

Book review

PURE AND CONSTANT: THE LIFE AND LEGACY OF THOMAS HAWKSLEY 1807–1893

S. Smith, K. Brand, P. Ellis, T. Keyworth and K. Farrer. Arima Publishing, 2008, ISBN 978-1-84549-304-2, £10, 143 pp.

This book is about the water engineering legacy of Thomas Hawksley (1807–1893). Thomas Hawksley is one of the UK's most famous water engineers and, born in Arnold, Nottingham, he is a legend in the East Midlands.

Thomas Hawksley became president of the Institution of Civil Engineers in 1871 and remained in the position for two years. His son, Charles, later became president in 1901. He was also president of the Institution of Mechanical Engineers in 1876, who commemorate him with an annual lecture and a gold medal for the best original paper (detailed in Appendix VI). In addition, Hawksley was a founder member and president of the Institution of Gas Engineers and Managers from 1864 to 1867 (Appendix VIII). He was elected a Fellow of the Royal Society in 1878 and was knighted by both Denmark and Sweden (p. 32). By all accounts, therefore, a remarkable engineer.

The book is a compilation by five authors. It details Thomas Hawksley's engineering achievements but is also a reflection on his life and times. It was sponsored by MWH Limited as part of their Hawksley bicentenary celebrations.

It is reported in the book (p. 81) that together, Hawksley and his company (he set up a practice initially at No. 3 Great George Street) were involved in over 150 waterworks schemes both in the UK and overseas. Most famously, Hawksley worked as chief engineer for the Nottingham Water Works Company, which established his reputation at the age of 23. Subsequently he was appointed water engineer for Leicester and for Sheffield, following the Dale Dike disaster. One of his other famous schemes was the precedent-setting and controversial Vyrnwy dam for Liverpool (Appendix II). Like Bazalgette for sewers, Hawksley founded many of the standard principles for water supply. These included establishing run-off equations for reservoir design, water filtration through gravel and then sand, lime treatment and pressurised distribution. It was his persistence with pressurised distribution that had the greatest impact at that time (1830). Most had given up the idea because of the large losses from leaks. Hawksley determinedly improved the basic components, the pipes and the joints, enlisting the

cooperation of the other trendsetting locals, the Butterley iron works. There were also better 'O' rings, washers and compression fittings. He pioneered this system in Nottingham, thus ensuring the death toll from Indian cholera was much lower here than in most other cities.

The first three chapters tell this story in the context of the time and suggest the strong influence that Hawksley's family and their connections would have had on his early career. Seeing at first hand the truly desperate urban conditions that many lived in must have influenced his ambitions to engineer some solutions. As noted in chapter 1, this was the machine age, the industrial revolution and it is interesting to wonder in this year of Darwin what would have happened if as much attention had been paid to the emerging sciences of microscopy and epidemiology as was suggested at the time by John Snow: would solutions to the cholera outbreaks have been found much sooner? Urban living has now encouraged microbial resistance as well as horizontal evolution between microbes – hopefully we will cope better with these forthcoming epidemics.

Chapter 5 provides evidence that Hawksley understood the importance of water quality and this was the reason for introducing pressurised mains and filtration. He preferred river water supplies (p. 51, p. 113, p. 124) but was eventually driven to abandoning the waterworks for the River Trent when it became too polluted and resorted to deep aquifers as an alternative – a pattern which was repeated in other towns. Hawksley also worked on wastewater schemes and he recognised that the practice of traditional sewage farming was insufficient without additional chemical or filtration treatment to render sewage harmless.

Chapter 4 also notes that Hawksley understood both French and German and caused consternation when he suggested to a parliamentary enquiry that the French equations for calculating flow rates were superior to the rather empirical approach used in Britain. There are other case studies where his experience and ingenuity on site was tested, typically when risky leaks or movements started in the dam that was being worked on.

Thomas Hawksley's first post was in an architect and surveyor's office (chapter 3) working and helping with the development of Nottingham. Like all the architecture and buildings of the time, waterworks were lavishly decorated and

superbly ornate. This is covered in chapter 4, but an idea can be gained from the description of chimneys as smoke towers. This is a more accurate description: many had enclosed staircases, viewing platforms, iron work filigrees and decorated brickwork. This chapter is a reminder of how precious our engineering heritage is.

Starting with the portrait of Thomas Hawksley at 80 by Sir Hubert von Herkoner, now found in the National Portrait Gallery, all the diagrams, illustrations, maps and photographs in this book are outstanding. They also include a delightful series of watercolours of the various pumping stations held in private collection by MWH.

In summary, this is an excellent book for anyone with an

interest in Thomas Hawksley, the social history of the time and the contribution made by the water industry to heritage.

I congratulate the authors for successfully steering the line between providing sufficient technical details combined with high-quality drawings to capture the reader's interest. Thanks are also due to MWH for producing the book and for donating the £10 purchase price to Water Aid.

The technical appendices not mentioned so far also include a list of Thomas Hawksley's projects (Appendix I), his presidential address (Appendix III), the history and dynasty of MWH (Appendix IV), the ICE obituary (Appendix V) and biographical details on the authors.

ANDREW WHEATLEY