

Rosalind Franklin, Marie Curie and Marie Tharp (from left to right).

WOMEN IN SCIENCE

Weird sisters?

Biographies of female scientists perpetuate stereotypes, laments Patricia Fara.

James Watson was thrilled to catch an illicit glimpse of Rosalind Franklin's X-ray photograph suggesting the double-helical structure of DNA. He was much less impressed by her personal appearance. "There was never lipstick to contrast with her straight black hair," he wrote in *The Double Helix*, "while at the age of thirty-one her dresses showed all the imagination of English blue-stockings adolescents." Had he been more aware of European fashion, he might have appreciated the care Franklin took to adopt designer Christian Dior's iconic 1947 New Look — although she presumably never revealed to him that her underwear was hand-made from parachute silk to her own specifications.

Watson was far from alone in believing that it is impossible for someone to be both a normal woman and a first-class scientist. To safeguard her reputation as a serious researcher, PhD student Jocelyn Bell — who discovered pulsars in 1967 — removed her engagement ring every morning before she went into the laboratory. Decades later, when president of Britain's Royal

Astronomical Society, she complained that "As a woman in physics, you certainly need to be a superwoman".

In the past, biographers and their publishers routinely squeezed female scientists into stereotypical roles — the frump, the whore, the enchantress, the underdog or the power behind the throne. Even Brenda Maddox, who criticizes Watson for his chauvinistic attitudes, played on gender stereotypes in choosing the subtitle *The Dark Lady of DNA* for her biography of Franklin. Is it not sufficiently fascinating that Franklin's skilled research was crucial for Watson's fame?

Current writers, male and female, are keen to distance themselves from old-fashioned approaches. Still, to boost their book's appeal, they emphasize the singularity of their subjects. It seems that being an ordinary woman with a stellar scientific career is simply not enough: to be marketable, she

Marie Curie and her Daughters: The Private Lives of Science's First Family

SHELLEY EMLING

Palgrave Macmillan: 2012. 256 pp. \$26.00

Soundings: The Story of the Remarkable Woman who Mapped the Ocean Floor

HALI FELT

Henry Holt: 2012. 352 pp. \$30

Rosalind Franklin: The Dark Lady of DNA

BRENDA MADDOX

HarperCollins: 2002. 304 pp. \$29.95

Hedy's Folly: The Life and Breakthrough Inventions of Hedy Lamarr, The Most Beautiful Woman in the World

RICHARD RHODES

Doubleday: 2011. 272 pp. \$26.95

I Died For Beauty: Dorothy Wrinch and the Cultures of Science

MARJORIE SENECHAL

Oxford University Press: 2012. 312 pp. \$34.95

must also be odd. Dust jackets entice purchasers by rebranding an overlooked character as a unique female individual — in other words, as a weird woman.

Converting female scientists into publishing opportunities may sell books, but it ▶



WOMEN IN SCIENCE

The gender gap and how to close it
nature.com/women

► does the cause of equality in science no favours. Take the recent biography of Marie Tharp, the American geologist and cartographer who, with colleague Bruce Heezen, produced the first systematic map of the ocean floor in 1977. In *Soundings*, author Hali Felt imagines Tharp walking along the streets of New York, her coat unbuttoned, shoes scuffed and frizzy hair unbrushed. "She does not look like the other women," Felt writes — reinforcing sweeping generalizations that female scientists are a race apart.

Even sympathetic authors perpetuate the prejudice that brains and beauty never go together. Describing the film star Hedy Lamarr as *The Most Beautiful Woman in the World*, Richard Rhodes deliberately provokes a shiver of surprise by reporting that she also made breakthrough inventions. With composer George Antheil, she devised spread-spectrum radio, a technology now used in many applications, including cordless phones. "Any girl can be glamorous," Lamarr is reported to have said. "All you have to do is stand still and look stupid." Despite her intelligence, Lamarr's remarkable looks and glamorous career occluded her innovations for decades.

Science's most famous heroine is surely Marie Curie. Over the decades, biographers have caricatured her as various unrealistic and undesirable ciphers, most notably the adulterous opportunist and the martyr to science. When her husband was killed — according to some such romances — she ensured her continuing success by latching on to his married colleague, Paul Langevin. Meanwhile, eulogies of the pioneer who dared to behave differently stress that she was often too absorbed in her work to eat, sacrificing her health as well as her appearance to the higher cause of research. Downplaying Curie's theoretical achievements, they portray her as a dedicated worker who spent months systematically sieving tonnes of pitchblende — a mindless, repetitive task with echoes of domestic drudgery.

Modern biographers may have abandoned such facile renderings, but they behave as if it were unthinkable to criticize an icon. Thus, in *Marie Curie and Her Daughters*, Shelley Emling presents the physicist as a doting mother to Eve and Irène, even though the evidence suggests otherwise. Birthday after birthday, Curie chose to be away, sending letters that overflowed with love and regrets, yet enclosed extra homework. Eve reported that her parents regarded radium as their

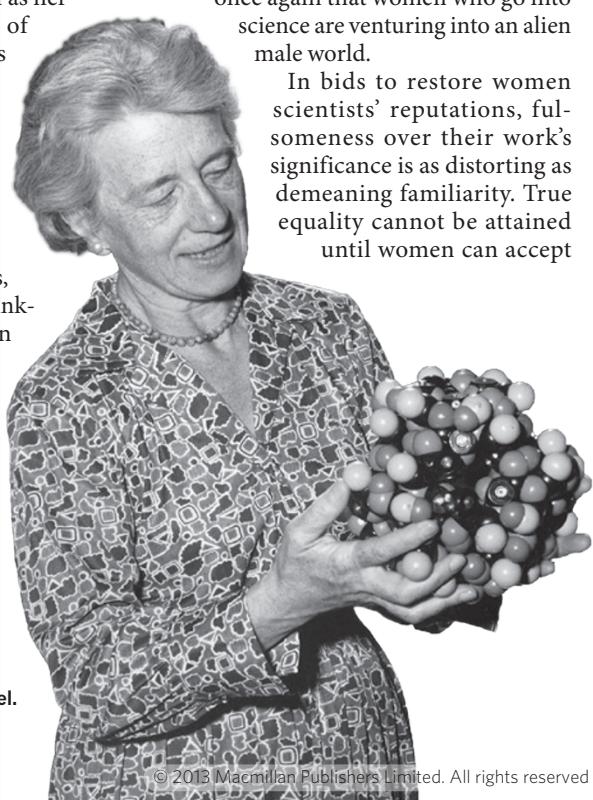
third child, and they seem to have treated their human offspring as an experimental research project. Marie remained physically and emotionally remote, while meticulously recording the girls' clothes, diet and academic progress in her notebooks.

A less familiar name is that of mathematician Dorothy Wrinch, often labelled a harridan because of her forceful manner among her male peers. Like Curie, she was censored for behaving like a man — with ruthless ambition. The first woman to receive a doctor of science degree from the University of Oxford, UK, Wrinch developed a theory about the molecular structure of proteins that, although later discredited, ultimately contributed to genetics.

In contrast with Felt's book about Tharp, Wrinch's name does at least appear on the cover of Marjorie Senechal's biography, although relegated to the subtitle in favour of the eye-catching but misleading *I Died for Beauty*. Wrinch was indeed fascinated by the aesthetic appeal of mathematical truths, so the title and the pink cover motif implicitly trivialize her intellectual abilities.

Another infuriating feature of many biographies about women scientists is their use of first names and gushing prose. Senechal adopts the nickname 'Dot' for Wrinch — but presumably she would not have converted Michael Faraday into Mike, or Albert Einstein into Al. Similarly, although Maddox writes in an accessible yet dignified style, she insists on calling Franklin 'Rosalind'. So why does she use surnames for Watson and his male colleagues? Presumably, this patronizing practice is intended to foster an impression of cosy familiarity, but it signals once again that women who go into science are venturing into an alien male world.

In bids to restore women scientists' reputations, fulsome over their work's significance is as distorting as demeaning familiarity. True equality cannot be attained until women can accept



Dorothy Wrinch with her protein model.



Hedy Lamarr co-invented spread-spectrum radio.

criticism without taking the easy route of complaining about gender bias. Ideas are often rejected simply because they are not good enough: the US Navy may have been justified in dismissing Lamarr's projected guidance system as too bulky to be valuable. And failing to win a Nobel prize need not mean that a woman is a wronged genius: Franklin's X-ray photograph proved crucial in the race to find the structure of DNA, but Crick and Watson did get there before her.

By perpetuating stereotypes, books affect how people think. When I was in my early twenties, I resolved never to confess that I had a degree in physics from the University of Oxford: I knew from experience that any potential suitor would immediately assume I slotted into one or other of the 'strange woman scientist' categories. And schoolgirls are still being steered, as I was, into mathematical and technical subjects by teachers serving the cause of political correctness. I migrated immediately after graduating not because I was incapable of tackling physics or because I was intimidated by being in an environment dominated by men, but because I was bored by the repetitive practical work.

Biographers can shift attitudes, but they need to celebrate their subjects for being special scientists, not marvel at them as weird women. Just like men, female scientists have individual personalities and idiosyncrasies, and they have weaknesses as well as extraordinary capabilities — not because they are women, but because they are human beings. ■

Patricia Fara is a historian of science at the University of Cambridge, UK.
e-mail: pf10006@cam.ac.uk