

Contents

Choose Your Science Story	1-3
Undead Science Stories	4-5
Scientific Wives & Woes	6-7
Down the Hadron Collider	8-9
Taking London's Pulse	10
Fossils & Fictionalisation	11-12
Grant Report	13
Conference Report	14
Interview - Adam Mosley	15
<i>BJHS</i> , <i>Viewpoint</i> , BSHS info.	16



The future of travel and exploration? A fictional poster for travel to Europa, as created by NASA's Jet Propulsion Laboratory. Image courtesy of Courtesy NASA/JPL-Caltech

What is your future, history?

A choose-your-own History of Science adventure from the **Unsettling Scientific Stories** team.

Remember: only YOU can choose your destiny...

May your journey be blessed by the Lady Subtilitae and Lord Venatus, and may you avoid the pit where the monster Dipsaeolian lurks with the snake Suimendax

Walk with Chronos, friend

These are dark times for the Academy. Many of your Colleagues have fallen in its defence, delivering their last lecture in the teeth of the three unsleeping Monsters that stalk its Corridors: Plans That Are Not Thoroughly Thought Through, Someone In Central Admin's Vanity Project, and Low-Level Omnipresent Malaise. The Overlords have decreed that More is once again Less. The Stipend for all is reduced. Many Students are arriving and must be Supervised through the Labyrinths of Halls, Seminars and Required Reading to the sunny uplands of Genuine Intellectual Engagement.

But you have been given the opportunity for one Heroic Quest – to understand how the past thought about and created the future, both in fiction and in fact. Making a further imaginative leap, you wonder if it might even

make it possible for you to *change* the future – if only you can gather together the tools and weaponry you'll need to succeed.

Do you

1. Open your Notebook and start searching all of the Academy for Concepts, Methods and Colleagues?
2. Go for coffee with fellow inhabitants of your Corridor to Discuss the Issues Again?
3. Become disturbed by a tearful Student seeking Succor?

If you've chosen (2), Suimendax's snares lie ahead. If (3), you must wait till tomorrow to start the Quest – but remember, sometimes tomorrow never comes.

If you've chosen (1), you may continue.

First, you must understand what the underlying Aim of your Quest actually is. On one level, your plan is to investigate the role that science and technology have played in creating this history of the future that you will write. But beyond this, you must also figure out a way to both protect Human Knowledge from

Editorial

This issue features a variety of science stories. We begin with a story for you to participate in, as told by Amanda Rees (1-3): complete the quest to get a History of Science project up and running! An article by Thony Christie follows (4-5), with examples of the sort of stories that won't *stop* running, though historians of science believe they should be long dead.

Shock and sensation were used in fictional and non-fictional science stories. Ann Loveridge shows the perils of loving a scientist in 19th-century novels (6-7), and Ross MacFarlane talks about how real Londoners were transformed into characters in a very creative report on the healthcare hardships they faced (10).

Kanta Dihal talks about science stories for the young, exploring how even quantum physics has made its way into tantalising tales (8-9). I'm also delighted to welcome back former *Viewpoint* editor Melanie Keene, who explains how a real scientist has been immortalised in fiction for children (11-12).

Contributions to the next issue should be sent to viewpoint@bshs.org.uk by 15th December.

Alice White, Editor



A futuristic vision from 1829: the advance of technology leads to rapid transport, sophisticated tastes among the masses, mechanization, and extravagant building projects. Etching by W. Heath (using the pseudonym Paul Pry). Courtesy of the Wellcome Library.

the twin assaults of Arrogance and Wilful Ignorance, and to add to her treasure in the humble spirit of Knowing You Might Have Missed Something.

Do you

1. Collect a Huge Pile of Books and Paper Downloads: many more than you can realistically read?
2. Put together a team of Crack Colleagues and with them hatch your plan to Catch the Vital, but Elusive, targets of Impact, Outreach, Intellectual Respectability and International Significance?
3. Decamp to the local Hostelry for Ale to sooth your throat and fevered brow?

If you've chosen (1) or (3) Dipsaeolian and Suimendax will certainly savour your flesh. If (2) you may proceed.

Congratulations! You've surmounted the first obstacles. Now, things become serious. You decide that your quest will seek six Objects, and you appoint six Champions in their pursuit.

Three will explore the well-trodden paths of the Case Study, seeking to carve out knowledge of the *Victorians and Edwardians*, *White Heat/Cold War* and *Environment, Complexity, Catastrophe*.

These Champions will explore the ways in which science and technology were deployed in thinking about the future at different points during the long technological 20th century. They will investigate how the dazzling displays and spectacular experiments of scientist-performers encouraged the development of what could be called a culture of futurism, in fiction, in fact and in a variety of different spaces. More prosaically, they will consider how ideas of improvement, reform and progress were gradually replaced by notions of planning and crisis, as prospective limitations on resources (economic, physical, historic) became plain. These case studies will show how early optimism become considerably blunted, as fears of political or military defeat became overlaid by the awareness of looming natural disaster. Confidence in technological, or technocratic progress was increasingly confronted, in novels, films, research papers and committee

rooms, with its unanticipated – and wholly unintended – consequences. The future, these Champions will show, was becoming fearful.

But what of the other three Objects? They are more unusual and are proving harder to define – although they each promise much greater opportunities for you to hit your Vital Targets. You hesitate. The Case-Study is, after all, the chief Weapon of the Academy. The snake Suimendax enlists her meretricious henchfolk, the twins Volens and Sordidus Cogitandi, to whisper in your ear that these three Objects are surely enough to fulfil your quest...

Do you

1. Agree. The mystic Gateway to Research is close now, and near closing: you have done enough. The Case Study Champions will ride alone and the three remaining Objects will disappear back into the Mists of Might Have Been.
2. Disdain their wiles. Protecting and increasing Knowledge alone will not Defend the Academy: you must also reach out to the Real World and even, if

you're brave enough, the Overlords. The Champions will ride out to the Gateway as Six or None.

3. Tempourise. Maybe one more Object - you might just slip through the Gateway?

If you chose (1), you find the Gateway slams shut against you. You return, abashed to your Corridor, and seek to pursue and protect Knowledge in the time you can clutch back from Supervision. Maybe next year, you'll be braver. If you chose (3), you pass the Gateway, but are trapped in Triage: you must battle it out with the other souls who had Good Ideas Backed Up with Solid Plans, but simply Weren't Distinctive Enough. Dispirited, the Corridor and Supervision await you and your time will be nibbled away by the Rats of Large and Small Admin Jobs.

If (2), you may proceed.

The three remaining Objects are ones that take you out of the Academy and force you to figure out how your Quest makes sense in the Real World. You need to look directly at how people – expert and lay – used science to think about the future in the past. You need to figure out how to find out about how lay people – who are each expert in their own field, even if they have no official credentials – are using science to think about the future now. And you need to know how present day populations react to the historical stories

you want to tell about the past's future. You identify *Past Periodicals*, *Prospecting Futures* and *Presenting Choices*.

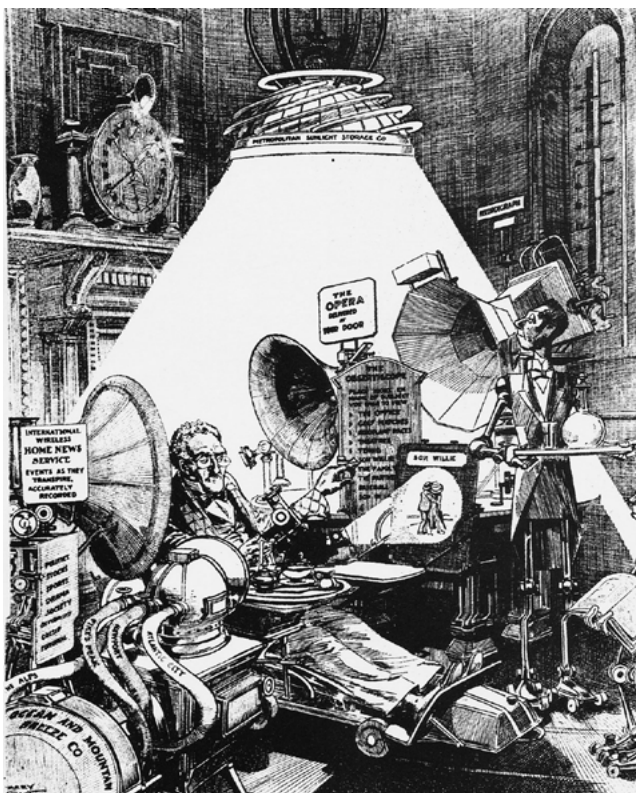
The first of these Three will use the Archive – it will seek out evidence of how science was historically deployed in journals and magazines throughout the long twentieth century in order to imagine the future. It will treat cartoons and advertisements with the same respect it proffers to editorials and articles: all go to shape science in the public mind. The second will turn to Focus Groups, and join sf reading groups and individuals in their own intrepid journeys through fiction. It will listen and talk with them about how and why stories of the future matter: it eschews arrogance, preferring instead to aim at stimulating conversations on which relationships of equality with lay experts can be built. The third – Ethnographic Role-Play, invites publics to use their imaginations to investigate the histories of 20th-century scientific decision making, and to decide on the choices that they would make, were they living in those histories. It will constantly seek feedback from its users, so it can study both how people use science to think about the future, and how non-historians utilise historical knowledge. Together, the Three will wonder what a Citizen History of Science might look like.

Your identification of the six elements of your quest is deemed worthy by Those Who Stand The Other Side of the Gateway. You and your colleagues are given the resources you need to seek them out and bring them home.

But remember, on your Quest, you must fight to retain your Purity and Clarity. As you pursue your Objects, you and your Colleagues must constantly seek different ways of fitting them together, and considering how each could be used to improve the other. The tools of Reflexivity and Self-Criticism are essential weapons in the never-ending fight against Dipsaeolian and Suimendax. But gentle Lubridum is always there to help.

TO BE CONTINUED.

THERE'S STILL A FUTURE TO CREATE.



"We'll All Be Happy Then". Cartoon depicting technological luxuries of the future, by Harry Grant Dart, 1911. Image in the public domain.

BShS Notices

HSS Conference

There's still time to register for the annual HSS conference, to be held this year at the Westin Peachtree Plaza in downtown Atlanta, Georgia, 3–6 November 2016.

Online registration will be available through 23 October 2016. Non-members are encouraged to join the Society and enjoy discounted meeting registration.

For more information, visit: hsonline.org/meetings/2016-hss-annual-meeting/

And to register, go to: hssweb.org/registration/

IUHPST Essay Prize

The International Union of History and Philosophy of Science and Technology (IUHPST) invites submissions for the first IUHPST Essay Prize in History and Philosophy of Science. This prize competition seeks to encourage fresh methodological thinking on the history and philosophy of science as an integrated discipline.

Entries in the form of an essay of 5,000–10,000 words in English are invited, addressing this year's prize question: "What is the value of philosophy of science for history of science?"

The award will carry a cash prize of 1,000 U.S. dollars and, in addition, the cost of hotel accommodation for attending the 25th International Congress of History of Science and Technology in Rio de Janeiro (23-29 July 2017).

Entries for this essay prize are invited from anyone, without restriction of age, nationality or academic status.

Entries for the prize competition should be submitted in pdf format by email to the Chair of the Joint Commission, Prof. Hasok Chang, Department of History and Philosophy of Science, University of Cambridge. Email: hc372@cam.ac.uk. Any queries should also be directed to him. The deadline for submission is 30 November 2016.

Get in Touch!

If you have a history of science conference, event, prize, etc., get in touch with us to help publicise or possibly even fund it. Details on www.bshs.org.uk

Myths, Zombies and History of Science Story Telling

Thony Christie discusses the science stories that just won't die, and explores the origins of some of these myths.

If I get asked what I do, the formal answer is that I am a contextual narrative historian of science, which is just a fancy way of saying that I'm a history of science storyteller. However, I take great care to ensure that the stories that I tell are as historically and factually accurate as possible. Unfortunately, the history of science is plagued with copious myths, many of which although thoroughly debunked on numerous occasions live on as, what I call, history of science zombies, the undead scourge of the discipline.

Perhaps the most persistent of all history of science myths, particularly in North America, is the assertion that medieval Europeans believed that the world was flat. This is most often claimed in connection with either Columbus' discovery of America or Magellan's circumnavigation of the globe.

Educated Europeans had known that the world was a sphere since the 5th century BCE and both Aristotle and Ptolemy provided empirical evidence for this. In the Middle Ages, when Aristotle's teachings were omnipresent, almost nobody who was educated believed anything else. This has been explained time and again by historians, but in recent times President Obama, American National Public Radio and Elizabeth May (leader of the Canadian Greens) have all expounded the myth in public.

The transition from the geocentric view of the world to the heliocentric one is a rich field for history of science myths. We get told constantly that Copernicus didn't publish his *De revolutionibus* for many years because he feared the reaction of the Church. In reality, leading Catholic prelates were urging him to publish and the Pope's secretary even offered to pay the costs of having a fine copy made of his manuscript. He was, in truth, reluctant to publish because in his earlier *Commentariolus* he had promised to deliver proof for his theories and he knew that he could not fulfil that promise.

Moving forward through time, it is a very common claim that Galileo had delivered proof for the heliocentric hypothesis using his telescope, and that those who still opposed it only did so on bigoted religious grounds. This supposed truth is frequently used by neo-atheists to beat religious believers around the

head. Yet Galileo knew very well that he did not have the required empirical proof. He never directly claimed to be able to prove that the cosmos was heliocentric but relied instead, in his writings, on propaganda and polemic, of which he was an undeniable master. His observations, and those of other early telescopic observers,^{*} refuted certain aspects of Aristotelian cosmology and a pure Ptolemaic geocentric astronomy but they did not deliver any proof that the cosmos was heliocentric. During the first half of the 17th century, the available scientific evidence most strongly supported some form of Tychonic geo-heliocentric system and not a heliocentric one.

The geocentric contra heliocentric mythology is a core argument in a much bigger history of science myth that there has been some sort of fundamental existential battle between science and religion through the ages. Actually, this myth is a product of the 18th and 19th centuries, which

* Another persistent myth is that Galileo was the only person astute enough to point a telescope at the heavens.



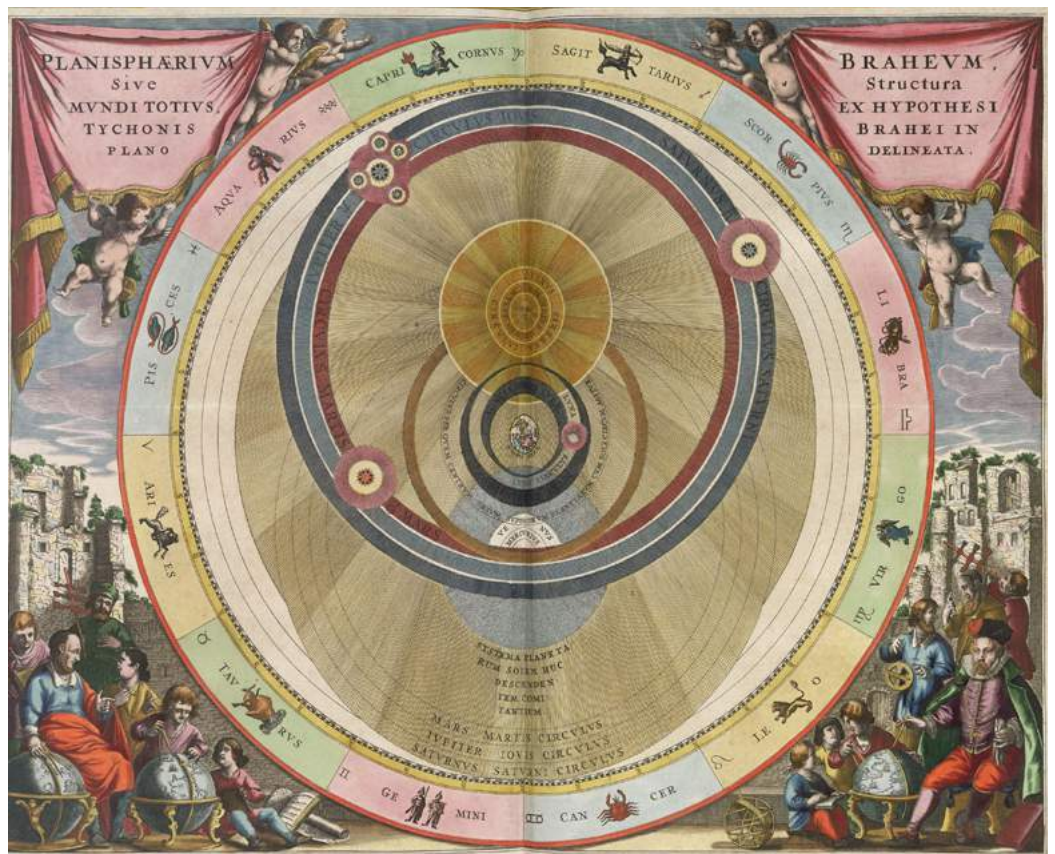
A round earth with men walking upon it. As depicted by Gossouin de Metz in *Image du monde*, circa 1320-1325. Image courtesy of the Bibliothèque nationale de France.

interestingly is when the flat earth myth first emerged. Its two most well know-proponents were the Americans John William Draper, with his *History of the Conflict between Religion and Science* (1874), and Andrew Dickson White, with his *A History of the Warfare of Science with Theology in Christendom* (1896). The flat earth myth was most widely propagated by another American, Washington Irving, in his largely fictional but purportedly factual biography of Christopher Columbus, *A History of the Life and Voyages of Christopher Columbus*, published in 1828. Irving also presented his Columbus as butting heads with a bigoted Catholic Church: a piece of pure fiction. The Draper-White (or conflict) thesis, as it is generally known by historians of science, has become deeply ingrained in the fabric of Western culture over the last two hundred years. One can often find even leading intellectuals expounding it as gospel truth and also accusing historians of science, who try to correct them, of being religious apologists.

Because of the religious and political history of England in the Early Modern period, it is quite common to find British intellectuals taking snide potshots at those especially hated storm-troopers of the Counter Reformation, the Jesuits, as being particularly anti-science. This is highly ironic, as the Jesuits provided the best mathematical/scientific education in the Early Mod-



Einstein as a child circa 1894
Image in the public domain,
courtesy of Wikimedia Commons.



The structure of the universe following the hypothesis of Tycho Brahe from Andreas Cellarius: Harmonia macrocosmica seu atlas universalis et novus, totius universi creati cosmographiam generalem, et novam exhibens, 1661. Image in the public domain.

ern period, producing many excellent and important practitioners of science in their own ranks and amongst their students. In the 17th century, Marin Mersenne, Pierre Gassendi and René Descartes were all Jesuit educated, as were many others. It was the Jesuit astronomers of the *Collegio Romano* (the Jesuit University), who provided the very necessary experimental confirmation of those early telescopic observations made by Galileo and published by him, to great acclaim, in his *Sidereus Nuncius* in 1610. They even held a banquet in Galileo's honour in the *Collegio Romano* to celebrate those discoveries and their discoverer; this is hardly evidence of a religious based anti-science attitude.

There are, unfortunately, many other widespread myths of science, not all of them old or religious. A modern non-religious myth that pops up at regular intervals (and even gets repeated by educationalists, who should know better) is that the legendary physicist, Albert Einstein, regarded as one of the greatest intellects who ever lived, was bad at school. Einstein was actually almost a straight-A student with an excel-

lent school report. Strangely enough, it is this school report that is the origin of the myth. In Germany, students are not graded by letters but by the numbers one to six, with one being the equivalent of an A-grade and six the equivalent of an F. However Einstein took his high school diploma in Switzerland, where the grading system was, in his times, the exact reverse of the German one, with six at the top and one at the bottom: Einstein's high school diploma is full of sixes! German authors, assuming the German grading system, thought that he had failed nearly all his subjects! And so a myth that refuses to die was born through a simple but understandable error.

I dedicate much of my history of science story-telling to trying to dispel the myths and drive stakes through the hearts of the zombies but it is mostly the equivalent of trying to push water up a very steep slope with a tea strainer and I don't really have any hopes of winning the battle in the near future.

Thony Christie
Freelance Scholar

Blogs as *The Renaissance Mathematicus*, and is creator, proprietor & editor of *Whewell's Gazette*
thony.christie@t-online.de

Women, Sensationalism, & Science

Ann Loveridge discusses marriage and vivisection in 19th-century novels.



Eleven p.m. - A Scientific Conversazione, with wonderful intellectual-looking beings... who smell musty bones with unpronounceable names, and make extraordinary instruments whiz round. From *Twice round the clock; or, The hours of the day and night in London* by George Augustus Sala & William McConnell (1859). Image in the public domain courtesy of the Library of Congress.

Wilkie Collins's novel *Heart and Science* (1883) and Florence Marryat's *An Angel of Pity* (1898) both engage with the theme common to novels that accompany vivisection: the imperfection of marriage. Lynn Crocket identifies anti-vivisection novels as regularly portraying the vivisector as a "man unfit for decent female companionship" (6) and disastrous marriages were a regular feature of sensation fiction.

George MacDonald's *Paul Faber: A Surgeon* (1878), Sarah Grand's *The Beth Book* (1897) and G Colmore's *Priests of Progress* (1908) are prime examples that depict scientific ambition as despoiling of marriage. Collins and Marryat look sideways from the vivisector's character to offer two diverse literary creations of the scientifically astute woman and her co-exist-

ence within the confines of a Late-Victorian marriage.

Collins addresses this topic with his offering of the amateur scientist, Mrs Maria Gallilee, who is portrayed as an object of derision and mockery. She is a woman led amiss from her domestic duties by her scientific obsession. Biology and physics are her choice of subjects and these topics position Mrs Gallilee as holding a recreational interest outside of the elite science of physiology. Her committed support to further the "march of science" echoes that of religious fanaticism. This is borne out by her conspicuous declarations and callous remarks more than by any purposeful scientific enquiry but with perseverance, she managed within the space of one year to familiarise

herself with the "zoophyte fossils" and had successfully "dissected the nervous system of a bee".

Mrs Gallilee's characterisation is presented as a scientific narrative that would have been familiar to the professional audience that Collins had addressed in his preface: his "Readers in Particular". She attends lectures on "radiant energy into sonorous vibrations", "Diathermancy of Ebonite" and she is knowledgeable about "Geographical Botany and "coprolites ... the fossilised ingestations of extinct reptiles. Collins here thoughtfully intersperses fragments of scientific discourse to validate Mrs Gallilee's claim to scientific culture and although Patricia Murphy argues that it is possible to read Mrs Gallilee as the "foolish

imitation" of the male scientist, her interests clearly show how women engaged with the natural world through the learning experience of public lectures.

It is through the *conversaciones* where Mrs Gallilee is "at home to science" that she truly indulges in her art. The *conversazione* was an integral part of leisurely class life and these events were social gatherings where the enlightened middle-class of the latter 19th-century circulated. As Samuel J. M. M. Alberti has observed, people attended these events not only to see the spectacle but also to be seen themselves and "to be part of the show". By interacting with the demonstrations, Mrs Gallilee was able to forge her own sophisticated cultural identity.

Suzanne Le-May Sheffield has suggested that "women who took part in excessive intellectual activity ... were thought to put at risk their chances for reproduction and motherhood", challenging the separate-spheres ideology of late-Victorian femininity. Florence Marryat's heroine Rose Gordon clearly rejected these strictures and did not consider personal feelings a sufficient basis for matrimony. Unlike Mrs Gallilee, Rose had



Anna Kingsford. Image in the public domain.

been well educated: having received a medical degree from Edinburgh "with honours" in an examination where "half the men candidates failed". She criticized the wife's traditional role as she did not "want to see all [her] study and experience wasted", but Rose accepted the hand of the 'celebrated' physiologist Quinten Lesquard on the understanding that the marriage would open for her "a larger sphere of usefulness, an opportunity for deeper study, and the acquirement of more knowledge".

After the discovery that her husband is a vivisectionist, she refused to bear his child and in an act of cruel retribution, Lesquard vivisected her pet dog, Bran. By mercifully killing Bran, she accidentally wounded her husband who contracted erysipelas and became "scarcely human". Rose's nursing restores her husband's health and leads to his renouncing of vivisection. Marryat uses the courtship plot to depict the terrible consequences of the moral degradation experienced by the vivisector. The novel clearly presents Rose's influence as the primary reason for Lesquard's change of heart, and it articulates women's special role: to embody the selflessness that is a moral

virtue. It is fair to presume that Rose is a thinly veiled characterisation of Dr Anna Kingsford (1846-1888): the first woman to obtain a medical degree from Paris. Both women are quoted as offering their own bodies to be "operated upon" instead of their poor patients and tortured animals.

Ironically for both Mrs Gallilee and Rose, it is their domestic, not their scientific life, that they are most isolated. Although Murphy contends that Collins's novel "carves no space in which a woman can follow scientific interests", both Mrs Gallilee and Rose push against the separation of feminine morality from male science. Antivivisection novels often suggest that vivisection is condemned for separating individuals from their sympathies, but Collins and Marryat suggest that a woman's place in science can act as a positive force and bring people together.

Ann Loveridge

Canterbury Christchurch University
ann.loveridge@canterbury.ac.uk

Works Cited:

- Alberti, Samuel J. M. M. "Conversaciones and the Experience of Science in Victorian England" *Journal of Victorian Culture*. 8:2 (2003): 208-230.
- Collins, Wilkie. *Heart and Science*. 1883 Ed. Steve Farmer. Plymouth: Broadview, 1996.
- Crockett, Lynne. *Victorians and Vivisection: Fictions of Pain from the Fin de Siècle*. Diss. Saarbrücken: VDM, 2009.
- Le-May Sheffield, Suzanne. *Women in Science: Social Impact and Interaction*. New Brunswick, N.J.: Rutgers Uni Press. 2006.
- Marryat, Florence. *An Angel of Pity. [a Tale]*. London: Hutchinson & Co. 1898.
- Murphy, Patricia. *In Science's Shadow: Literary Constructions of Late Victorian Women*. London: Uni of Missouri Press, 2006.

BJHS Book Reviews Update

The *British Journal for the History of Science* is expanding its book reviews section. Over the coming months we will be looking to publish more book reviews, as well as essay reviews on the state of historical research in various fields and on specific issues.

Taking two or more recent publications in tandem and utilising a longer essay style format, essay reviews offer the opportunity to explore a developing historiography or set of historical problems. They often provide readers with an invaluable guide to the questions and concerns that shape areas of research. One recent review essay, Tim Boon's 'Sounding the field', shows how insights and interests from HPS, STS, musicology and cultural studies have found new form in the study of sound, providing a rich interdisciplinary perspective on the relationship between sound and culture.

Along with essay reviews the journal continues to publish individual reviews of the latest contributions to the history of science, technology and medicine, providing the community with a vital resource. The books reviews section offers researchers an opportunity to engage in the scholarly discussion on the research that shapes our discipline. We are eager to see that this discourse is open to scholars at various stages of their careers, from doctoral students and postdocs to established academics.

For more information on the book review section, along with the lists of books received by the journal and information for potential reviewers, head over to BJHS's page on the Cambridge Journals website.

Don Leggett, BJHS Book Reviews Editor

Scientific storytelling: quantum physics books for children

Even very complex concepts from quantum physics are brought to life in children's stories, explains **Kanta Dihal**.

It seems that no topic is too difficult to communicate to children. Popular science books written for a young audience go far beyond the school curriculum, and have covered topics such as deadly illness, evolution, and even quantum physics.

Children's books on quantum physics usually rely on fictional stories the reader is already familiar with. Russell Stannard's *Uncle Albert and the Quantum Quest* (1994), aimed at children aged 10+, uses the story of Lewis Carroll's *Alice's Adventures in Wonderland* (1865). The protagonist, a young girl named Gedanken, can enter the thought bubbles of her uncle Albert, a famous physicist – modelled on Albert Einstein,

of course. In his thought bubbles, Gedanken can enact thought experiments: Uncle Albert asks Gedanken to find out what atoms are made of, and she observes that they have both particle- and wave-like properties at very small scales. Uncle Albert makes this particular thought experiment take place in Wonderland. Perhaps surprisingly, Gedanken is not very happy when she discovers this: shouting that "Nobody reads that old fuddy-duddy stuff these days!" she calls her uncle old-fashioned

for choosing this setting.

Even so, the Wonderland setting is helpful for both Gedanken and the young reader: both know the bottle labelled 'Drink Me' will change Gedanken's size, and indeed, it makes her small enough to observe the quarks inside an atom! The White Rabbit and the Cheshire Cat help her perform experiments: while the White Rabbit is nervous, making Gedanken do all the work, the Cheshire Cat is more knowledgeable and helps her.

Novelist Lucy Hawking has also written a

series of children's books that cover advanced topics in physics: co-authored with her father, Stephen Hawking, the *George* series started with *George's Secret Key to the Universe* in 2007 and has recently reached its fifth instalment, *George and the Blue Moon* (2016). In the first instalment, eight-year-old George discovers that he has new neighbours: the world-famous astrophysicist Eric, clearly modelled on Stephen Hawking, and his daughter, Annie. Together, they go on adventures throughout the universe aided by Eric's computer Cosmos,

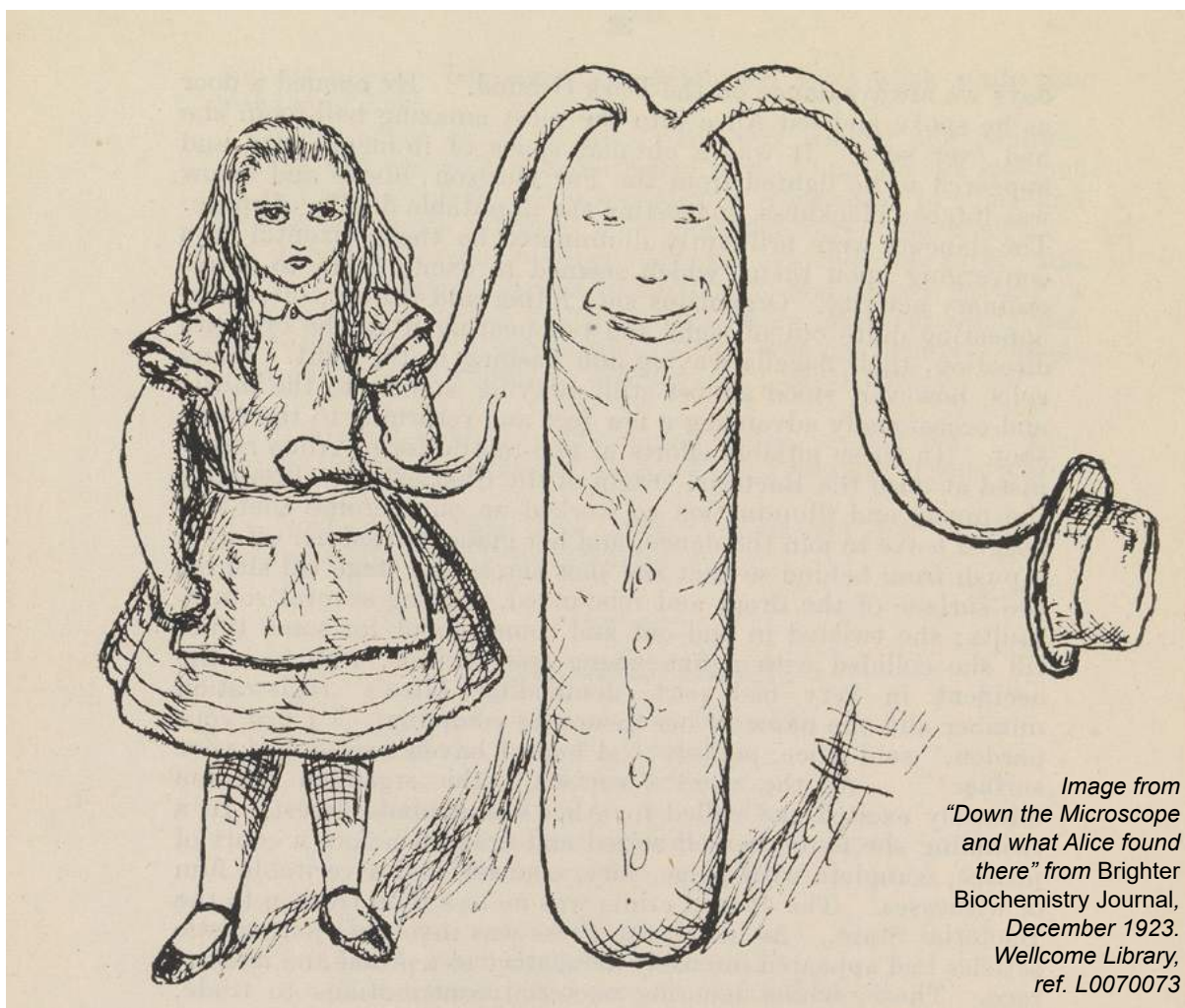


Image from
"Down the Microscope
and what Alice found
there" from *Brighter
Biochemistry Journal*,
December 1923.
Wellcome Library,
ref. L0070073

who is sentient and can open portals to distant parts of the universe.

The *George* books thus fit into a tradition of rocketship adventure stories for children, which harks back to the early twentieth century. The storyline of each book is riddled with references to specific scientific content, which is further explained in separate informative sections.

The *George* series is notable for including contributions from well-known real-life scientists, including Stephen Hawking himself. Popularisations, certainly those for children, are not necessarily written to communicate the author's own scientific findings: for a young audience, those could easily be too complex. Hawking, however, introduces some of his most important findings in the very first book in the *George* series: the structure of black holes, and Hawking radiation.

Hawking radiation is a quantum mechanical phenomenon usually not taught below university level. *George* encounters it in a science-fiction-like setting: Eric, who has been swallowed by a black hole, is slowly radiated out again - and *Cosmos* is able to assemble him from these individual particles. Eric emerges again from the computer, all his memories intact; the only error *Cosmos* made is that Eric is now wearing the wrong glasses.

This content refers to a very recent scientific debate: the black hole information-loss paradox. Different interpretations of this paradox by Hawking and Stanford physicist Leonard Susskind led to what the latter in 2008 called 'the Black Hole War'. Interestingly enough, *George's* adventure assumes Susskind's interpretation of the black hole information paradox: information is not irretrievably lost in a black hole. This indicates that Hawking admits to having lost this so-called war, and is now on Susskind's side. Although Hawking had publicly admitted that information does leak out of black holes at a press conference in 2004, *George's Secret Key to the Universe* was Hawking's first popular work since this admission. Thus, a children's book reflects the outcome of a cutting-edge scientific dispute.

A third quantum physics book for children hails from Singapore: Otto Fong's *The Quantum Bunny* (2015) is a comic book that incorporates quantum physics in a reworking of the fable of the East Asian legend of the Monkey King. Just as Stannard uses an *Alice in Wonderland* setting with which British children will in one way or another be familiar, Fong uses a story his Singaporean audience will have grown up with. In the original legend the Monkey King rebelled against Heaven and was imprisoned under a mountain by the Buddha; in this comic, the Quantum Bunny, called Qubit, rebels against the palace of the Sky Emperor, Albert Einstein. The bunny is indeed trapped under a mountain - in a Large Hadron Collider, where he is studied.

This makes the story an allegory for the way in which quantum physics overthrew classical physics in the early twentieth century. Notably, this book does not attempt to explain quantum physics the way the previously mentioned works do: instead, it is a fictionalised narration of the historical development of the field. As this is a comic, Fong has chosen not to break up the narrative with explanatory sections as the *Hawkings* have done, and instead presents an immersive story from which the readers are not asked to disengage themselves until the end: entertainment is the main purpose of the book. Fong aims to familiarise his readers with the concept of quantum physics from a young age onwards and make this a memorable experience.

These three book series are notable for not making the reader an active agent. Whereas the hands-on element of science is usually vital to science books for children, there are unfortunately no quantum mechanics experiments which can safely be performed by a young reader. Therefore, the fictional component of the stories becomes more important as the practical execution becomes impossible. Rather than participate in it, the reader is encouraged to observe and enjoy a familiar story, that is made just strange enough again to be fascinating.

Kanta Dihal
St Anne's College,
University of Oxford
kanta.dihal@ell.ox.ac.uk



Above and below: Images of Qubit from *The Quantum Bunny*, courtesy of Otto Fong.



John and Mary & London's Pulse

Ross MacFarlane reveals how stories about the health of Londoners were sometimes surprisingly creative.

The annual reports of British Medical Officers of Health have long been recognised as an important resource in the history of British public health. But do these reports – which consist of summaries by Medical Officers of Health (MOH) of their activities in their localities - tell stories? Do the authors of these local government reports - highly statistical attempts to track outbreaks of infectious disease and mortality rates - ever try and tweak their data-driven formula?

Evidence from Wellcome Library's *London's Pulse* digitisation project – which has made over 5500 reports for London freely available online – suggests at least one MOH tried to inject an element of creativity into his annual reports.

In his introduction to his Report for 1948, the MOH for Barking, C Leonard Williams, wrote:

It is to emphasise the spirit of the present age that I have made this a personal report in which I want to tell you something of the lives of John and Mary, of the problems which they brought to me, and what is more, of their difficulties and something of their conversations with me.

There are thousands of Johns and Marys in Barking, and it is through this book that I would like to speak to each one of them, and it is to these Johns and Marys that I have dedicated this Report.

John and Mary are young, recently married and about to start a family. They are living with Mary's mother and want a house of their own. Their encounters with local health services allow Williams to enlarge from his archetypal couple's experiences to report on wider topics such as housing, maternity services, district nursing and dental services.

Williams tries to be as creative as possible in how he manages to meet John and Mary: in one section he stands next to John on an over-crowded commuter train (which gives Williams an opportunity to talk about the deleterious health effects of such travel). As the report continues, things become more contrived: "John asked me to address a meeting in which he was interested in the

questions of parks and open spaces in Barking..." or "John was talking to me one day as to why so many of the nurses to be found at clinics were Health Visitors..." Mary even attends a lecture where "where a man had very stoutly declared that all the improvements in health of the public were entirely due to improved social conditions...and had nothing to do with the development of the medical services" – an incident which allows Williams to go into great detail on the beneficial role of the Medical Officer since their formation in 1846.

A debate over a proto-McKeown thesis indicates the interesting – and sometimes surprising - content to be found in this report: given 1948 saw the creation of the National Health Service, the report captures Williams's thoughts on this matter too.

Williams's tweaking of the reporting format was no one-off: his 1947 report consists of questions and answers on the health of Barking (a format he would use again in 1950). Williams had been MOH for Barking since 1927 - was he altering the format his method of trying to inject an element of freshness into his job?

Thirty-five pages into the 1948 Report, Williams writes: "There were many other questions put to me by John and Mary to do with what we call environmental health, but their questions were not of the same personal interest and incidentally, did not cover all that I would wish to write on the subject. I am, therefore, continuing this Report on more

orthodox lines".

Whilst this detail suggests that for Williams stories and science could only go so far, his reports are an indication of how MOH reports are shaped by the personality of their author and also suggests considering MOH reports as slightly more creative forms of writing than they perhaps been given credit for.

Ross MacFarlane

Wellcome Library

R.MacFarlane@wellcome.ac.uk

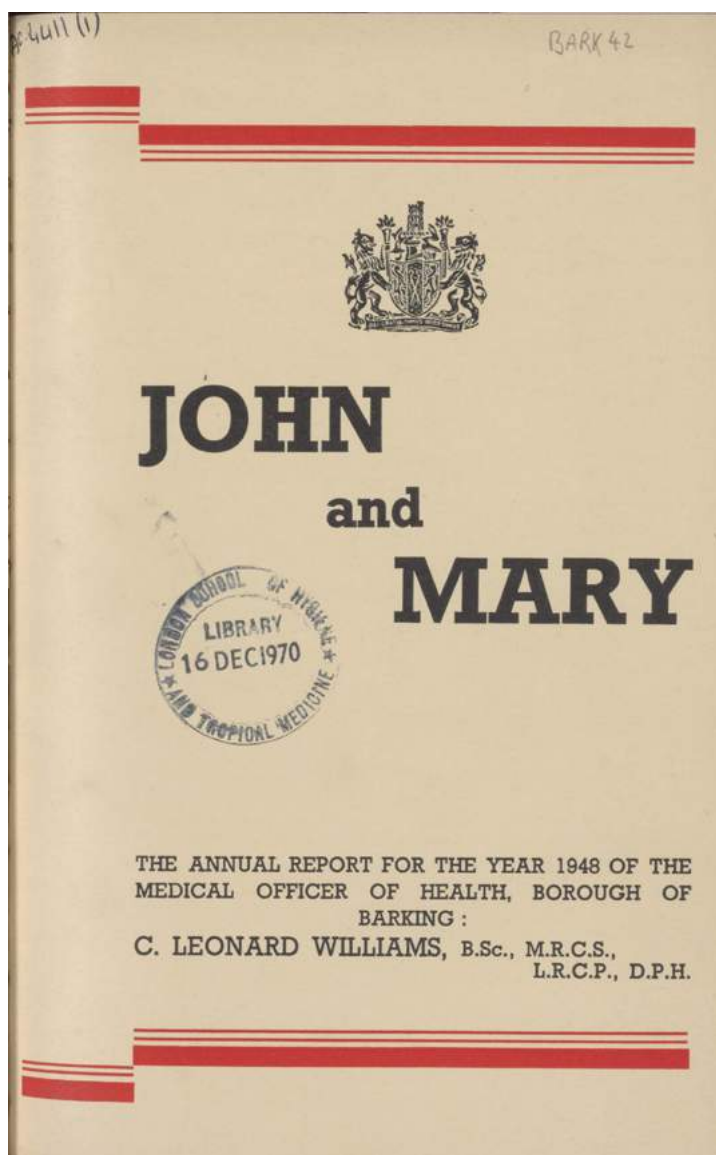
Referenced Resources

Digitised Medical Officer of Health Reports for London

wellcomelibrary.org/londons-pulse

The 1948 Barking report

wellcomelibrary.org/moh/report/b19784387



The cover of C. Leonard Williams' 1948 Medical Officer of Health Report. Courtesy of the Wellcome Library.

“She sells sea-shells”: Mary Anning & the history of science for children

Melanie Keene discusses the various different ways in which fossil-hunter Mary Anning has been introduced to children.

As a story, it has it all: a seaside setting, impoverished beginnings, a lightning strike, monstrous creatures, a tragic death, fame if not fortune, and even a little dog. No wonder tales about 19th-century fossil-hunter Mary Anning have been told to rapt young audiences over the past one hundred and fifty years.

During this time, different aspects of her story have been emphasised by children’s writers and illustrators: she has metamorphosed from a juvenile ‘Columbus’ of the ichthyosaur ‘fossil furies’ to a scatological ‘coprolite queen’ who should best be remembered for her expertise in ‘fossilized bits of poo’. Anning’s appealing life has evidently been an effective means to draw in new generations, but what wider lessons can its treatment teach us about ways to present the history of science to children?

The purpose of writing such histories could be said to be to encourage children’s participation in scientific activities, and Anning is no exception. Highlighting her young age when she made her famous early discoveries has been common, from *Chatterbox*’s 1869 article on ‘The Little Fossil-Gatherer’ to *The Fossil Girl* picture book in 1999. Sometimes the first literal lightning strike when a baby, and the metaphoric *coup de foudre* upon meeting the stony eye of an extinct sea-dragon a decade later, have been the only parts of her life discussed. Thankfully, 1920s children were encouraged to emulate the second of these actions rather than the first, going out into nature to seek ‘treasure’ lurking anywhere in the surrounding environment, whether ‘sticking out of a cliff or lying under a hedge.’ There was ‘no need’, authors urged, ‘to imagine that you have to be old before you can be a discoverer’; indeed, finding ‘curiosities’ was the proper province of the ‘sharp eyes of a child.’

Children could also mimic Anning as exactly as possible to maximise their chances of scientific success: in 1881 *The Girls’ Own Paper* recommended to ‘Pansie’, a correspondent, that she try fossil-hunting at Lyme Regis, where Anning ‘made her splendid discoveries.’ (Pansie should take a ‘chisel and hammer’ with her to open the blue lias ‘in layers, like slates’, but she should ‘beware of the sudden falls’ of rocks from the cliffs.) Children could also experience geology as part of a visit to

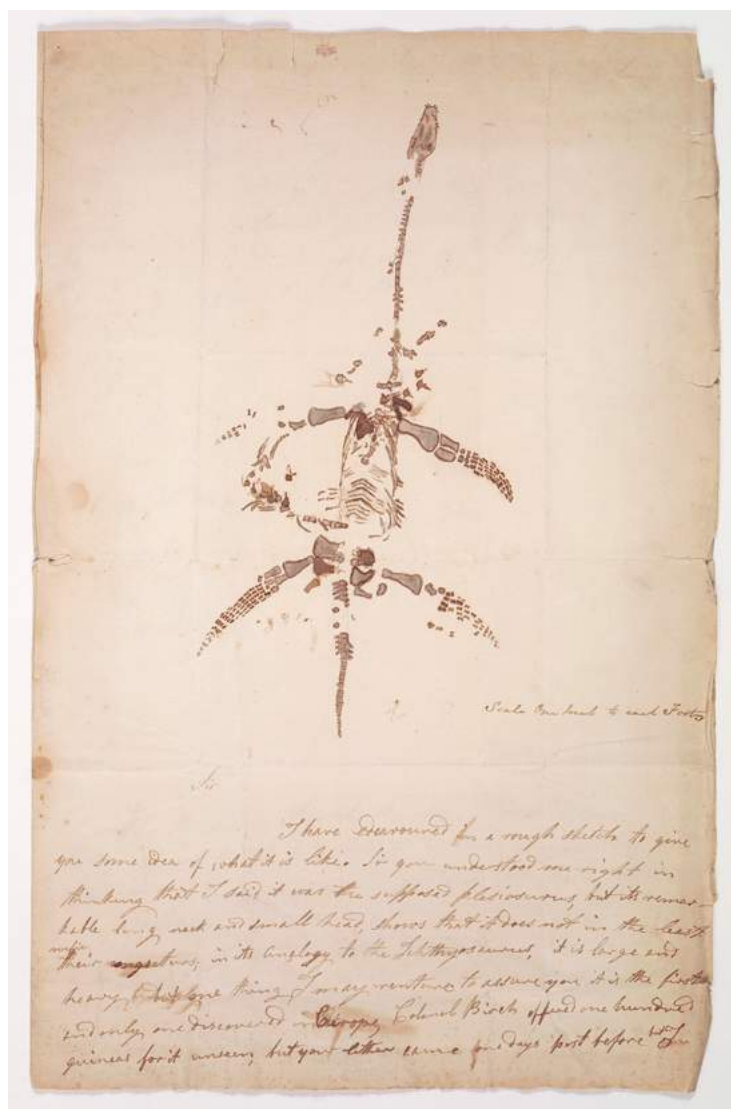


Anning as depicted on the cover of the weekly magazine *Chatterbox* in 1869. Image made available in the public domain by the University of California & Google.

the Natural History Museum: Anning and her specimens featured prominently in a 1937 *Children’s Newspaper* guide. Today children can virtually participate in several types of Anning-inspired scientific activity, including identifying embedded species, or cleaning rocks for sale to well-to-do customers, via a BBC History web game.

Anning can also be used to introduce to children the many women, members of the working classes, and people of colour who

have practised the sciences, but whose traces remain unearthed, her story the striking polished specimen on display. As she was a working-class woman living in the early nineteenth century, the ‘unlikely’ fact of Anning’s scientific expertise has long been emphasised by her biographers. Some have cast her as a ‘History VIP’ or even a ‘Superhero of Science’, but others have introduced her as part of a wider community, one admittedly remarkable women who can help us think about all



An autographed letter concerning the discovery of plesiosaurus, with a sketch of the plesiosaurus, from Mary Anning. Image courtesy of the Wellcome Library, image reference L0022370.

the unrecorded rock-botherers who have haunted shore and moor. Both the first full 1925 book-length treatment of *The Heroine of Lyme Regis* and picture book *Stone Girl Bone Girl* (1999) acknowledge the role of local 'quarrymen', and of her father's skill and influence, alongside Anning's heroism; latterly, her relationship with the Philpot sisters has also fruitfully been mined.

Other texts highlight Anning's sometimes fraught relationships with members of the contemporary scientific community, whether to uphold a received hierarchy, as in the 1923 account which claimed that 'Dean Buckland worked out the story. He could explain where Mary Ann could not' (Anning granted neither title nor surname); or for more pointed

humour, as in comic artist Kate Beaton's recent riff on Kelis: 'My fossils bring all the boys to the yard, and they're like: you still can't join the Geological Society of London'. It is clear that Anning is today credited as being one of the people who 'helped create the notion of a prehistoric world', her global influence going far beyond a Dorset beach; or, as *Chambers's Journal* had it in an 1857 article, bringing 'two very important entries in the world's bulky catalogue – watering-places and geology –' into existence. But Anning's later life, after that exceptional childhood, reminds us that such lasting fame was not guaranteed.

In these ways, exploring the histories of science we tell to children can put historiographical considerations and storytelling choices into clear forms: like a Lyme Regis palaeontologist confronting an expanse of blue lias, superfluous material must be chipped away to excavate the bones of the story beneath. What kind of story is found and circulated is up to us to decide.

Melanie Keene
Homerton College, Cambridge
mjk32@cam.ac.uk

The Dana Research Centre & Library

The Science Museum's splendid Dana Research Centre and Library was launched during its inaugural research conference in March 2016. This marked the culmination of several years of change as the Museum's Library collections were moved from their former home shared with Imperial College to the Museum's stores at Wroughton, near Swindon. The closure of the old library allowed staff to plan for a new library.

The result is a beautiful, relaxing and inspirational space, designed by Coffey Architects, that has received many positive reviews from architects, librarians and researchers. Visitors have been impressed by the continuity of design and attention to detail which makes the experience of using the library very rewarding. The library is a physical manifestation of the Museum's strong commitment to research and scholarship.

There are 18 reading desks, around 6000 volumes of books and journals in the history and biography of science, technology and medicine, access to the new library and archive catalogues and to other electronic resources. Readers can consult archives and library material transported from Wroughton. For opening times, access to catalogues and other information see <http://www.sciencemuseum.org.uk/library>. The Wroughton reading room remains open by prior appointment for researchers to consult large quantities of material.

Nick Wyatt, Head of Library & Archives



Exhibiting 'the Other' in Scotland's human zoos

Gemma Wilson describes her research into human zoos and Scottish identity, work made possible by a BSHS Undergraduate Dissertation report.

On 2 May, 1911, the Scottish Exhibition of National History, Art and Industry, opened its doors to an eagerly awaiting public. The exhibition was held in Glasgow's Kelvingrove Park, and marked the city's third attempt to enhance Scotland's industrial, technological, and imperial prestige, and construct a coherent, Scottish national identity.

Located at one end of the exhibition grounds were the Palaces of Industry, History, and Art, the Concert Hall, and the Kelvin Hall. At the opposite end, in the Entertainment Section, visitors were offered an array of attractions, including a Mountain Slide, Joy House, Joy Wheel, and a Mountain Scenic Railway, the latter of which proved the most popular exhibit, with an estimated 1,285,000 visitors. In second place, drawing 900,000 visitors, was a more peculiar exhibit, dubbed 'the West African Village'. The mock village was comprised of mud huts, a Common Hall, a Mosque, and a kitchen. It was inhabited by approximately one hundred West African 'natives', coerced into leaving their homelands and recruited by Messrs. Erlich and Singer of London, providers and concessionaries for public entertainments. For six months, the natives, dressed in their regional garments and surrounded by their national ornaments and artefacts, were instructed to carry out their daily lives, perform songs and dances, wrestle, and exhibit their various arts and crafts to a crowd of curious onlookers. For a small fee, visitors



Interior of the West African Village at the Scottish Exhibition of National History, Art and Industry, 1911. Reproduced by courtesy of Clemens Radauer, www.humanzoos.net

were invited to view the various 'dusky' tribes of West Africa, in what the souvenir guide accompanying the exhibit purported to be an authentic reconstruction of 'bush life'. They were able to experience, at first-hand, those 'characteristic features of tropical savagery' found in the colonies, and so frequently recorded in explorers' accounts.

Such human exhibitions, now commonly referred to as 'human zoos', proliferated throughout Scotland during the nineteenth and early-twentieth centuries, and were part of a worldwide phenomenon that has, until very recently, been neglected by historians. Scholars including Pascal Blanchard and Nicolas Bancel have helped to highlight the significance of human zoos, as racially- and imperially-driven exhibits designed to disseminate hierarchical racial theories to the wider public, and manipulate Western perceptions of not only themselves, but also 'Others', in a bid to promote Western supremacy and, in turn, legitimise imperial expansion.

My dissertation locates the human zoo within a strictly Scottish context, and explores the implications of these human exhibitions for Scottish national identity, colonialism, and attitudes towards 'exotic' Others. It begins

by considering their role in Scotland's great exhibitions, focusing on the aforementioned Exhibition of 1911, before turning to those held on a lesser-scale within the nation's smaller localities, through a case study of the several Inuit men who were transported from the Arctic to Scotland on Scottish whaling vessels, and exhibited throughout the country in an attempt to showcase Arctic life to an immensely curious public.

I am very grateful to have been awarded the BSHS grant. It has helped tremendously with my research, allowing me to gain access to invaluable primary material in the British Newspaper Archives, Glasgow's Mitchell Library, Dundee's Central Library, and Dundee's McManus Collections Unit. Visiting these archives was a thoroughly enjoyable experience, and helped to develop my historical research skills.

Images courtesy of Coreen McGuire.



This July, BSHS members travelled to Edmonton for the eighth Three Societies Meeting, joining with colleagues from the Canadian Society for the History and Philosophy of Science, and the History of Science Society (USA).

The city, being the second furthest north city of over a million people (the furthest north is Saint Petersburg), was fairly remote for virtually every attendee, but we were all made to feel very welcome throughout the conference by Lesley Cormack and her team of volunteers.

Delegates had been gradually trickling in in the days before the conference and several – including myself – had enjoyed the stunning scenery of Jasper National Park. Unfortunately, I did not spot a bear in its natural habitat, but on arrival at the opening plenary I was treated to the scene of three societies worth of historians of science in their natural habitat: lecture halled and renewing acquaintances, making introductions and shuffling through the pages of the programme. Then,



3 Societies Meeting

University of Alberta, 22-25 June 2016

after the appropriate welcome and acknowledgement to the First Nation peoples who had lived on the land before, the opening lecture began. Erika Dyck's paper on government-

imposed population control in the north of Canada explored the control of indigenous bodies in politically and geographically disparate regions. Dyck focused on the effect of eugenics based policy in a cultural context that has been little explored, demonstrating the difficulty of recovering Inuit women voices from history. It was a suitably Canadian beginning to proceedings, but with material to interest all.

The next day saw the concurrent sessions begin. With six sessions running simultaneously there was no shortage of choice, with a range of both subject and time periods on offer for delegates. Some personal highlights were: Suman Seth's paper on naval medicine in the 18th century, Geoff Bil on native plant names and print culture, Noah Moxham on Henry Oldenburg, and Edwin Rose on Hans Sloane's cataloguing. There were also several organised panels, with 'Transitions of Power: cultural biographies of electricity in Russia, India, and Britain' (Natalia Nikiforova, Animesh

Chatterjee, Paul Coleman) and 'Editors and Referees at Learned Society Journals in the 20th Century' (Roberto Lalli, Camilla Mork Rostvik, Charlotte Bigg, Michael Barany) being the best I attended.

With three societies present, there were two more plenary

lectures apart from Erika Dyck's to enjoy, with Lawrence Principe and Aileen Fyfe representing HSS and BSBS respectively. Both of the remaining plenaries posed important methodological questions for historians of science. Lawrence Principe's paper on the results of his own alchemical experimentations uncovered a rich seam of historiographical ore with regard to how historians of science can uncover past scientific practice and knowledge. Aileen Fyfe's fascinating *longue durée* of the Publishing the Philosophical Transactions project at St Andrews emphasised that taking a similarly *longue durée* approach to one's own research can bring out long term trends and conclusions that are often unavailable to narrowly focused research.

Aside from the academic, there was plenty of socialising. The Art Gallery of Alberta proved to be a stunning host for a reception from both an architectural and artistic standpoint. The collection of First Nation art was one of the conference highlights, though the one-free-drink policy did make me yearn for the more homespun efforts of most British conferences – with a tiny table of cheap plonk unmanned and, most importantly, free. But, of course, things are different over there, and the conference was nevertheless a wonderful opportunity to mix with historians that would be otherwise rarely met in person. Travelling all that way had certainly been worth it and the banquet on the final evening topped proceedings off. Though I left the next day several others stayed to spend some time in Jasper National Park: I believe that Rupert (Cole) saw a bear.

Richard Bellis
University of Leeds
ph10rtb@leeds.ac.uk



The *Viewpoint* Interview

Adam Mosley is Associate Professor at the University of Swansea, and has recently completed a Dibner Fellowship at the Huntington Library, California.

He is also now the BSHS Conferences Committee Chair.

Who or what first turned you towards the history of science?

I was torn between the sciences and the humanities when it came to choosing my A-levels, but ended up plumping for the sciences with some history (AS level) and Latin (GCSE) on the side. I think I would have changed degree after my first year of science at university - I missed history too much - had it not been possible for me to study history and philosophy of science in my second year.

What's your best dinner-table history of science story?

It's a dead heat between Johannes Kepler's design for a drinks-dispensing planetarium and the sad tale of the elk Tycho Brahe procured as a gift for a prince, which died en route after it drank too much beer and fell down some stairs.

What has been your best career moment?

Best is hard to pick... But I've just returned from a nine-month stint in California as a Dibner Fellow at the Huntington Library, and that was an all-round great experience.

And worst?

I've occasionally struggled to prepare conference papers that I'm happy with, but stood up and opened my mouth regardless... I try not to do that any more.

Which historical person would you most like to meet?

I feel I know a lot about the character of two of my historical subjects, Brahe and Kepler, already, so I think I'd like to meet someone who is a bit more mysterious: Johannes de Sacrobosco. I could then find out where he was born, for example, and other things to which we don't know the answer.

What are your favourite history of science books?

There are lots of authors I admire, but the most useful books in my library, the ones that I return to again and again, are the annotated editions and/or translations of primary sources.

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

I think we're in reasonable shape at the moment, but I'd like to see historians of science use our particularly privileged perspective more in debates about higher education and academic development. We're especially well placed to know when practitioners of the humanities should stand in solidarity with those in the sciences, and when differences in funding models, working patterns, and other ways of being and knowing would be appropriate.

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

Actually, I don't consider history of science a discipline at all! For me, it's a subdiscipline of history... I think the language of disciplinarity has become rather distorted in contemporary academic discourse, particularly in relation to the idea of 'interdisciplinarity', which though ill-defined is usually presented as always and necessarily good. The implication seems to be that merely practising (or being trained in) a single discipline is no longer good enough. This is a situation that suits funders in a time of budgetary discipline, but does not, I think reflect academic realities. As someone who studies disciplines and their evolution over time, I think we shouldn't lose sight of the virtues and purposes of disciplinary configurations. And 'multidisciplinarity' seems like a more coherent notion and achievable goal to me than 'interdisciplinarity'...

If you did not work in the history of science, what other career might you choose?

I suspect I would have ended up practising the law if I hadn't become a historian of science. But being an antiquarian book dealer would suit me more.

The British Journal for the History of Science

Forthcoming papers include:

- Jessica Ratcliff, 'Travancore's Magnetic Crusade: Geomagnetism and the Geography of Scientific Production in a Princely State'
- Janis Antonovics and Jacobus Kritzing, 'A translation of the Linnaean dissertation, "The Invisible World"'

A special selection in honour of the 25th anniversary of publication of Misia Landau's *Narratives of Human Evolution*, edited by Amanda Rees, featuring:

- Matthew R. Goodrum, 'The Beginnings of Human Paleontology: Prehistory, Craniometry, and the "Fossil Human Races"'
- Paige Madison, 'The Most Brutal of Human Skulls: Measuring and Knowing the First Neanderthal'
- Amanda Rees, 'Stories of Stones and Bones: disciplinarity, narrative and practice in British popular prehistory, 1911-1935'
- Oliver Hochadel, 'Spain's Magic Mountain: Narrating Prehistory at Atapuerca'



www.bshs.org.uk/publications/bjhs

Viewpoint: the Magazine of the BSBS

Contributions

All contributions and correspondence should be sent to the Editor, Alice White, Wellcome Trust, Gibbs Building, 215 Euston Road, London NW1 2BE; viewpoint@bshs.org.uk. Electronic communication is preferred. *Viewpoint* is issued three times a year – in February, June and October. The next issue will be in **February** and the deadline for copy is **15th December**.

Circulation

Enquiries about circulation should be sent to the BSBS Executive Secretary, British Society for the History of Science, PO Box 73631, London, SW14 9BS. *Viewpoint* is free to BSBS members and is priced £12.00 a year (three issues) for UK non-members, £17.00 a year for overseas non-members.

Advertisements

The Editor will consider advertisements regarding new appointments but, as a general rule, other advertisements are not printed in this publication. However, for an appropriate charge, leaflets advertising suitable events, publications etc. can be sent out with *Viewpoint*, subject to size and postage restrictions: full details are available from the BSBS Executive Secretary; execsec@bshs.org.uk.

Copyright

© The British Society for the History of Science Ltd. 2016. Extracts not exceeding the equivalent of a normal paragraph may be reproduced elsewhere providing acknowledgement is given to *Viewpoint: the Magazine of the British Society for the History of Science*.

Disclaimer

Any views expressed in *Viewpoint* are those of the Editor or named contributor and not those of the council or membership of the BSBS. Every effort is made to provide accurate information, but no responsibility is accepted by the Editor or Council for omissions or errors.



The British Society for the History of Science

All enquiries to the BSBS Executive Secretary, British Society for the History of Science, PO Box 73631, London, SW14 9BS, UK; Tel: +44 (0)1603 516236; office@bshs.org.uk.

You can join online, paying by credit or debit card at www.bshs.org.uk/membership/join-online Alternatively you can download a **direct debit** mandate form.

The British Society for the History of Science is registered as a Company Limited by Guarantee, No. 562208, and is also a Registered Charity, No. 258854. Registered Office: PO Box 73631, London, SW14 9BS.

