-technical (Swyngedouw 2004; Taylor et al. 2009)² – droughts were perhaps more appropriately known as 'famines' in late nineteenth century London.

¹ Although there were drought periods in 1911, and 1929, the 1920–1921, and 1933–1934 drought events are recorded as being more serious (Chevalier 1953, p. 160–61). For more information on how these droughts affected places in Britain other than London, see also Taylor et al. (2009).

² Droughts, and particularly those occurring in large cities, cannot be viewed as wholly natural phenomena divorced from water management. Urban water's production and distribution, so dependent on industrial infrastructure and central management, as other water researchers have pointed out, makes 'drought' in these contexts as much an outcome of the system as the availability of the raw material: a 'socio-technical' process (Swyngedouw 2004, p. 47; Taylor et al. 2009, p. 569–70).

In 1934, water's on-tap reliability in London, and indeed elsewhere in the country, became less certain again when the effects of the previously dry summer were compounded by another season of low rainfall. London's water reserves were seriously depleted. At first, the Metropolitan Water Board requested that its customers – circa seven million in total – voluntarily reduce their water consumption, like in 1921, but this time with guidance on how to water their gardens more sparingly, and instruction on the use of antiseptics in the toilet so that flushing could be minimised (Taylor et al. 2009). This was swiftly followed by an enforceable ban on the use of hosepipes and sprinklers for domestic gardens, public parks and for washing cars. *The Times* collaborated with the Board in its efforts to encourage behaviour change: a 20 % reduction of water consumption was a target for these imposed restrictions on 'non-essential' uses of water. Nationally, the drought aroused public interest and debate about water supplies (Hassan 1998). During the MWB's 1934 publicity campaign, the waste prevention message was communicated liberally: '[P]ublicity and notices were displayed in public vehicles, buildings, and hotels and on cinema screens' (Chevalier 1953). An article published during the mid-1930s publicity drive to inform the public about London's water production suggests that the MWB's strategy was to guilt-trip consumers into more thoughtful water use by dazzling them with aerial photographs of reservoirs, dams and mighty water pumps, collectively depicting the effort and expense involved in capturing and transporting river and groundwater to their taps (Ray 1934).

The 1934 crisis also coloured where the MWB should locate the building it was commissioning for the Department of Water Examination: central command was needed for crises management and so it was agreed that the Laboratory Building would flank the existing administration headquarters, which was already grandly occupying a swathe of Rosebery Avenue on the estate of the former New River Company that had been in situ since the early seventeenth century. By 1920, the MWB's central office had absorbed the New River's famous Round Pond under its building. The central headquarters, now also flats, has been described 'as prestigious headquarters on the grandest municipal scale, almost rivalling County Hall' – home of the former London County Council (Forshaw 2001). The visibility of London's water management was therefore writ large in Clerkenwell, visibly central to the metabolism of everyday inner city urban life.³

2.3 On the Drawing Board

The architect John Murray Easton, whom the Metropolitan Water Board recruited to design the new laboratories in 1936 formed one third of the highly-regarded architectural practice Easton, Robertson and Hall.⁴ In selecting Easton as the

³ Clerkenwell is in the London Borough of Islington.

⁴ John Murray Easton (1889–1975) was President of Royal Institute of British Architecture (RIBA) in 1939, and was awarded the RIBA Royal Gold Medal for Architecture in 1955, as was his partner Sir Howard Morley Robertson (1888–1963) in 1949; biographical files are available at the RIBA Library, London.



Fig. 2.2 ‘Opening of the Metropolitan Water Board’s New Laboratories’, 1938 (Source: London Metropolitan Archives, City of London: Thames Water Predecessors Archive (Metropolitan Water Board), ACC/2558/MW/C/14/103)

lead designer, the Board was sensibly placing trust in an architect with a proven track record of delivering specialist buildings for science, such as Cambridge University’s zoological laboratories and School of Anatomy (Annual Report of the Director of Water Examination 1936; Department of Zoology, University of Cambridge 2014). He was also an eminent figure in Britain’s architectural *avant-garde*, consequently the laboratory was poised to be a thoroughly modern building, both architecturally and scientifically. However, these modernist values were not shared by all public figures in the inter-war era (Mayer 2000). Even partners in the architect’s own practice dissociated their work from the more experimental modernist architects of the era, preferring their buildings to be labelled as ‘moderate’ modern (Robertson 1932) (Fig. 2.2).

Functionality, however, united all designers on the modernist spectrum, and for this laboratory to house experts and be productive there were many practical challenges for Easton and his colleagues to consider. For example, the inner city location on the main thoroughfare of Rosebery Avenue, which linked Islington and Holborn, meant movement, noise and pollution from road traffic. It was a situation which may have been tolerable for administrators but for the delicate arts of measuring chemicals; tasting; smelling, and studying the biological and chemical minutiae of water samples, the location was far from ideal. Therefore, to give the laboratories

some sanctuary, the building was to be set as far back as possible from the road, and an extra design safeguard were vibration-proof lab benches. The MWB's financiers had evidently agreed on the wisdom of investing in a high-quality and performance building. To make way for the lab, a water treatment filter bed was decommissioned to allow space for a generous landscape garden to operate decoratively and as a sonic and olfactory buffer. A large fountain in the garden that would be illuminated at night was another signal that there was no intention beyond the practical necessity for some distance from the hub-bub to make the building a shrinking violet. Indeed, the striking opaque glass frontage wrapping around the building's interior staircase that can be seen in the photographs in this chapter was an equally strong visual beacon to attract public attention to this municipal space of water science rather than to keep it under wraps.

Easton had to meet the considerable expectations of the Department's staff for improving lab conditions. The Deputy Director of Water Examination, Mr Byles recounted his frustrations and those of his colleagues with their existing premises:

...the Biologist had his laboratory on the third floor, but he had to come down to the first floor to do certain experiments, which required a reasonably lofty room; to the wine cellar in the basement for micro-photographic work, because only there was the building reasonably free from vibration and then back to the darkroom on the third floor to develop his photographs (Metropolitan Water Board 1939).

Resolving such detailed user specifications was no doubt tantalising for Easton and his colleagues, in what would be a building that was all about use and the user: the biology team, for example, dealt with up to 2000 test tubes to process 120 water samples daily.

Part of the design process involved a trans-Atlantic trip to consult water science colleagues in the United States of America (USA) and Canada (Harold 1936). The investment underscored the MWB's intention for this to be a flagship building nationally, but also internationally on the world stage of water science. For the USA trip, the Rockefeller Foundation provided a letter of introduction as a passport to must-see water people and facilities, with advice from senior public health administrators. This transatlantic dialogue presents an example of the ongoing international mutualism of the hygiene revolution that had grown initially out of the decades-long battle against cholera (Howard-Jones 1975). The USA forged ahead with chlorination in the first decades of the twentieth century, along with sanitary allies in Europe. During this period, water production became an ever more sophisticated, and increasingly standardised industrial process, albeit in industrialised societies. The strength of this specialisation by the inter-war period is one reason why the desire to create a separate departmental building was both a practical necessity and of symbolic importance in elevating what was still a relatively new science.

The final building, although adjacent to the administrative headquarters, in its quirky embrace of bricks, was an entirely separate unit physically and aesthetically. A third larger than the former laboratories, it had four storeys although two of these were most prominent as the uppermost storey was recessed to allow a flat roof space

for outdoor experiments (see the white-coated figures just visible in the 1938 photograph of the laboratories), and the final storey was a basement. Despite its modest stature, the building's impressively engineered shape and glazing certainly made it a visually distinctive purpose-built space. As one of the 1938 inaugural photographs of the building shows, two rows of steel-framed windows made up most of the ground and first floor façades with high-tech reinforced glass for sound-proofing. Chemistry was the focus of the top floor, with one laboratory spanning two thirds of that space, the Chief Chemist's quarters and the 'chemical store'. In an appreciation of the new building for the Board's internal magazine, the good north light on the top storey was noted as being 'essential, as many of the tests depend upon colour matching or noting colour changes' (Metropolitan Water Board 1939). The first floor was designed for the bacteriological end of operations, with two large laboratories, 'sorting incubators' and 'media filter/media store'. Given the concern about air pollution from the road affecting experiments, this portion of the building also had sophisticated air conditioning technology. On the ground floor, a key feature was the incorporation of a spacious 'library and lecture room' for the inevitable pilgrims: at a 1936 meeting at the MWB it was recorded that 'the hospitality of the Board's Laboratories has been extended to numerous visitors and professional staff not only of organisations belonging to Britain and the Dominions, but also to foreign countries, and the names of many of these rank high in the annals of science associated with water supply' (Metropolitan Water Board 1939).

The building's first official visitors in October 1938 were the Minister for Health, who was greeted with a guard of honour, and the Mayor of Finsbury Borough Council. The latter represented a local authority known to promote the socially progressive architecture and values that were also embodied in the Finsbury Health Centre for preventive medicine that was concurrently inaugurated that month, and somewhat upstaged the MWB's new laboratories in the architectural press. Even so, the building did not fail to make an impression or a large-scale photographic splash on the pages of the main architectural journals of the day, albeit with the same details rather lazily rehashed from the MWB's press release. The journal *Building* at least offered some opinion, congratulating the plan's 'extreme simplicity' and the project's 'excellence in brickwork' (Anon 1938).

2.4 Water Stress

The lecture theatre provided a space for disseminating scientific knowledge to visitors, reflecting the implicit need for communication about water: both professional knowledge dissemination and, increasingly during the ensuing years, general public education. When World War Two broke out in London, water infrastructure would become more visible and more widely discussed, at least in the public domain, than in peacetime. The MWB went on a publicity drive to ensure that each Londoner was versed in home water sterilisation techniques, on one occasion using a radio broadcast with instructions from the Director of Water Examination on do-it-yourself

chlorination – Milton became a must-have product (Jones 2013). The issue of waste prevention was, of course, vital because of reserves needed for fire-fighting on a major scale. A series of posters promoted this message, some featuring ‘Tommy Tap’, a cartoon-faced faucet (Metropolitan Water Board 1939–1950):

‘YOUR HELP IS URGENTLY REQUIRED. YOU SAVE WATER, BRITAIN SAVES FUEL.’

‘EVERY DROP OF WATER YOU USE HAS TO BE PUMPED. EVERY PUMP IS DRIVEN BY COAL OR OIL. SAVE COAL, OIL AND USE AS LITTLE HOT OR COLD WATER AS YOU POSSIBLY CAN.’

‘THOSE WHO WASTE WATER HELP THE ENEMY. THOSE WHO SAVE WATER HELP BRITAIN.’

Water quality also had to be prominent in the minds of Londoners due to the dangers of sanitation breaking down during the Blitz when London’s subterranean infrastructure was often lacerated, or under threat. In the Post War demand for water to rebuild and regenerate London, and particularly following an official drought emergency in 1944, the MWB’s public relations strategy became more sustained to elicit a general appreciation for, as the organisation’s own corporate historian put it, the ‘need for economy in the use of water’ (Chevalier 1953). Visits to waterworks to enthuse officials from local authorities and health professionals about the water industry, such as nurses, were encouraged, a travelling exhibition was mounted, and a film documentary was even commissioned (Figs. 2.3 and 2.4).



Fig. 2.3 ‘Emergency Supplies, Edward Street, Canning Town, [London] E16’, 1944 (Source: London Metropolitan Archives, City of London: Thames Water Predecessors Archive (Metropolitan Water Board), ACC/2558/MW/C/14/112)

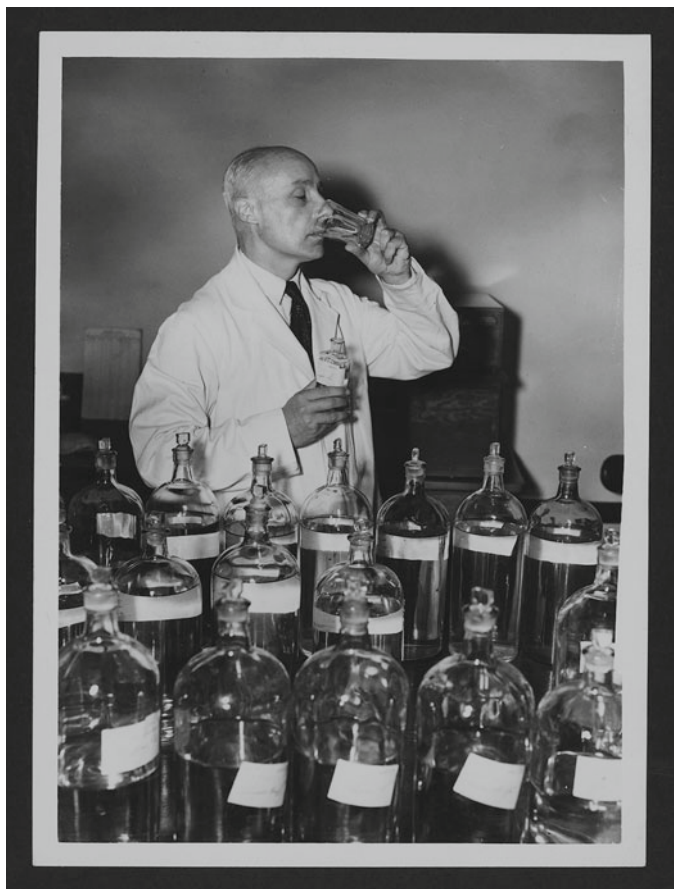


Fig. 2.4 'Metropolitan Water Board Anti-Waste Campaign: Mr S. Barwick', c.1940–1944 (Source: London Metropolitan Archives, City of London: Thames Water Predecessors Archive (Metropolitan Water Board), ACC/2558/MW/C/14/113)

Within the Post War public relations campaign, the Department of Water Examination's laboratories had two starring roles. The first was in a series of photographs documenting the labour of water examination and research scientists at work: sterilising media culture, at lab benches awash with test tube samples, sucking up fluid with pipettes, and performing the all-important taste tests with a standard glass of water. This was all under the auspices of the grandly-titled 'Metropolitan Water Board Anti-Waste Campaign'. One photograph introduced 'Mr S. Barwick, [who] has a very unusual job. He is a water-taster, and tastes fifty samples a day at the Water Board's Laboratories'.

These intriguing vignettes of scientists-at-work certainly show the MWB's intention to present a more nuanced narrative about water quality within the rhetoric of water conservation. They invite the viewer into the laboratory to virtually experience



Fig. 2.5 ‘Metropolitan Water Board Anti-Waste Campaign: Inoculating samples of water to detect the presence of any undesirable organisms’, c.1940–1944; London Metropolitan Archives, City of London: Thames Water Predecessors Archive (Metropolitan Water Board), ACC/2558/MW/C/14/113

drinking water production and in contrast to the rather patrician voice of the 1930s water industry and of the earlier years of the War. Microbiology was also represented in a far more sophisticated mode than had been deployed, for example, in a 1935 supplement on ‘London’s Water Supply’ that had only one article on water quality in a several-page spread of technological prowess, merely depicting the scientific aspect of London’s water production and examination via photographs of two petri dishes: one riddled with bacteria, and the other spotless (Harold 1936). In a decade, the representation of science by the MWB had transformed. The fact that water examination had also gained a modern building allowed it a new stage for performing within such modern, sophisticated modes of communication (Fig. 2.5).

When I first came across the Anti-Waste Campaign photographs, I was surprised by their candid revelation of what I had hoped to find while looking for evidence of the humans involved with the science of London's drinking water production in the 2000s, yet I found little contemporary material. These revealing photographic documents of scientists going about their daily work were refreshingly unguarded. Rather than unconsciously knowing that some anonymous white-coated person is testing and researching our water quality, here we see a real person holding a petri dish, tasting a sample of water on their own tongue, actually driving home to an audience the visceral reality of the labour that is involved in the production of drinking water. If anything, in revealing the precise science, they are also a reminder of the possibility of human error.

Prioritising this *quality* as well as *quantity* message as a public relations strategy recurred in the laboratories' second starring role of the 1940s, in the film 'Every Drop to Drink' (Metropolitan Water Board 1948). In 1947, the MWB's Chairman wrote that the intention for the film commission was to 'spread a knowledge of the Board's undertaking together with a certain amount of propaganda – which could be suitably camouflaged – to try and get people to use as little water as possible.'⁵

The 19 min result laid on that message thickly in a didactic tone, while also serving up a succinct portrait of the MWB's work in the short documentary. One section of the film that showed the might of water pumps choreographed in the edit to a full orchestral score was a clear nod to the social-realism style of Russian film-makers then in vogue (Boon 2000, p. 110). However, the film's coverage of such engineering prowess did not dominate the narrative: equal emphasis was given to water quality. The drinking water theme was clear in the opening lines: '6.5 million Londoners have a formidable thirst. Over 300 million gallons of water is provided for them every day, for food and drink, for industry, transport, cleanliness and health.' This commentary went over footage of children refreshing themselves from a public drinking fountain, a toddler drinking a glass of water beside the kitchen tap, then a man glugging from a pint of beer (water being the all-important raw material in the latter, I assume). The visual absence of representations of water's use for industry and sanitation revealed the carefully mediated frame on how the MWB wanted its product to be viewed by the audience: as an essential nutrient rather than a key ingredient for the taboo topic of everyday sanitation.

Following the film's potted history of the nineteenth century, and a lingering shot of the MWB's administrative headquarters, the camera turns to showcase the 'magnificently-equipped laboratory' with several scenes of scientists at work. Similarly to the anti-waste photographs in content, we see the daily cast of the laboratories on their production lines: the delivery of water samples from a suited man – fresh from a Morris Minor car that workers travelled to and from the reservoirs in – and straight onto the lab benches to several white-coated colleagues on the test-tube production line; a chorus of pipettes in action; samples in petri dishes being moved on a trolley into the 'bacterial incubator' unit; the monitoring of

⁵ Letter of H. F. Cronin, Chairman of the Metropolitan Water Board's Works and Stores Committee, 17 November, 1947, London Metropolitan Archives, reference ACC2558/MW/C/8/213/001.

chlorination machinery, and again, Mr Barwick the water-taster-extraordinaire performs. As he sips from a glass, the commentary explains, ‘an expert with an unusually sensitive palate tests samples of water every day to see whether it is over-chlorinated, flat, or just right.’

The documentary’s final couple of minutes offer some light relief from its stiff tone, depicting a more sumptuous enjoyment of water recreationally: a diver plunges into a river; some rowers drift past the lens; a group of people loll by a riverbank; and there is a lingering hold as a sprinkler pivots around a large lawn. The narrator reminds us that this pleasure in ‘rural’ water is ‘justly celebrated’ before an abrupt cut to a bustling urban lido full of young people frolicking in the swimming pool; women in chunky bikinis march past the camera and a portly man is shown purposefully carrying a deckchair to the poolside. The scene gives an impressionistic portrait of just a few of the Londoners enjoying their leisure time at the lido, that epitome of the interwar architectural and cultural zeitgeist in Britain, just like the public drinking fountain at its side that children scamper to and drink from in the film’s parting shot – both civic amenities are, of course, brought to you courtesy of chlorinated municipal water.

The documentary was premiered in 1948 at the Tivoli cinema on the Strand in London, then it was screened in schools and other institutions, apparently extensively, including at the Foreign Office and the Central Office of Information. In 1949, the film was also shown to delegates at the United Nations Scientific Conference on the Conservation and Utilisation of Resources, incidentally a year when another drought struck London (Chevalier 1953, p. 329). And further international profile for the MWB came the following decade when it represented Britain at the World Health Organization’s meeting to set the first International Standards for Drinking Water in Geneva.

2.5 Conclusion

London’s ‘world-class’ water quality is certainly one connecting point between the 1930s, 1940s, and the present. The move to actively promote water quality as an incentive for wiser water use in the 1940s by bringing the consumer into the laboratory was a bold one: how many critical questions might it also have raised about the water industry’s methods, stoking consumer fears about chemicals for example in the brave new world? In a way, the industry was almost encouraging consumers to fetishise their water in order to not take it for granted, to be awestruck by a simple glass of healthy water produced in the city. Fetishising water quality today is something we much more readily associate with bottled water when particular brands of mineral or spring water are elevated by advertisers above tap water. Water quality is not only fetishised by the consumer who chooses Evian over tap water, but also in the professional, scientific spheres, which further advanced in the second half of the twentieth century with disciplines such as molecular biology, environmental toxicology, and then with the spectre of bioterrorism to boot. The specialisms

surrounding water science have only grown, becoming more complex and consequently much more publicly inaccessible and distant from most tap water drinkers. Unlike the Laboratory Building's era, London lacks any public buildings relating to our water supply with a privatised industry. Its facilities are gated communities, which are located on the periphery of the city, often for good practical water abstraction, treatment, and security reasons but this geography certainly makes it difficult to see the water industry's role in your daily life, apart from virtually.

While the contemporary water industry is keen to assure consumers of the stringent legal/regulatory hoops that it must leap through to produce world-class tap water, unlike the 1940s' media campaigns, our lack of access to any real window on the daily work of flesh and blood scientists, and engineers, is a worrying omission in the industry's communication to consumers. Perhaps this is because too much consideration of drinking water examination and production might lead to uncomfortable debates about why tap water is employed for uses for which potable quality is unnecessary, and consequently the topic of greywater technologies? Employing alternative or 'soft' technologies and/or re-plumbing cities to divide grey and drinking water supplies are propositions that are all too often swiftly rebutted by large technologies, with associated slick public relations campaigns, even though in European Union countries, for example, there is a mandate to protect places of 'drinking' water abstraction under the terms of the Water Framework Directive (2000/60/EC).⁶ These regulations make even more of a mockery of flushing drinking water down the loo, however wise it, of course, is to prevent water pollution and reduce the environmental and labour costs of drinking water treatment.

Public relations within the water conservation debate, if light touch in the 1940s, now play an ever more sophisticated role in the water industry, which, like most modern businesses, has its dedicated communications departments. As well as such departments' customer services role, they also mediate much of the information we receive about our urban water metabolisms and *they* also instruct *us* on how we should be reducing our water consumption, often greenwashing the real issues in the water conservation debate with novel water-saving tips. Then, as now, critiques of the systemic flaws designed into London's water industry, and wastewater, infrastructure and treatment as it modernised, and the philosophies underpinning these technologies and practices, were avoided by focusing on the consumer's rather than the industry's role in waste prevention, and, in that respect at least, little has changed.

References

- Annual Report of the Director of Water Examination (1936). London Metropolitan Archives, ACC/2558/MW/W/01/08
- Anon (1938) Building. November 1938
- Boon T (2000) The shell of a prosperous age: history, landscape and the Modern in Paul Rotha's *The Face of Britain* (1935). In: Lawrence C, Mayer Anna-K (eds) *Regenerating England: science, medicine and culture in inter-war Britain*. Rodopi, Amsterdam/Atlanta, pp 107–148

⁶See Article 7: Waters used for the abstraction of drinking water.

- Burnett J (1999) *Liquid pleasures: a social history of drinks in modern Britain*. Routledge, London
- Chevalier WS (1953) *London's water supply 1903–1953: a review of the work of the Metropolitan Water Board*. Metropolitan Water Board, London
- Directive 2000/60/EC of the European Parliament and of the Council http://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF. Accessed 7 Sept 2015
- Forshaw A (2001) *20th century buildings in Islington*. Islington Society, London
- Halliday S (1999) *The Great Stink of London: Sir Joseph Bazalgette and the cleansing of the Victorian Metropolis*. Sutton, Stroud
- Hamlin C (1990) *A science of impurity: water analysis in nineteenth century Britain*. Adam Hilger, Bristol
- Hardy A (1984) Water and the search for public health in London in the eighteenth and nineteenth centuries. *Med Hist* 28:250–282
- Harold HH (1936) Report on the chemical and bacteriological examination of the London waters for the twelve months ended 31st December, 1936. London Metropolitan Water Board, Department of Water Examination. London Metropolitan Archives, ACC/2558/MW/W/01/08
- Hassan J (1998) *A history of water in Modern England and Wales*. Manchester University Press, Manchester/New York
- Howard-Jones N (1975) *The scientific background of the international sanitary conferences, 1851–1938*. World Health Organization, Geneva
- Johnson S (2006) *The Ghost Map: a street, an epidemic and the two men who battled to save Victorian London*. Allen Lane, London
- Jones EM (2013) *Parched city*. Zero Books, Winchester/Washington, DC
- Mayer A (2000) A combative sense of duty: Englishness and the scientists. In: Lawrence C, Mayer A (eds) *Regenerating England: science, medicine and culture in inter-war Britain*. Rodolpi, Amsterdam/Atlanta
- Metropolitan Water Board (1939) *Aquarius: the magazine of the Metropolitan Water Board Staff Association*. Special Number. Water Examination Laboratories. New River Head, London Metropolitan Archives, ACC/2558/MW/C/58/007, pp 19
- Metropolitan Water Board (1948) *Every drop to drink*. World Wide Pictures, Dir. Mary Francis. London Metropolitan Archives, ACC2558/MW/C/11/26
- Penner B (2013) *Bathroom*. Reaktion, London
- Ray C (1934) Supplying a great city with water. *The World of Wonder*. London Metropolitan Archives, ACC/2558/MW/C/43/011, pp 353–356
- Robertson H (1932) *Modern architectural design*. The Architectural Press, London
- Salzman J (2014) *Drinking water: a history*. Overlook Duckworth, London/New York
- Swyngedouw E (2004) *Social power and the urbanisation of water: flows of power*. Oxford University Press, Oxford/New York
- Taylor V, Chappells H, Medd W, Trentmann F (2009) Drought is normal: the socio-technical evolution of drought and water demand in England and Wales, 1893–2006. *J Hist Geogr* 35:568–591
- Trentmann F, Taylor V (2006) Water politics in nineteenth century London. In: Trentmann F (ed) *The making of the consumer: knowledge, power and identity in the modern world*. Berg, Oxford

Urban Water Trajectories

Bell, S.; Allen, A.; Hofmann, P.; Teh, T.-H. (Eds.)

2017, XXI, 214 p. 23 illus., 14 illus. in color., Hardcover

ISBN: 978-3-319-42684-6