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# VIEWPOINT

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## Queering the Museum

Exploring LGBTQ+ lives and issues in the history of science, technology and medicine



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## Editorial

Commemorating the 50<sup>th</sup> anniversary of the Stonewall Riots, which broke out in New York City in June 1969, this issue is dedicated to lesbian, gay, bisexual, transgender, and queer/questioning+ (LGBTQ+) lives and issues in the history of science, technology, and medicine.

Our cover feature, by Eleanor Armstrong, reports on the success of a BSHS grant which supported a new public tour series at the Science Museum.

Next, *Viewpoint* takes a look at the lives and careers of five LGBTQ+ scientists, physicians, and engineers, including some lesser-known figures.

Then Contributing Editor Ross Brooks considers the origins of modern sexology in 18<sup>th</sup>- and 19<sup>th</sup>-century studies on avian sex reversal, while Clare Tebbutt investigates the work of Lennox Ross Broster and the language surrounding the unfixedness of sex in the 20<sup>th</sup> century.

This issue's interview is with Jana Funke on behalf of the 'Rethinking Sexology' project currently being hosted at the University of Exeter. Lastly, James Sumner remembers our late colleague and former BSHS President Jeff Hughes.

Let us know what you think of the issue on Twitter [@BSHSViewpoint](https://twitter.com/BSHSViewpoint) or by email. Contributions to the next edition should be emailed, by 15 August 2019, to [viewpoint@bshs.org.uk](mailto:viewpoint@bshs.org.uk).

Hazel Blair, Editor

## BSHS Engagement Fellowships

The BSHS Engagement Fellowships are month-long funded placements at heritage organisations. During their placements the Fellows (UK postgraduates) develop research and materials that allow their host organisation to engage new audiences with science history. In addition to events and material produced last year, new outcomes from the 2018 Fellowships are still emerging.

Jason Irving, BSHS Engagement Fellow at Bristol Museum, put together a fantastic final event from his work during the placement. On 30 March, Bristol Museums hosted the workshop 'Food Journeys' exploring Caribbean food histories. The event was a collaboration with Mama D Ujuaje, a community learn-



ing facilitator of Jamaican heritage.

This represented the outcome of Jason's work in reframing and reconsidering the 18<sup>th</sup>-century Jamaican herbals held by Bristol Museum.

Laura Mainwaring, Engagement Fellow at George Marshall Medical Museum, Worcester, contributed to a study day: 'Bovril, Whisky and Gravediggers: the Spanish Flu Pandemic comes to the West Midlands', on 5 April. The work of Ed Armston-Sheret, Engagement Fellow at The Polar Museum, will be included in a new digital display. •

## Outreach grants awarded

Each year the BSHS Outreach and Engagement Committee offers four small project grants that are intended to kick-start engagement events and opportunities that might not receive funding from other sources.

The grant winners from May 2018, Eleanor Armstrong (UCL) and Damien Arness Dalton, were awarded funds to support their 'Queering the Science Museum' project. After a successful series of museum tours in summer 2018, they have been engaged in several further public events. These include a public lecture, 'Queering the History of Science', at LSE as part of the 'Narrative Science' project, and an afternoon of 'alternative archaeology' at the University of Cambridge.

The grant winner from August 2018, Laura Brassington and colleagues (University of Cambridge), funded the

organisation of the inaugural 'History of Science for Schools' event on 27 April. The team developed material that engaged children and families with the history of Darwin, his travel, and his networks. The first event was a pilot, so do look out for future iterations of these.

The final grant from 2018, was awarded to Matjaz Vidmar (University of Edinburgh) who is using the funds to support the development of a tour and information related to the history of astronomy in Edinburgh. This will be transposed onto the app 'Curious Edinburgh', joining a series of other successful mobile-tours that showcase the history of science in the city.

The first project grant of 2019 has been awarded to Alexander Longworth-Dunbar (University of Manchester) as seed funding for a history of technology podcast. •

## Watt anniversary events

Events commemorating the life and work of inventor James Watt (1736-1819) are taking place this summer.

The 25 April saw the 250<sup>th</sup> anniversary of Watt's patent for the separate condenser – an invention which revolutionised the power of the steam engine and drove the industrial revolution. This year is also the 200<sup>th</sup> anniversary of the Scottish inventor's death.

Watt was born in Greenock, Glasgow. He took an apprenticeship in London, before he turned his attention to improving the steam engine.

He teamed up with John Roebuck, co-founder of Carron Ironworks, and, later, manufacturer Matthew Boulton. Watt's steam engine was 80% more efficient than the one built by Thomas Newcomen, and drove Britain's industrial and technological advancement.

You can visit Watt's workshop at the Science Museum in London, explore exhibitions, including at Heriot-Watt University and the Scottish National Portrait Gallery, or visit the site of an early Watt engine at Galton Valley Canal Museum.

See [www.jameswatt2019.org/events](http://www.jameswatt2019.org/events).

## James Joule commemorated

A ceramic pavement to commemorate physicist James Joule has been unveiled in Trafford. The artwork was unveiled in Worthington Park, Sale, where Joule lived in the 19<sup>th</sup> century.

Joule, who has the unit of energy named after him, established the important principle that heat and mechanical work are both forms of energy.

Friends of Worthington Park raised money for the pavement to be made and installed, with the work being done by local ceramicist Gordon Cooke.

Cooke said, 'The pavement to commemorate 200 years since the birth of J P Joule is the most complex work of this kind that I've attempted. It's comprised of



58 ceramic 'tiles' and three of black granite. The bullet points are in solid brass. It is surrounded by Victorian setts.'

Cooke said the artwork was constructed in his Poplar Grove studio in Sale, which is located 'just round the corner from Wardle Road, which is where Joule lived.'

Funding for the piece came from a donation from a local resident, The Sale Mayoral Fund, Manchester Airport Community Trust, and the Heritage Lottery Fund.

## Sarton Prize 2018

The American Academy of Arts and Sciences has named Jenny Bulstrode the recipient of the 2018 Sarton Prize for History of Science, recognising her achievement and promise as an emerging scholar in the field.

Jenny is a doctoral student and researcher at Cambridge and the National Maritime Museum, Greenwich. Her research has focused on the history of mining, Victorian earth sciences, geomagnetic survey, the whaling industry, and the relation between innovation in the clock-trade and changes in economic regulation in the age of reform.

## New research hub

A new History of Science and Technology Hub has been launched at the University of Warwick.

The university has wide-ranging expertise in the history of science, and technology, but the new hub also links up the history of scientific theories with wider historical phenomena such as war, religion, globalisation, ideology, and social, and environmental change.

This work is integrated into various projects in the History Department and other Warwick research centres. Visit [warwick.ac.uk/fac/arts/history/sat](http://warwick.ac.uk/fac/arts/history/sat) & @HistSciTechHub (Twitter).

## Survey sciences

Royal Society Publishing has published a special issue of *Notes and Records*, titled *Nineteenth-century survey sciences: enterprises, expeditions and exhibitions*.

The issue co-ordinates a newly comparative and synthetic approach to some of the principal early 19<sup>th</sup>-century survey sciences prosecuted by British practitioners, including geomagnetism, geographical exploration, navigation, and meteorology.

The essays attend to the conduct of large-scale 19<sup>th</sup>-century surveys across a range of domestic and overseas areas, at sea, on land, and in the atmosphere. See [royalsocietypublishing.org/toc/rsnr/73/2](http://royalsocietypublishing.org/toc/rsnr/73/2).

## President's notice: BSHS e-newsletters

After every Council meeting (January, April and October), and sometimes between, I send out a newsletter e-mail as a service to members so that you are able to see what we are discussing on your behalf. This is sent via Mailchimp. It has come to our notice that many institutional firewalls block Mailchimp messages, miscategorising them as phishing e-mails. The good news is that asking your IT department to 'whitelist' the domain [@bshs.org.uk](mailto:bshs.org.uk) can solve this problem. If you are still not receiving Presidential e-mails after that, please contact [office@bshs.org.uk](mailto:office@bshs.org.uk) to check your membership status. — Tim Boon





# Queering the Science Museum

**Eleanor Armstrong** reflects on last year's 'Queering the Science Museum' tour series, highlighting its importance in communicating ideas in queer science and technology studies to non-academics. This work was supported by a BSHS Outreach Grant.

**W**here do you go to learn about LGBTQ+ history? To a local 'Pride' event? To the archives of your town or city? A podcast, Netflix series, or social media account? Or to one of the Victoria and Albert Museum's 'LGBTQ Tours'?

What about LGBTQ+ histories that intersect with science and technology? In 2018, I noticed many museums (here taken as examples of sites of public recognition and narrative construction) engaging with the 50-year anniversary of the decriminalisation of homosexuality (2017), and/or the 30-year anniversary of the enactment of Section 28 of the 1988 Local Government Act (2018), which prohibited promotion of the acceptability of homosexuality by local authorities and schools.

As these displays and tours popped up around the UK (at the V&A, the Tate

galleries, the British Museum, and Oxford University Museums, to name but a few institutions), I wondered why there were no explorations of queer histories in science museums in general, and in the Science Museum, London in particular. I worked there at the time, so my colleague Damien Arness-Dalton and I decided that we would pull together a free tour about queer histories in science and technology for an interested public, beyond our paid work in the museum.

## Defying heteronormativity

Over the course of nine tours in July 2018, we reached over 100 visitors who came around the hour-long tour with seven stops. We created the tour by using objects on display within the collection to explore queer identities and stories related to them. We then used these stories, and

queer theory, to build critical thinking about queerness in science and technology.

For example, with the Spitfire plane that hangs in the third floor Flight Gallery, we talked about Roberta Cowell – University College London chemical engineer, mechanic, race car driver, spitfire pilot, and the first recipient of vaginoplasty surgery in 1951 in a Harley Street clinic. Her defiance of the heteronormative understanding of what transwomen would be like in the Western popular imagination (having done national service, being a technical worker, and having had a wife and two children) brought her into public consciousness in the 1950s and 60s. We know about her story now through her autobiography *Roberta Cowell's Story, by herself*, but not all trans\* individuals of history are able to write about themselves.

## Terminology: 'Queer'

I will be using 'queer' in this article in two senses: as an umbrella term for LGBTQ+ identities (and thus I will use LGBTQ+ and queer interchangeably); and to describe a body of theory about genders and sexualities which informed the tour.

We then introduced earlier trans\* professionals in science, technology, engineering, mathematics, medicine (STEMM), like Irish military surgeon James Barry (1789-1865), and discussed how these stories are still contested, illustrating ongoing struggles for LGBTQ+ recognition in history of science narratives. (Barry was assigned female at birth, and lived his adult life as a man.)

## Gathering data

When we asked our participants after the tours which of the stories they had heard before, 38% told us that they only knew about Alan Turing – arguably one of the more well-publicised queer STEMM professionals – while a further 33% did not know any of the figures or stories that we discussed. But beyond introducing individuals and their narratives, our tours talked about the construction of STEMM fields and the studies that are undertaken within them through a queer lens. This was well received by our participants and was highlighted by a number of responses. One such piece of feedback read:

*I liked the fact that it wasn't just about queer scientists (although that was very interesting) but also flawed scientific studies/the lack of scientific studies on sex/gender issues.*

More than this, we further queered the idea about who we could talk about in the Science Museum. We drew on Susan Ferentinos' ideas that queer theory gives us 'a focus on outsiders [that] has the potential to reveal a great deal about the society as a whole.' We took Ferentinos' emphasis on outsiders to critique why some narratives fall outside the current scope of the museum, looking beyond the normative understanding of STEMM professionals, who are alluded to in museum objects.



**Above** Eleanor and the tour group on 27 June 2018 in the Mathematics Gallery.

**Opposite** Looking at objects within the Science Museum through a queer lens, the tour series found novel ways of extracting LGBTQ+ narratives from museum exhibits.

Queer histories of science are not commonly told. Museum visitors are often only aware of one or two women in the history of science – normally Marie Curie, Ada Lovelace, or Rosalind Franklin – and so too, in general, there are not many well-known queer STEMM professionals of other genders.



Image: Andrew Rogers

**Above** Eleanor by the Pioneer Plaque in the Exploring Space Gallery. The plaque, based on Sagan's illustration and geared towards extra-terrestrial life, was placed on board Pioneer spacecraft in the 1970s. Its heteronormative description of humanity as a whole was a point of discussion on the tours, as was the question about what humanity is or should be.

On the tour, we discussed Jackie Wan, a Deaf Singaporean-British nurse and winner of 'Best Deaf Role Model'. In an oral history recording at the Royal College of Nurses, Wan discussed feeling like an outsider around the LGBTQ+ communities in her hospital because they did not have signing provision. And, in addition to highlighting Roberta Cowell, discussed above, we also considered Linda Sagan (astronomer Carl Sagan's wife), who illustrated the normative image on the Pioneer probe in the museum's 'Exploring Space' gallery.

When thinking about why people come to the museum, John H Falk has indicated that 'identity-related needs motivate [the visit] ... and provide an overarching framework for that visit experience'. Our participant feedback suggested that 33% of visitors attended our queer-focused tours because they were motivated by the identity-focused 'queer'/LGBTQ+ aspect of our tour, and 20% mentioned something related to STEMM. To me, this suggests that people are interested in learning about queer history in science, and that they do not find many other museum spaces where these stories are explored.

Emily Dawson's work builds on Falk to suggest that people do not attend everyday science learning activities if they do not see them as being relevant to their





**Above** Eleanor talking about Roberta Cowell in the Flight Gallery at the Science Museum. According to the feedback forms, well over half of the tour participants would not have visited the museum that day had it not been for the tour series.

lives and identities. It transpired that 57% of those who gave us feedback would not have come to the Science Museum that day if we had not been running the tours. The majority of these people had also not visited the Science Museum within the past year, suggesting this space is not normally relevant to them and their identities.

Most importantly, in my mind, we not only highlighted queer narratives and perspectives, but we worked through the tour to equip our participants with tools for critiquing other exhibitions they visit in the future. Who is telling the story? What kind of normative narratives are being demonstrated in the space? Who or what might be overlooked when we place science as detached from the society it took place in? These tools are not only useful for thinking about queer histories, but can be applied to think about intersectional problems of having narratives that reflect the diverse individuals that

museums hope to reach. Another participant stated that the tour,

*really opened my eyes to the ways in which history is shaped by those who have the privilege to tell their stories from their perspectives.*

### Curatorial dreaming

I personally think that this was one of the best things about our decision to queer the tour format as well as the tour material. We wanted to get people to think outside of the narratives presented to the small group at that time, and to bring their own reflections on the spaces too. We encouraged and valued the knowledge of our participants, and supported them to take ownership of sharing their knowledge with the rest of the group. We drew parallels and comparisons with other museums, other exhibitions within the Science Museum historically, and evoked the 'curatorial dreaming' (a concept promoted by the research group

Museum Queeries) of what could have been in these galleries.

By taking a queer position, unoccupied by the museum itself, the 'Queering the Science Museum' tour introduced, in the words of James Sanders, 'the small cracks and fissures in the heteronormative foundation of the museum – spaces through which the roots of new curatorial and educational performances may take hold.'

I hope that curators at the Science Museum, and at other science museums, see in this tour series the popularity and alternative explorations that are possible through a queer lens. More than that, I hope that other intersectional lenses can be realised in the museum, too, perhaps via decolonial, or feminist tours, and by challenging norms about (dis)ability, class, and religion. As one participant wrote in their feedback: 'I just wish more science museums did this.' I do too, and what is more, I wish this had not been a 'special tour series', but part of the Science Museum's permanent educational repertoire. •

**Eleanor S. Armstrong**  
University College London

*Eleanor is a PhD student who writes comparatively on the display of space science in London museums. She also works on developing intersectional interventions into STEMM museums, such as 'Queering the Science Museum' and her 'Behind the Glass Cabinet' podcast series. You can find her on Twitter at @ellitheelement.*

### Works Cited

Emily Dawson, *Equity, Exclusion & Everyday Science Learning: The Experiences of Minoritised Groups* (2019).

John H Falk, *Identity and the Museum Visitor Experience* (2016).

Susan Ferentinos, *Interpreting LGBT History at Museums and Historic Sites* (2015).

James Sanders, 'The Museum's Silent Sexual Performance', *Museums & Social Issues* 3:1 (2008), pp. 15-28.

Museum Queeries website: <http://museumqueeries.org>.

# LGBTQ+ Lives in the History of Science, Technology & Medicine

**Viewpoint** profiles five of history's pioneering LGBTQ+ scientists, physicians, and engineers.

Readers will be familiar with mathematician and computer scientist Alan Turing (1912-1954), who is portrayed by Benedict Cumberbatch in the 2014 biopic *The Imitation Game*, and whose life and legacy was the subject of a blockbuster retrospective at the Science Museum in 2012/2013.

Turing, a gay British cryptanalyst who worked at Bletchley Park during the Second World War, is considered the father of modern computing. The 'a-machine' that he masterminded in 1936 (better known as the 'Turing machine') is

praised as one of the earliest, simplest, and most influential modern computer models.

In 1945, Turing designed another machine, which – in the 1950s – was developed into the 'Pilot ACE (Automatic Computing Engine)'. It was one of the first computers built in the UK and, at the time, the world's fastest.

Despite Turing's professional successes, which included cracking the 'Enigma' code used by the German army to send messages during the war, he was convicted of 'gross indecency' in 1952 because of his homosexuality. The conviction resulted

in the revoking of his security clearance with the government, and ended his cryptographic consultancy work. Turing was told to choose between prison and chemical castration, opting for the latter shortly before taking his own life in 1954.

Turing is perhaps the best-known gay scientist from history, but here *Viewpoint* presents readers with five more influential researchers, physicians, and engineers who identified as LGBTQ+ and overcame prejudice, discrimination, and harassment to advance modern scientific knowledge.

## Sara Josephine Baker (1873-1945)

### Physician and Public Health Worker

Sara Josephine Baker was an American physician from New York. A lesbian feminist, she was the first woman to earn a PhD in Public Health from New York University, and went on to make significant contributions to public health and child hygiene among communities suffering poverty in New York City.

Baker's father and brother both died of typhoid when she was young. Choosing a career in medicine, she joined the New York Infirmary Medical College (for women), graduating second in her class in 1898.

She then moved to Boston for a 1-year hospital internship, returning to NYC as a private physician. Baker became a medical inspector with the city's Department for Health in 1901, and in 1907 she was made Assistant Commissioner of Health. Two years later she founded the American Child Hygiene Association and was its first director.

Baker's focus on preventative medicine caused New York City's infant mortality rate to drop from 144 to 88 per

1000 live births between 1908 and 1918. Reflecting on her work in *Fighting for Life* (1939), she wrote:

*The way to keep people from dying from disease, it struck me suddenly, was to keep them from falling ill. Healthy people don't die. It sounds like a completely witless remark, but at that time it was a startling idea. Preventative medicine had hardly been born yet and had no promotion in public health work.*

Among Baker's key strategies was a focus on maternal education and better midwifery training, with a special emphasis on supporting the younger women and girls who were often charged with looking after baby siblings and young family members.

Baker wore masculine clothing to work and opted for tailored suits to help her blend in to her male-dominated working environment. She was also a member of the 'Heterodoxy Club', a bi-weekly lunch club for free-thinking



women. Totalling c.100 members, it is estimated that around a quarter of these were lesbian or bisexual.

Upon retirement, Baker moved to New Jersey with her partner (the novelist Ida Wylie), where the couple shared a farmhouse with fellow physician Louise Pearce.

More information about Baker and other LGBTQ+ lives in public health history can be found online in an open-access article by Bert Hansen titled 'Public Careers and Private Sexuality: Some Gay and Lesbian Lives in the History of Medicine and Public Health', featured in volume 92 of the *American Journal of Public Health*.

## Magnus Hirschfeld (1868-1935)

### Physician and Sexologist

Magnus Hirschfeld was a physician and sexologist based in Germany. He made his career studying sex and sexuality, but was also an advocate for same-sex relationship and transgender rights.

Hirschfeld, a gay Jewish man, earned his medical doctorate in 1892, founding the Scientific Humanitarian Committee – the first gay rights organisation in history – five years later. The committee fought for the scientific and cultural acceptance of LGBTQ+ people, and the repeal of German anti-homosexuality laws (specifically, Paragraph 175 of the German Criminal Code, which criminalised sexual relationships between men and remained enshrined in German law until 1994).

In 1905, Hirschfeld joined the feminist League for the Protection of Mothers, with whom he campaigned for the decriminalisation of abortion. A few years later, he also became involved in the Harden-Eulenburg affair. This was a

controversy centred on a series of trials involving journalist Maximilian Harden, who had accused Kaiser Wilhelm II's friend Philipp, Prince of Eulenburg-Hertefeld, of having engaged in illegal homosexual relations with Berlin military commander General Kuno von Moltke.

Hirschfeld testified on behalf of Harden that von Moltke was gay and that 'homosexuality was part of the plan of nature and creation just like normal love'. This sparked criticism throughout Germany, and, contrary to Hirschfeld's hope that his public statement would lead to acceptance of homosexual love among the German ruling classes, the affair instead led to a backlash against homosexuality.

After the First World War, Hirschfeld set up the Institute of Sexology in Berlin in 1919. The Institute was a research hub which offered sex and sexuality counselling, hormonal therapies, and sex reassignment surgery to clients. One



of Hirschfeld's early clients was Einer Wegner, who transitioned to Lili Elbe (of the *The Danish Girl* fame).

The Institute engaged sexologists and left-wing political reformers, and called for better sex education and access to contraception. It housed a museum and an important library on homosexual love and eroticism, destroyed by the Nazis when the Institute was shut down in 1933. This was part of a much wider Nazi campaign to purge Germany of homosexuality, which took place while Hirschfeld was exiled in Switzerland, having left Germany for a worldwide speaking tour in 1930. He never returned home, dying on his 67<sup>th</sup> birthday in Nice in 1935.

Image: Wellcome Collection/CC-BY-4.0. Photo no.: L0024860 via Wikimedia Commons. Cropped.

## Alan L. Hart (1890-1962)

### Physician and Radiologist

Alan Hart was an American radiologist and physician. He was the first doctor who thought to use x-rays to detect tuberculosis. This helped early detection of the disease, which improved recovery rates and prevented it from spreading, since affected people could be identified and isolated.

Hart is perhaps the least well-known of our figures, despite his contributions to 20<sup>th</sup>-century science and literature.

Born in Kansas in 1890, he was assigned female at birth, but according to a 1918 newspaper report he identified as male early in life. Hart went on to become the first trans man in the US to transition, and both his grandparents' obituaries, published in the 1920s, referred to him as their grandson.

After graduating from the University of Oregon Medical School in 1917, Hart asked a former professor, Joshua Allen Gilbert, for sterilisation and surgery to stop menstruation. Gilbert tried to 'treat' Hart using psychoanalysis and hypnosis, but at Hart's request he performed a full hysterectomy. After completing his transition in 1918, Hart said he was happier than ever and 'ashamed of nothing'.

Although Hart was influential in the campaign against TB, he found his early years as a physician difficult. He gave up his practice in Oregon after a former classmate recognised him, and his gender was often challenged as he moved around the West Coast.

During the 1930s and '40s, Hart spearheaded the campaign to eradicate



TB in Idaho. He set up the state's first TB screening clinics, including a mobile clinic, and screened, treated, and educated people about the disease.

Hart dedicated most of his professional career to researching TB, but was also an enthusiastic writer of fiction. His semi-biographical *The Undaunted* (1936) features a gay radiologist persecuted for his sexuality. See Hansen (*op. cit.*) for more on Hart's life and career.

Image: Bert Hansen Collection, New York, NY.



## Sally Ride (1951-2012)

### Astronaut, Physicist, and Engineer

Astrophysicist, astronaut, and engineer Sally Ride holds the titles for first American woman in space (1983), third woman in space, and youngest US astronaut to have travelled to space to date, completing her first mission aged 32.

Ride came from a strongly Presbyterian family and her father was a professor of political science. She graduated from Stanford, earning her PhD in Physics in 1978 by researching the interactions of X-rays and the interstellar medium (matter and radiation that exists between star systems in a galaxy).

Upon completing her initial training with NASA in 1979, she became a ground-based capsule communicator for the second and third space shuttle

flights. As a crew member on the *Challenger* STS-7 flight in 1983, she was tasked with working the shuttle's robot arm. She also flew to space in 1984, alongside another female astronaut (Kathryn Sullivan). After the 1986 *Challenger* disaster, she worked on investigating shuttle accidents and headed an operations subcommittee on the Rogers Commission (set up by the government to investigate the disaster).

Sally's gender attracted a great deal of media attention in the run up to her first space flight, which she applied for after seeing an advertisement in the Stanford student paper. Among the many questions posed to her was the sexist, 'Do you weep when



things go wrong on the job?'

After NASA, she returned to academia, first at Stanford and then as professor of physics at the University of California, San Diego. An intensely private individual, Sally's 27-year relationship with Professor Emerita Tam O'Shaughnessy was only revealed after her death in 2012. Next to her many other accolades, Sally is the first known LGBTQ+ astronaut.

## Christopher Strachey (1916-1975)

### Computer Scientist

Christopher Strachey was a computer scientist and programmer, who played a large part in developing specific programming languages, as well as general theoretical principles.

He was born in 1916 to the prominent Strachey family; Lytton Strachey, of the Bloomsbury group, was his uncle, and his father worked at Bletchley Park during World War II. Christopher was an intelligent and inquisitive child, but this did not translate directly on to his formal studies. He went to King's College, Cambridge to study Mathematics, but graduated with a lower second in Natural Sciences. This may have been impacted by a nervous breakdown Strachey suffered in his third year, which his sister suspected could have been linked to struggles with his homosexuality.

After graduation in 1938, Strachey worked for Standard Telephones and Cables, before becoming a schoolmaster. In 1951, he obtained the manual for

the Ferranti Mark 1 computer at the University of Manchester from Alan Turing, whom he had known at Cambridge. He wrote a programme to make the Ferranti play draughts, before playing 'God Save The King'.

On the back of this, he was offered a position at the National Research and Development Corporation, where he worked for 8 years; during this time he had a major role in developing the Pegasus programming system. After running a private consultancy for a few years, Strachey was given a position at the University Mathematical Library, Cambridge. In 1965 he left to become part of the Programming Research Group at Oxford University.

During his time at Cambridge and Oxford, Strachey worked on designing CPL (Combined Programming Language). Further advances in his 'Fundamental Concepts in Programming Languages' proved highly influential.

One of Strachey's most memorable



inventions, however, was his love letter algorithm, which he and Turing used to produce nonsense automated correspondence. One such letter reads,

*Darling Sweetheart, You are my avid fellow feeling. My affection curiously clings to your passionate wish. My liking yearns to your heart. You are my wistful sympathy: my tender liking. Yours beautifully, M. U. C [Manchester University Computer].*

For more on Strachey, see the 'LGBTQ Love and History: No Offence' trail on 'Oxford Alternative Stories': [oxfordstories.ox.ac.uk/torch#/story/unexpected-tales](https://oxfordstories.ox.ac.uk/torch#/story/unexpected-tales). •

# Queer Birds: Avian Sex Reversal & the Origins of Modern Sexology

**Ross Brooks** explores how 'extraordinary' animals provided a means for late-18<sup>th</sup>- and 19<sup>th</sup>-century scientists to investigate the mysteries of sex in an era of prejudice and censorship.

Sex-variant bodies, minds, and behaviours have long been subject to a plethora of medical and scientific atrocities. Intersexualities, transformations of sex, and nonreproductive sexual behaviours – in humans and nonhumans alike – have been objects of segregation and forced physical and psychological interventions in efforts to configure the biological and medical sciences to adhere to prevailing gender and sexual norms.

Yet sex variations have also played pivotal roles in the history of biology, raising questions in scientific minds and prompting important new theories and discoveries. Scholarly interest in avian sex changes (or 'reversal') is a case in point. Individual birds of many sexually dimorphic species can develop sex characteristics more typical in the opposite sex. Such natural transformations are uncommon, but not so much so that anyone familiar with birds on a regular basis – country-dwellers, farmers, gamekeepers, hunters, ornithologists, and other naturalists to name a few – could be unaware of their occurrence.

In the age before genetics and endocrinology, sex-transformative birds provided key insights into puzzling sex-related phenomena. They allowed naturalists to discuss scientifically interesting but socially taboo subjects, such as same-sex sexual behaviour and the mutability of sex differences, with relative impunity. Combined with some rampant anthropomorphism, investigations into avian sex 'reversal' contributed to the development of innovative and historically significant concepts of human sexuality, for good or ill.

## Extraordinary sex

Avian sex 'reversal' has been noted by naturalists since antiquity. In his *Historia animalium*, Aristotle bequeathed an astute description; he wrote of domestic hens that 'crow in imitation of the males and attempt to tread, and their crest and tail are raised so that one would not easily

recognise that they are females; in some there has even been an outgrowth of a sort of small spurs.' Of transformations in male birds, he wrote: 'There are also some birds that are effeminate from birth to the extent that they even submit to males attempting to tread them.'

Sex-transformative birds became an important *modus operandi* of modern biologists largely through a seminal paper titled 'An Account of an Extraordinary Pheasant' by the Scottish surgeon and naturalist John Hunter, published in the Royal Society's *Philosophical Transactions* in 1780. In the paper, Hunter described various examples of wild hen pheasants with male-typical plumage. He also described a peahen with a full-sized eye-feathered tail which was preserved in the collection at Ashton Lever's famous museum, or Holophusikon, in Leicester Square. In life, the bird had astonished its doting owner, Lady Tynte (of Halswell House in Goathurst, Somerset), by moulting and assuming male-typical plumage aged around eleven years. Hunter ascribed the phenomenon to the process of aging:

*We find something similar taking place even in the human species: for that increase of hair observable on the faces of many women in advanced life, is an approach towards the beard, which is one of the most distinguishing secondary properties of man.*

Hunter's study made two innovations that would shape modern medico-scientific approaches to sex differences, the emerging discipline of teratology, and the development of evolutionary theory. The first is the assertion that irregularities ('monstrosities') that were observable in anatomical structures throughout the natural world develop in relation to the fundamental principles which governed the growth of individuals according to the particular pattern of their species.

The second important innovation in

Hunter's paper on avian sex transformation – a foundation stone of Charles Darwin's theory of sexual selection – is his designation of 'secondary properties' (i.e. secondary sexual characteristics) to account for non-genital sex differences in those species which usually have two distinct sexes. The possibility that such differences could, in and of themselves, be collectively considered important objects of study and a means of better understanding the mysterious origins and evolution of sex was not comprehensively appreciated until Hunter's transformational birds led him to delineate a new scientific epithet.

Through the century following Hunter's authoritative interest in the subject, numerous naturalists and physicians made further descriptions of sex-transformative birds in leading works of natural history and medical science. Avian species in which sex changes were documented include peafowl, turkey, partridge, pigeon, bustard, duck, cuckoo, cotinga, chaffinch, redstart, starling, sparrowhawk, wood grouse, bunting, and kingfisher.

In common with Hunter, several naturalists slickly generalised the phenomenon of sex 'reversal' beyond avian subjects. The French zoologist Isidore Geoffroy Saint-Hilaire, for example, wrote:

*In many women, after the cessation of the menses, the chin and upper lips become furnished with a true beard, a phenomenon, the relation of which, with the development of the plumage of our hen pheasant, cannot be denied.*

Seeking to explain the phenomena, certain naturalists identified the ovary as essential in producing the observed effects. This was a pivotal moment in the history of biology as the ovaries had long remained mysterious entities and were mostly ignored; the uterus had been considered the defining organ of female physiology.

Writing about sex-transformative pheasant hens in 1784, the French phy-



sician and naturalist Pierre-Jean-Claude Mauduyt de la Varenne reported that his fellow physician, the renowned pioneer of comparative anatomy Félix Vicq-d'Azyr, had dissected several such birds, observing the oviduct which evidenced their sex but finding the ovaries completely obliterated. Such observations, intensely puzzling for the era, were largely neglected until the English naturalist William Yarrell broached the subject in 1827.

Yarrell insisted that the occasional development of male-typical characteristics was not restricted to aged female birds but could be produced by 'certain constitutional circumstances', essentially impairment of the ovaries, which could occur at any period of life or induced by artificial means. Extended to other species, including humans, Yarrell's savvy proto-endocrinology paved the way for a new era of sex physiology to emerge, with far-reaching consequences.

## Both sexes

The pioneering investigations of Hunter and Yarrell impressed the minds of a new generation of naturalists, not least the young, *Beagle*-fresh Charles Darwin. Along with other natural sex-variant phenomena (such as neuter bees and the occasional appearance of horns in does), avian sex 'reversal' helped persuade Darwin that all the higher animals, including humans, were essentially 'hermaphrodite' (i.e. intersexed). The idea had previously been forwarded by the Scottish anatomist Robert Knox but had not received widespread acceptance. Darwin, however, was an early convert to the theory. Remarks in his notebooks, compiled through the late-1830s, evidence the profound impact of Yarrell's observations, as well as other related studies, on his developing biological thought. For example, Darwin wrote:

*A capon will sit upon eggs, as well as, & often better than a female. – this is full of interest; for it shows latent instincts even in brain of male. – Every animal surely is hermaphrodite – (as is seen in the plumage of hybrid birds).*

In another pertinent entry, among several, Darwin asserted that '[e]very man & woman is hermaphrodite'.

The perennial coexistence of female and male elements in each individual remained



**Clockwise, from top-left:** Lady Tynte's eye-feathered peahen, first published in John Latham's *A General Synopsis of Birds* in 1783; Hector, a hen-feathered cockerel, pictured in *The Sporting Magazine* in March 1833; a female silver pheasant which developed complete male-typical plumage late in life, from Saint-Hilaire's *Essais de zoologie Générale* (1841).

an important component of Darwin's evolutionism on a number of fronts. It was, for instance, vital to his theory of heredity. In *The Variation of Animals and Plants under Domestication* (1868), he discussed sex transformations in a section titled 'Latent Characters'. He wrote:

*But I must explain what is meant by characters lying latent. The most obvious illustration is afforded by secondary sexual characters. In every female all the secondary male characters, and in every male all the secondary female characters, apparently exist in a latent state, ready to be evolved under certain conditions.*

Supporting this momentous assertion, Darwin explicitly referred to the literature on female birds assuming male plumage, particularly when old or diseased or when operated on. He drew heavily on those

naturalists who had investigated the subject, including Saint-Hilaire and Yarrell. He further remarked that 'Aristotle was well aware of the change in mental disposition in old hens.' It was one of the rare instances that he referred, albeit obliquely, to same-sex sexual behaviour.

Following Darwin, a new breed of modernist sexologists, most notably Sigmund Freud, extended the principle of primordial intersexuality ever deeper into the realms of mind and behaviour, with profound implications for how we think about sex differences and sexuality to this day. •

Ross Brooks  
Oxford Brookes University

*Ross's PhD, titled 'Evolution's Closet: The New Biology and Homosexuality in Britain, 1871-1967', is funded by the Wellcome Trust. You can follow him on Twitter @rossb\_oxford.*





# Hormones & Headlines: Gender Variance in 1930s Britain

**Clare Tebbutt** on Lennox Ross Broster and the language of 'sex changeability'.

In 1930s Britain, endocrinological developments and the wide circulation of popular press accounts of people whose sex had been reassigned, coalesced to bring about new ideas of the 'changeability of sex.'

The language of 'sex change' was a common feature of the media accounts and can be used as way of appreciating the unfixedness of sex that was predominant in the 1930s. It is an instance of how language that is now outmoded – 'sex change' – has a history that encompasses a number of different identities – transgender and intersex – and reveals a lot about previous understandings of the sexed body.

The 1930s media circulated a positive narrative about the possibility to move

from one sex categorisation to another, although the reality for those who endeavoured to do so was not always so positive.

## Making headlines

'Doctor Changes Sex of 24: Patients Have Married' trumpeted a headline in the *Daily Mirror* from May 1938. The paper's special correspondent informed readers that: 'Twenty-four English men and women have had their sex changed in the past few years. The man who has brought new hope and happiness into these baffled lives is Dr Lennox Ross Broster, surgeon at Charing Cross Hospital, London.'

Broster was positioned here as a hero, a man bringing certainty and promise where

before there was uncertainty – to those 'baffled lives'. The article centred on one case in particular, that of Donald Purcell, who had been raised as a girl but was now hoping that an operation would make him the man he had always been 'at heart'. Although readers were not given any information as to what surgical techniques were being employed at Charing Cross Hospital, they could glean that 'sex change' was now a relatively frequent occurrence, that it required a qualified medic such as Broster, and that it could resolve turmoil and bring about happiness.

Lennox Ross Broster was a specialist on the 'adrenogenital syndrome', who had originally arrived in Britain from South



Africa in 1909 as a Rhodes Scholar. The prominence that he received in the press did not reflect his status amongst his fellow endocrinologists. The Medical Research Council's Sex Hormone Committee was founded in 1930 and Broster was not a member. His applications to them for funding were met with a degree of exasperation. He did receive a grant for his research on the relations between changes in sex characteristics and the suprarenal gland, but other members of the committee were dissatisfied with his methodology.

Of even more concern was the media attention that Broster was garnering. The Sex Hormone Committee's position was that the newspaper stories of 'sex changes' were inaccurate. There is a sense of irritation in their correspondence that the findings of the burgeoning field of endocrinology were being disseminated in a sensationalistic manner.

Yet the notion of 'sex changeability' was being effectively disseminated. The vague language of 'sex change' used by the press, alongside references to operations and 'gland secrets' fostered the idea that sexual characteristics could be changed thanks to modern scientific insights and that medics could help people who felt at odds with the gender they had been assigned.

### Everyday sex problems

In his 1948 book *Everyday Sex Problems*, the sexologist Norman Haire dedicated the second chapter to 'Change of Sex', lamenting the impact of such press stories. He reported that numerous patients were approaching him desirous of getting their sex changed. This, he stressed, was impossible, a fact of which it was difficult to convince people given the power of the newspaper accounts. By way of explanation he wrote: 'It is true that change of sex has



Image: courtesy of Ruth F May, genealogyamay.co.uk

**Above** Lennox Ross Broster, c. 1920.

**Opposite** Charing Cross Hospital in Villiers Street, Westminster, where it was situated from 1821 to 1973.

been brought about in some of the lower animals, and in birds, but it is quite impossible in human beings.'

The idea of 'change' is paramount here. Experiments such as those by Eugen Steinach on the sex characteristics of guinea pigs and by F A E Crew on chickens had also been widely reported in the press. They promoted the idea that sex characteristics could change, whether through intervention, as in the case of Steinach's guinea pigs, or through natural occurrence, as in the case of Crew's chickens. The power of scientific discovery, especially in the field of endocrinology, appeared to be pointing to the capacity for bodies to alter from one set of sex characteristics to another.

In much the way that scientific experiments called on a degree of equivalence between animals and humans, so humans were noting the changes in animals and extrapolating that they too might change. Haire was adamant that this belief be dispelled:

*It is important to stress the fact that no real change of sex occurs at all. The truth is that sex has been wrongly diagnosed at birth, and the real sex of the child becomes apparent only at puberty or during adolescence.*

This idea of 'mistaken sex' did feature in a number of the press stories, but readers could easily be forgiven for believing that bodies could be medically induced to change.

Broster's 1938 co-authored book *The Adrenal Cortex and Intersexuality* published more than fifty case studies of 'departure from normal sexual development.' Reading Broster's clinical and surgical assessment of patients alongside Clifford Allen's psychological assessment, it is apparent that the decision to reassign a person's sex was subject to Broster and Allen's prejudices about gender roles.

Mark Weston, whose reassignment from female to male received a great deal of media coverage in 1936, was one of the case studies. Broster noted with admiration:

*This man succeeded in attaining male sexuality against every disadvantage. He is a triumph of instinctual development.*

The description of Weston's undescended testes and hypospadias (where the opening of the urethra is on the underside of the penis) revealed far more than any of the press stories had. An official reassignment was dependent on the presence of atypical sex characteristics such as Weston's. Those patients who reported that they were men despite having been assigned female at birth were never recognised as men by Broster and Allen unless their bodies carried physical traces of their gender identities.

### A language of changeability

The research Broster did on the adrenals did yield benefits for intersex people. Widespread press speculation about hormones and their effects allowed for a popular discourse of sex changeability. For people whom we might now understand as transgender but not intersex, the promise offered by the press stories was not matched with medical treatment and official recognition of their gender.

Yet even for those people who were refused treatment by Broster or Haire, there was a language being created of sex changeability and there were press stories readily available to prove the existence of other people who had rejected the gender they had been assigned at birth.

Broster's tendency for self-publicity, combined with the media appetite for 'sex change' stories, meant that the 1930s were a time when, contrary to Broster's actual message, the public might reasonably conclude that sex was changeable. •

Clare Tebbutt  
Trinity College Dublin

**The 1930s media circulated a positive narrative.**

# Viewpoint Interviews...

**Jana Funke**, director (with Kate Fisher at the University of Exeter) of the Wellcome Trust-funded 'Rethinking Sexology' Joint Investigator Award project (2015-2020). The research team also includes Jen Grove, Sarah Jones, Ina Linge, and Kazuki Yamada.

## Who or what inspired your project, 'Rethinking Sexology'?

We were partly inspired by the sexologists themselves. In the second half of the 19<sup>th</sup> and beginning of the 20<sup>th</sup> century, many sexual scientists, at least in Britain and Germany, articulated a broad and inclusive understanding of sexual science. They sought to include diverse forms of knowledge and expertise, including insights drawn from medical sciences, anthropology, history, and literary studies. We wanted to study this history to investigate how sexual knowledge and scientific expertise have been constructed and contested.

## What has been the project's greatest achievement?

Last year, we got follow-on funding from the Wellcome Trust to run an ambitious public engagement project with artist Jason Barker and community group Gendered Intelligence. The plan is to engage young trans and gender diverse people with our research, focusing specifically on the intersections between the history of sexology and LGBTQ+ history, to develop a performance and an exhibition.

## And what difficulties have you encountered?

In terms of our engagement work, one challenge is presenting the sexologists in a nuanced way. It is easy, for instance, to idealise German-Jewish sexologist Magnus Hirschfeld: he fought for the rights of homosexual, trans and intersex people and used his scientific authority to affirm his patients' identities. He was also gay himself. Hirschfeld is often celebrated, but we also need to remember that he studied LGBTQ+ people and used them to further his career. As part of our engagement workshops, we have had productive conversations with the young people about the different aspects of his work.

## Which of your team members has the best dinner-table history of science story?

Where to begin? Sarah Jones is interested in the 'popular' life of sexology and could tell you



all about the invention of foreplay. Ina Linge, who works on sexology, zoology, and the natural, could discuss the little-known butterfly station in Hirschfeld's Institute of Sexology in Berlin. And Kazuki Yamada, who is writing a PhD on sexology, gerontology, and ageing, would have anecdotes to share about the rejuvenation hype of the 1920s. We also have a menu of sexological cocktails to bring to a party. My favourite is the Ginsey Scale!

## Which historical person would you most like to meet?

I would choose Edith Less Ellis. She was a writer and feminist activist. She had relationships with women and was married to British sexologist Havelock Ellis. I would ask her what it was like to be part of sexual scientific and activist circles at the turn of the 20<sup>th</sup> century.

## What are your favourite history of science books?

Steve Epstein's *AIDS, Activism, and the Politics of Knowledge* (1996) helps me think about whose voices are included and excluded or seen as 'credible' when it comes to producing scientific knowledge. Kirsten Leng's fantastic new book *Sexual Politics and Feminist Science* (2017) demonstrates the previously overlooked contributions of women sexologists in early 20<sup>th</sup>-century Germany.

## What would you do to strengthen the history of science as a discipline?

Including diverse voices when writing the history of science is important. Engagement work involving dialogue between academics and broader publics can help to achieve this goal, but it is not easy. We are privileged to work alongside Jen Grove on the Rethinking Sexology project. Jen is a researcher working on sexology, collecting, and material culture, and she is an engagement expert. She helps all of us to become better engaged researchers.

## How do you see the future shape of the history of science?

I hope the history of science continues to thrive as an interdisciplinary field that attracts diverse people within academia and beyond. Many questions that have concerned people in the past about how we relate to science, what it means for our lives and who gets to make decisions remain pressing for us all today. •

*For more about 'Rethinking Sexology: the Cross-Disciplinary Investigation of Sexuality – Sexual Science Beyond the Medical, 1890-1940', visit the project website at: [rethinkingsexology.exeter.ac.uk](http://rethinkingsexology.exeter.ac.uk)*



# Jeff Hughes, 1965–2018

Many of us learned of the tragic loss of Jeff Hughes, at the age of just 52, on the final day of the 2018 European Society for the History of Science meeting in London. The news inevitably cast a pall over the event; and yet there was some solace in the fact that so many friends and colleagues could gather to recall together a man who gave so much to the field.

A miner's son from Carmarthenshire, Jeff initially studied chemistry at Oxford but soon transferred his attention to the history of science, moving to Cambridge as a postgraduate in 1988. His PhD focused on the community of early radioactivity researchers that grew up around Ernest Rutherford in Manchester and Cambridge, and their relations with researchers at other sites internationally.

In 1993, he moved to Manchester for a lectureship at the Centre for the History of Science, Technology and Medicine (CHSTM), helping to shape its profile as a cross-disciplinary group with a strong critical mass in 20<sup>th</sup>-century studies. He was particularly prolific as a PhD supervisor, and oversaw several projects in partnership with the Science Museum Group.

Accessible communication was another of Jeff's priorities. His best-known work, *The Manhattan Project: Big Science and the Atom Bomb* (2003), was an overview aimed at general audiences. It also found a niche as an undergraduate set text, and several researchers have cited it as their first or favourite introduction to the history of science.

Most of Jeff's research, however, concerned British science, if often in the context of its international networks. He developed a particular interest in the Royal Society and its relationship to government, but published widely on topics including spectography pioneer Francis Aston's interest in the 'occult chemistry' of the theosophist Annie Besant, Ewan MacColl's extraordinary agitprop stage drama *Uranium 235*, and the influence of politically engaged journalists on national science policy (a focus which inspired his long-term involvement in the field of science communication studies).

Likeable and approachable, Jeff made countless friends throughout the international academic community. At conferences, he would sit up until all hours, reminiscing with old colleagues or planning the future with new ones: one such session, at the 2007 BSHS Annual Conference, is attested to have concluded with a trip to a Rusholme curry-house as the sun rose around 4am.

Yet Jeff was equally capable as a skilled and efficient organiser behind the scenes. His career-long involvement with the BSHS included terms as Secretary from 1995 to 2000, and, from 2008 to 2010, as one of the youngest Presidents of recent times. His greatest administrative achievement was undoubtedly the 2013 International Congress of History of Science, Technology, and Medicine in 2013, which brought over 1700 delegates to Manchester.

For all that Jeff was a consummate



social academic, university culture did not dominate his life; he belonged to a close-knit family and was a familiar face on the live folk music scene. He is survived by his wife Natalie, Herbie the cavapoo, and three generations of appreciative colleagues, students, and friends.

In recognition of Jeff's career-long commitment to broadening engagement, the BSHS has recently renamed its prize for the best book in the history of science accessible to a wide audience of non-specialists in his honour. Details of the 2019 Hughes Prize competition may be found at [www.bsbs.org.uk/prizes/hughes-prize](http://www.bsbs.org.uk/prizes/hughes-prize). •

*James Sumner*

*A more detailed version of this obituary appears in the Spring 2019 issue of the Science Museum Group Journal, available at [journal.sciencemuseum.org.uk/browse/issue-11/jeff-hughes](http://journal.sciencemuseum.org.uk/browse/issue-11/jeff-hughes).*





## *The British Journal for the History of Science*

- Jim Bennett and Rebekah Higgitt, 'Introduction – London 1600-1800: communities of natural knowledge and artificial practice'
- Jasmine Kilburn-Toppin, '"A place of great trust to be supplied by men of skill and integrity": assayers and knowledge cultures in late 16<sup>th</sup>- and 17<sup>th</sup>-century London'
- Philip Beeley, 'Practical mathematicians and mathematical practice in 17<sup>th</sup>-century London'
- Noah Moxham, 'Natural Knowledge, Inc.: The Royal Society as a metropolitan corporation'
- Anna Simmons, 'Trade, knowledge and networks: the activities of the Society of Apothecaries and its members in London, c. 1670 – c. 1800'
- Rebekah Higgitt, '"Greenwich near London": The Royal Observatory and its London networks in the 17<sup>th</sup> and 18<sup>th</sup> centuries'
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