

with earlier reformatory efforts; the shift in emphasis from eating well for the nation to eating well for the planet, and from eating for individual health to eating for individual *and* ecological health, did little to change the prescriptive, normalizing nature of earlier dietary recommendations and belied a marked neoliberal undercurrent.

In the final case study, Biltekoff construes the dietary reform efforts attendant with the obesity epidemic of the past two decades (and obesity concern going back to the 1950s) as a convergence of biomedical concepts of eating right and ecological concepts of eating right. This is an interesting claim, but Biltekoff misrepresents the uniqueness of these dietary reforms. ‘The campaign against obesity was unrecognisable as a dietary reform campaign’, she argues. ‘It emanated from locations beyond nutrition and public health, and it focused broadly on a range of behaviours that transcended eating habits’. However, neither of these characteristics was unique to this context or time period, being instead an artefact of selection bias in the sources and case studies chosen. For example, she states that ‘unlike in the other movements I have examined, many of the players in this campaign stood to profit from defining obesity as a health crisis’. Had she consulted, say, Rima Apple’s work on vitamins (see no. 1), not to mention the large literature on this issue in the history of medicine more generally, she would have realized that commercial interests have long contributed to and benefited from the construction of health issues. While Biltekoff suggests that the ‘core message – that people needed to either attain or maintain a “healthy weight” – was not exactly dietary advice’, preoccupation with weight was quite common in nutrition campaigns throughout the 20th century.² Historians of medicine will note as well that Biltekoff does not discuss the low-fat, low-salt or cholesterol-controlling diet reforms that emerged in part from research on coronary heart disease.

As with any synthetic work, it is not possible to cover all topics, and a certain level of generalization is required. *Eating Right in America* is an ambitious book, attempting as it does to cover a wide range of complex developments for a non-specialist audience, and in parts it does so quite well. But its ambition is ultimately unrealized. Incomplete scholarship and oversimplification create a narrative that is compelling but historically flawed and lacking in analytical rigour. Indeed, *Eating Right in America* reflects the vast gap that exists between scholarship on the history of health and medicine and scholarship in food studies and related fields, such as fat studies. To improve our understanding of the complex relationship between diet and health, this is a gap we must endeavour to close.

A.R. Ruis

University of Wisconsin, Madison, USA

doi:10.1017/mdh.2014.34

Malcolm Nicolson and John E.E. Fleming, *Imaging and Imagining the Fetus: The Development of Obstetric Ultrasound* (Baltimore: Johns Hopkins University Press, 2013), pp. xi, 317, \$50.00/£26.00, hardback, ISBN: 978-1-4214-0793-7.

Since the 1960s fetuses have become some of the most visually resonant biomedical entities and ultrasound has played the major role in their clinical imaging. But for all

² See, for example, Jeffrey P. Brosco, ‘Weight charts and well child care: when the pediatrician became the expert in child health,’ in *Formative Years: Children’s Health in the United States, 1880–2000*, Alexandra Minna Stern and Howard Markel (eds) (Ann Arbor, MI: University of Michigan Press, 2004), 91–120; A.R. Ruis, ‘“Children with Half-starved Bodies” and the Assessment of Malnutrition in the United States, 1890–1950’, *Bulletin of the History of Medicine* 87, 3 (2013): 380–408.

of the cultural studies of foetal sonograms, we have sorely lacked a thorough history of the technique. In compelling detail Malcolm Nicolson and John Fleming now tell how, in Glasgow from the 1950s, medics and engineers collaborated to produce one of the most influential ways of seeing inside the body. Unusually, the authors are themselves a historian of medicine and a sonographic engineer, a former member of the Glasgow team turned curator of the material legacy of his field. Together they deploy deep knowledge gained from sustained engagement with publications, instruments, interviews and archives over many years.

The book first reviews early attempts to use ultrasound to reveal detail in soft tissue. These projects did not lead to sustained development or significant applications, because they variously sought to form images by transmission like X-rays rather than by echolocation as in naval sonar and industrial flaw detection; concentrated on the brain, for which the skull massively complicated the task; or lacked institutional support. Two chapters then introduce the situation in obstetrics and gynaecology through a sensitive biography of Ian Donald, who would lead the Glasgow team. The authors' major theme is Donald's lasting commitment to the elite medical holism he imbibed at St Thomas's Hospital, London in the 1930s and how this anti-reductionism modulated his lifelong fascination with technology. Of several early innovations, only his use of radiography to image hyaline membrane disease in living babies really caught on, a lesson for Donald perhaps and another for the reader in the difficulty of putting heterogeneous factors together.

On the strength of his research, in 1954 Donald was appointed Regius Professor of Midwifery in Glasgow, where his approach and interests drove the Scottish success. Familiar with sonar from service in the Royal Air Force, he was keen to look 'behind the iron curtain of the maternal abdominal wall'. But, as Nicolson and Fleming vividly reconstruct, the city, with its medical and industrial institutions, provided the arena, the resources and other key personnel. Donald controlled large maternity wards to which working-class poverty provided too many challenging cases, and was close to the engineering industry associated with shipbuilding on the River Clyde. But he experimented fruitlessly until the husband of a grateful patient introduced him to the industrial fabrication firm of Babcock and Wilcox in 1955. They used ultrasound as a safer method of flaw detection than X-rays. In a legendary cross-class encounter the Communist shop steward Bernard (Benny) Donnelly showed the professor, just emerged from a boardroom lunch, how the technicians tested the equipment by bouncing the beam off their thumbs and shins, and so taught him that biological information could be obtained. The authors reenacted a follow-up meeting between a Kelvin and Hughes Mk IV flaw detector and uterine fibroids, an ovarian cyst and a large steak, and so found out how lucky Donald had been with his choice of settings and material, and more about what he learned.

If we approach (and will leave) the central chapters via Donald's biography, and if patients play only a small role, Nicolson and Fleming excel in restoring agency to a host of other actors, especially Thomas (Tom) Brown, a brilliant young Kelvin and Hughes engineer with something to prove. Clinical experiments failed until he volunteered to join the team, and with his help Donald and registrar John MacVicar gained enough experience in interpreting signals and eliminating alternatives to pull off some life-saving and confidence-boosting 'diagnostic coups'. This work used the one-dimensional or A-scope displays to which Donald had become committed, but Brown independently adapted the more pictorial two-dimensional or B-scanning mode to the problem at hand. The resulting 'bed-table scanner' was also the first 'contact' machine, with the sonic coupling provided by a film of olive oil rather than a column of water. The book goes on

to explore the series of innovations that led to the first commercial medical scanner, with the spotlight on the difficulties of clinical calibration and relations between engineers and clinicians. We may not gain much sense of the economics, but there is a strong section on how Dugald Cameron's consumer-oriented design turned one-off grey metal boxes into modularised, commodified white goods that improved clinician convenience while reducing patient intimidation.

Diagnosing pregnancy was not a priority initially. A nurse, Marjorie Marr, first recognised the foetus, but only her uncanny knowledge of the position of the head revealed that she had taught herself to identify echoes from the skull. The team produced some high-profile pictures of pregnancy in 1958, and Donald reassured himself with experiments on kittens' brains that ultrasound at diagnostic intensities was 'no more dangerous than listening to Beethoven's Fifth Symphony'. In the 1960s they improved the differential diagnosis of normal pregnancy and various pathological conditions. The first *in vivo* growth curves increasingly informed clinical decisions. Colleagues' amused scepticism fell away and visitors, students and orders rolled in.

Donald retired in 1976, around the time Glasgow dominance ended, in part because he had not created a school. An Anglo-Catholic, he devoted his time to bemoaning liberal attitudes to extramarital sex and campaigning against abortion; while still in the clinic he gave women photographs of their scans to put them off. But since the main use of the technology was in detecting abnormalities for which the only clinical option was termination, he feared that he had inadvertently contributed to a Brave New World that emptied obstetrics and gynaecology of the moral agenda in which he had been trained. Nicolson and Fleming close with reflections on feminist critiques. With Donna Haraway, they stress the inescapability of technological mediation. While acknowledging that this has diminished women's autonomy and authority, they sketch, in line with ethnographies of *in vitro* fertilisation, how foetal objectification has promoted new forms of emotional and imaginative identification even in pregnancies not carried to term.

As a study of the development of obstetric ultrasound in Glasgow it is hard to imagine this book being surpassed. If the early and late chapters are perhaps not quite as satisfying, the core is as finely tooled as the best Clyde-built machine. Readers benefit not just from the authors' rare pooling of expertise, but also from their bridging between their own cultures: engagement with the more esoteric technical, medical and historical matters is as confident as the standard of exposition is high. Beyond Glasgow, Nicolson and Fleming build on Deborah Nicholson's research on the diffusion of the technique and place the Scottish innovation with respect to other work. There would be more to say about the international circulation of ideas, techniques and machines, and relations to other specialties. The foetus is only part of the history of ultrasound, even in obstetrics and gynaecology, as this book makes clear, but imaging and especially imagining the foetus is also a bigger story, and here there is more to do. The authors outline how it gained a clinical presence and the later chapters contain some new material on its public life. To flesh out that larger history, it will be necessary to compare the new images of the foetus more thoroughly with those that went before and to excavate what happened when technologies of mass communication brought the clinical pictures into various settings of viewing. As it stands, however, this is a distinguished history of an important innovation.?

Nick Hopwood
University of Cambridge, UK