Women in science: Pioneers blaze path for others

The Royal Society has named its top 10 female scientists, yet many still feel marginalised

By Rachel Shields

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They have mapped the infinity of space, developed spray-on skin for burns victims, pioneered cancer-beating therapies, created cutting-edge computer chips, discovered the first radio pulsars, and won Nobel prizes. But female science professors are still being asked to make the tea and take notes at meetings by their – often junior – male colleagues.

Sexism remains all too prevalent in Britain's scientific community, according to some of its leading figures, even as The Royal Society unveils a list of the 10 greatest women scientists in British history.

Women scientists this weekend called for government funding to be ring-fenced for projects headed by women, and men who are principal child carers, to help them get ahead in what remains a male-dominated profession.

"If you are on high-level committees, you'll be asked to make the tea," said Professor Athene Donald, the deputy head of physics at Cambridge University. "Recently, on a committee, the chairman thought I was the secretary. And I've been in committees where we've been addressed as "gentlemen", despite the fact that there are women there. It is very off-putting."

Baroness Greenfield, who is suing the Royal Institution after it ousted her as its director in January, has criticised the Government for failing to provide enough financial support for women trying to make a career in the sector.

"However much people support and encourage women, it has got to be backed by resources. The Government has never really delivered that," said Lady Greenfield.

"I hope that the election campaign addresses this. What is needed is about £50,000 a year per woman, and then add the cost of equipment, and you are looking at £200,000 for one person. Science research is expensive."

Lady Greenfield also argues that the insecure nature of science research puts women at a disadvantage: most scientists have to make do with research contracts until they secure a fixed position in their thirties and forties; maternity leave provision is limited; and, for those in career break at that stage can leave them way behind their male peers.

"Many people won't have security of tenure until they are in their thirties. It is one of the few employment cultures with no security," she said.

It is thought that the subject's "nerdy" image puts girls off studying science beyond GCSE, and the sector still has less than 70 per cent of women science graduates deciding on non-science related careers.

One of the aims of the Government's 10-year strategy on science and technology, launched in 2004, was to encourage more women into the science and technology professions, and for men, for men," said Annette Williams, the director of the UK Resource Centre for Engineering and Technology. The centre was established in 2004 to address the gender imbalance by using mentoring, training and networking.

"Often, women can find the climate quite hostile. And science and technology are so male-dominated that t...
flexible working," said Ms Williams.

The Royal Society, which did not allow female fellows to join until 1945, is using its 350th anniversary year to highlight the work of women. Rosalind Franklin, whose work on DNA led directly to the discovery of the structure of the DNA molecule, an chemistry.

Despite the negative experiences of many female scientists, some believe that the situation is improving. "I per cent of the total in 2004 to 11 per cent now. I think we had something to do with that," said Ms Williams.

While women may be under-represented in science, few are in favour of "quotas" of jobs being reserved for women. "Affirmative action can be very damaging. Women don't want to be appointed because they are women, the Professor Donald. "But if you advertise a job, you should have a proper search, and encourage women to cc

The Royal Society Top 10

1. Caroline Herschel (1750-1848)
As an assistant to her brother, a royal astronomer, Herschel discovered eight comets and catalogued star cl salary and was awarded many honours.

2. Mary Somerville (1780-1872)
The Scottish scientist was only the second woman to receive recognition in the UK for her scientific experim renditions of the French astronomer Laplace's book Traité de Mécanique Céleste made her famous.

3. Mary Anning (1799-1847)
The daughter of poor Dis- senters, the palaeontologist made a number of important finds in Lyme Regis, inc skeleton and the first two plesiosaur skeletons ever found. She also discovered important fish fossils.

4. Elizabeth Garrett Anderson (1836-1917)
Denied entry to medical school, Garrett Anderson instead passed the Society of Apothecaries examination to the New Hospital for Women in London and was influential in the passing of an Act permitting women to ent

5. Hertha Ayrton (1854-1923)
Working with her husband, Professor William Ayrton, Ayrton published several papers on the electric arc. In as a fellow of the Royal Society, although as a married woman she could not accept.

6. Kathleen Lonsdale (1903-1971)
A pioneer of X-ray crystallography – the study of molecule shapes – in 1945 she and Marjory Stephenson w Royal Society. She was the first female professor at University College London, and the first woman to be p

Her work with Professor R A McCance revolutionised the way the world assessed nutritional values and how on nutritional problems during the Second World War, and on treating the effects of starvation suffered by c

Hodgkin discovered the structure of penicillin and of vitamin B12. She was awarded the Nobel prize for her She devoted much of her later life to championing scientists in developing countries.

9. Rosalind Franklin (1920-1958)
Her work on the X-ray diffraction images of DNA was used to formulate Crick and Watson's 1953 hypothesis on the tobacco mosaic and polio viruses.

10. Anne McLaren (1927-2007)

McLaren produced the first litter of mice grown from eggs that had been developed in tissue culture and transferred to a surrogate mother, human in vitro fertilisation.

Today's Trail Blazers

1. Susan Greenfield Professor of pharmacology, University of Oxford

"People don't sell science to young people, and especially to girls, as well as they might. It takes time and resources to send people into research. But when something is regarded very badly in the scientific community, it is seen as 'dumbing down'."

2. Patricia Fara Director of studies, history and philosophy of science, Cambridge University

"Younger women believe there is no discrimination against women in science, but I think that is optimistic. There is a lack of role models. Projects are set up that they think will appeal to women. It certainly isn't a level playing field, you just have to look at the statistics. It is tough for women."

3. Julia Higgins Professor of polymer science, Imperial College London

"Even now women in science are rather invisible. It is a cultural thing. When people talk about Newton and Darwin, we want them to do amazing things, too."

4. Uta Frith Emeritus professor of cognitive development, University of London

"We still have a long way to go. Women had a late start in the profession. I'm privileged to be one of the few women who have done great things."

5. Sunetra Gupta Professor of theoretical epidemiology, Oxford University

"It is only since I undertook to write a children's book on women scientists that I have come to know their lives in any detail. It makes me realise how much of a need there is for the book."

6. Maggie Aderin-Pocock Royal Society university research fellow and a space scientist for Astrium Ltd

"My career has been great up until now, but I'm due to give birth to my first child in three weeks time, so that might pose more of a problem in science, as you aren't keeping up with the cutting-edge research."

7. Athene Donald Deputy head, department of physics, Cambridge University

"There is an unconscious bias. The number of women science professors is only about 11 per cent. It is improving, pathetically slowly. It is a well-recognised problem. But they put their hands up and say 'mea culpa' is a positive message."

8. Helen Mason Solar physicist, Cambridge University

"Research grants have been cut and universities are suffering financially; people are being made redundant. I have been hit hardest by this. Indeed, I know that this is happening, and I feel powerless to stop it."

9. Ottoline Leyser Professor of biology, University of York

"The list highlights how tremendously recent it has been that we've had the equality we are now enjoying, and how frustrating it is that it is working really hard over the gender issue. That they put their hands up and say 'mea culpa' is a positive message."

10. Nancy Rothwell MRC research professor, University of Manchester

"I'm often asked how I manage in a male dominated profession. I just don't recognise this description. I have
colleagues."

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Leading women in UK astronomy and geophysics today, assembled from portraits by the photographer Maria Platt-Evans. "She sometimes watched the heavens for five or six hours, when only a few stars were visible amid the clouds, and her perseverance was often amply rewarded by the detection of fireballs." Mrs Wilson's wholehearted pursuit of science during the war led to accusations of spying. "During the war astute special constables detected the flashlight she used for recording meteors, and severely threatened her with arrest as a German agent," Ms Cook w

Women have made significant contributions to science from the earliest times. Historians with an interest in gender and science have illuminated the scientific endeavors and accomplishments of women, the barriers they have faced, and the strategies implemented to have their work peer-reviewed and accepted in major scientific journals and other publications. The historical, critical and sociological study of these issues has become an academic discipline in its own right. The pioneering astronomer Maria Mitchell, who was doing for women in science what Hosmer was doing in art and who met the sculptor while visiting Rome as America’s first international scientific celebrity, recounted that "if there came to any struggling artist in Rome the need of a friend, she and of the thousand artists in Rome very few were successful, Harriet Hosmer was. You can beam some bit-love my way: 197usDS6AsL9wDKxtGM6xaWjmR5ejgqem7. Sunday newsletter. Brain Pickings has a free Sunday digest of the week's most interesting and inspiring articles across art, science, philosophy, creativity, children's books, and other strands of our search for truth, beauty, and meaning. Here's an example. Like?