

Review

Fiona Gleed recommends this historical account to anyone wanting to broaden their perspective on women's role in engineering and society.

Magnificent women and their revolutionary machines

Author: Henrietta Heald
Publisher: Unbound
Price: £20.00
ISBN: 978-1-783-52660-4

IN 1919, A GROUP OF WOMEN IN THE UK, concerned that opportunities in engineering were receding as men were demobbed from World War I, started the Women's Engineering Society (WES). Their stories, and those of their families and colleagues, are presented in *Magnificent women*.

Henrietta Heald's first biography was of William Armstrong, and this book stemmed from an interest in another engineer with links to Newcastle upon Tyne, Rachel Parsons. We first meet her at that initial WES meeting, with her mother, Lady Parsons, also present. They are joined by Lady Shelley-Rolls and Lady Moir, Janetta Ornsby, Margaret Rowbotham and Laura Willson. While the status and backgrounds of these 'Leading ladies' differed, all had been involved with engineering during the war.

Rachel Parsons' story runs through the book, from her 'Brilliant inheritance', with a wealthy family engaged in science and discovery over several generations, through her founding and presidency of WES to the 'Jagged abnormalities' surrounding her death in 1956. Technical innovations are described in tantalising outline, leaving many threads for future scholarship, while the triumphs and tragedies of her life are explored in greater detail.

The second protagonist, Caroline Haslett, is introduced in 'A new dawn'. She had a less illustrious background, but played a pivotal role in WES as its first Secretary and later as President. Caroline was active in a number of other organisations related to women and technology, leading to collaborations and conflicts that are explored in some depth.

One of these, the Electrical Association for Women, had a significant overlap of ambition as well as membership. Lady Moir, introduced as one of the seven at the first WES meeting, also served as President of both organisations and developed 'The All-Electric House' demonstration project in Bristol, showcasing the potential of domestic appliances.

The 'Conquest of the air' provided opportunities for women on the ground and in flight. The author speculates that novelty and innovation allowed

a more diverse workforce to emerge, with the Royal Aeronautical Society taking a lead in admitting women to professional membership.

Amy Johnson is one of the most well-known individuals in the book, with a series of record-breaking flying exploits prior to her death as a pilot in World War II. But Amy was also the first woman to qualify as a ground engineer and served as President of WES.

Among the other women we meet in this chapter, I was particularly interested in Tilly Shilling, with her innovations in engine design, and Letitia Chitty, who applied her structural analysis techniques to structures in civil engineering as well as aerospace.

Alongside the stories of individual women, Henrietta Heald explores social and political changes in the UK that facilitated or restricted diversity in engineering. The opening of educational opportunity in schools and universities allowed women to study science and qualify as engineers. Nancy Astor MP, the first

woman elected to the House of Commons, hosted celebratory parties and convened committees empowered to develop employment of women. And in challenging legislation that limited pay and working hours, women in engineering advanced the case for equality in employment.

The book closes with a listing of milestones for women since 1805, focusing on STEM in the UK. Familiar names for me included Sarah Guppy, celebrated in Bristol for her involvement with the Clifton Suspension Bridge, and Sarah Buck, the first woman President of the Institution of Structural Engineers.

A further listing is given of contributors to the crowdfunding of the publication, through Unbound. They have enabled an interesting read, recommended for anyone wanting to broaden their perspective on women's role in engineering and society.

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Fiona Gleed is a chartered structural engineer and a member of the Women's Engineering Society. She is currently teaching on the Civil Engineering degree apprenticeship programme at the University of Exeter, UK.

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