

BOOKS & ARTS

Modest heroines of time and space

The astronomical activities of two women helped to open up the heavens and ensure that a city ticked to the same time. **Patricia Fara** asks if their laborious work was valued.

Ruth Belville: *The Greenwich Time Lady*

by David Rooney

National Maritime Museum: 2008. 192 pp.
£12.99

The Georgian Star: How William and Caroline Herschel Revolutionized our Understanding of the Cosmos

by Michael D. Lemonick

W. W. Norton: 2008. 178 pp. \$23.95

When writers want to make science history sound exciting, they often focus on inventions, using military vocabulary to enthuse about major breakthroughs, victories over illness or unprecedented advances along the upward path of progress. Dava Sobel's *Longitude* (Walker, 1995) captivated millions of readers who enjoyed believing that a single inspired innovation — John Harrison's clock — had solved the greatest scientific problem of the age. Other historians are more circumspect. In the opinion of David Rooney, author of *Ruth Belville: The Greenwich Time Lady* and curator of timekeeping at the Royal Observatory in Greenwich, London, "New technologies don't simply replace old ones... they just add another layer of complexity to our lives." Decades after electrical time signals were introduced, he explains, many public clocks still operated mechanically, telling different times and so generating confusion rather than imparting information. How could passers-by know which of them, if any, was right?

An energetic and enterprising researcher, Rooney writes with verve, successfully infusing dramatic suspense into the everyday mundanity of horological history. He opens his saga in 1811 with a youth calling himself John Henry: his mother had fled to London from revolutionary France, but he concealed his foreign family name of Belville to secure a government job as an astronomical assistant. The book's modest heroine is John's daughter Ruth, who died in 1943 from gas poisoning after conscientiously turning down the lamp to save fuel. In between these two dates — an extraordinarily long stretch for only two generations — Rooney presents some of the fundamental stages during the agreement of universal time, spiced up with gory accounts of Jack the Ripper and a nineteenth-century terrorist whose efforts "to stop time" by blowing up a clock apparently initiated a chain of



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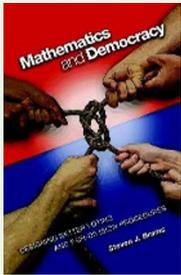
The work of Ruth Belville (above right) let London's clocks display the correct time.

events that influenced the twentieth-century Unabomber, Theodore Kaczynski.

The delight of Rooney's book lies not in such epoch-making events, but in his meticulous uncovering of the ordinary lives and activities that survived unchanged right through episodes of technological innovation. Before the railway system was introduced, synchronizing clocks in different parts of the country was unimportant. But after daily life had become structured by rail timetables, it became essential to make sure that people all over Britain, and eventually the entire world, were running to the same time. It was only in 1884 that international agreement was reached on Greenwich as the prime meridian, the zero line of world time. At the Royal Observatory, astronomers used

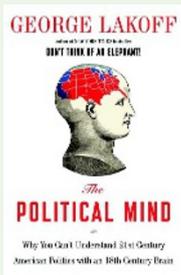
their high-precision instruments to determine the correct time. For around a century, the task of the Belville family was to ensure that this pronouncement was regularly and accurately communicated to other horological centres in London, such as watchmakers, factories and docks.

Ruth Belville spent much of her life travelling around the city, carrying in her handbag an eighteenth-century chronometer that she took to Greenwich every Monday morning so that it could be checked for accuracy against the master clock and so act as a portable standard. Well into her seventies, she trudged along the streets, a mobile purveyor of absolute time who was cheaper and more reliable than contemporary radios. She supplemented this service by



The forthcoming US presidential election has spawned books about the science of voting. Political decisions can be made more democratic using social choice and game theory, allowing voters to express their preferences and enabling public goods to be divided fairly,

explains Steven J. Brams in *Mathematics and Democracy: Designing Better Voting and Fair-Division Procedures* (Princeton Univ. Press, 2008). Brams has also updated his classic 1978 book, *The Presidential Election Game* (A. K. Peters, 2008), which dissects presidential campaign strategies.



Engaging emotions is key to winning votes and political arguments, argues George Lakoff in *The Political Mind: Why You Can't Understand 21st-Century American Politics with an 18th-Century Brain* (Viking, 2008). He suggests that fact-laden

Democrat campaigns could benefit from using emotionally loaded phrases such as 'tax relief' or 'war on terror'.

In *Gaming the Vote: Why Elections Aren't Fair (and What We Can Do About It)* (Hill & Wang, 2008), William Poundstone seeks out the fairest voting systems and explains why the most popular candidate may not always win.

Facing decisions on topics from nuclear terrorism to climate change, the new president might consult Richard A. Muller's *Physics For Future Presidents: The Science Behind the Headlines* (W. W. Norton, 2008). Or he might turn to Joseph S. Nye's *The Powers to Lead* (Oxford Univ. Press, 2008) for tips on how to mimic the best leadership styles.

And for perking up that speech, he might consider reading *Tippecanoe and Tyler Too: Famous Slogans and Catchphrases in American History* (Chicago Univ. Press, 2008) by Jan R. Van Meter, for the stories behind 50 famous phrases, such as "nice guys finish last".

telephoning individual customers, but in 1936 the speaking clock was introduced. Known as TIM, it gave ordinary people immediate access to standardized time. In its first year, TIM took 20 million calls in London alone, from customers who dialled up to hear the recorded voice of Ethel Cain, an exchange operator picked out at an audition after her mellifluous reading of a poem by John Milton. Although there have been several other human announcers since then, this telephonic clock still speaks on, coexisting with more recent timekeepers that continuously set themselves automatically. As Rooney concludes, "New isn't necessarily better, it's just different ... stuff endures."

Rooney has the rare gift of combining the obsessiveness of an academic sleuth with the fluency of a detective novelist: not many people would attempt to write entertainingly about how the dot of the Morse code became the pip of a time signal. With its small format and subdued cover, Rooney's book superficially resembles Michael Lemonick's book *The Georgian Star*, which also uses an engaging and informative style to present a combination of history and science. Like Rooney's, Lemonick's subjects are two close relatives — in this case, the siblings William and Caroline Herschel — who also relied on an accurate scientific instrument, a telescope. There are three Georgian 'stars' in this relationship: two astronomers, here cast in heroic mode, and the planet Uranus, originally named 'George's Star' by William Herschel to gratify King George III of Great Britain and Ireland.

The Herschels worked together on the massive telescopes that helped William to become famous for his discovery of a new planet and for his work on nebulae. Disconcertingly for modern readers with egalitarian aspirations, Caroline seems to have colluded in her own marginalization, protesting that "I am nothing, I have done nothing ... a well-trained puppy-dog would have done as much".

Caroline's reputation improved towards the end of the twentieth century, when feminists commemorated her as the first woman to discover a new comet, even though this is of little scientific significance when compared with the collaboration with her brother and the star catalogue that she laboriously compiled. Caroline features prominently throughout Lemonick's book, although by the epilogue she has been reduced to a cranky old woman who helps her nephew, the Victorian astronomer John Herschel, to assume the mantle of genius passed down from his father.

Whereas Rooney presents his own original research in an accessible way, Lemonick behaves more like a journalist providing a colourful version of well-known historical and scientific material. His major source of information is the astronomy expert Michael Hoskin of the University of Cambridge, UK, and Lemonick repeatedly portrays himself as a reporter transmitting the privileged conversations he enjoyed in Hoskin's Cambridge home. Hoskin is indeed a leading authority on the Herschels, but Lemonick unsceptically attributes to him the ability "to go beyond the straightforward facts ... and to understand their complex and remarkable personalities". At the end of *The Georgian Star*, Lemonick approvingly reproduces William Herschel's boast that, thanks to his telescope, "I have looked further into space than ever human being did before me." In contrast with this eulogy of a powerful instrument, Rooney's closing remark is that Ruth Belville "provided what no electrical wire could: the personal touch." Because she supplied what her customers wanted, her service outlasted sophisticated inventions. ■

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ELECTION READING

No species is an island

The Loom of Life: Unravelling Ecosystems
by Menno Schilthuis
Springer: 2008. 220 pp. £37.50

In the summer of 1966, Harvard biologist Edward O. Wilson and his student Daniel Simberloff undertook a classic ecology experiment in Florida. They identified a number of minuscule mangrove islands, took a census of their mostly insect fauna, and then paid

an exterminator to kill all the animals on the islands with methyl bromide. Observing the islets as they became repopulated, they found that, after eight months, nearly all had regained the same number of species as they had hosted before the extermination. But most of these inhabitants were not of the same species as before.

The scientists' interventions confirmed the theory of island biogeography that Wilson and Robert MacArthur had published some years